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73rd

INTERNATIONAL ASTRONAUTICAL CONGRESS

18 - 22 SEPTEMBER 2022, PARIS, FRANCE

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**TECHNICAL
PROGRAMME**

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FROM EARTH TO DEEP SPACE

#spaceforlife



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1 Information

1.1 Information for Authors

All authors are asked to upload their manuscripts and multimedia presentations prior to the Congress in order to make them available to all participants on the online Proceedings of the 73rd IAC.

You can still update your manuscripts through the IAF platform: <https://iafastro.directory/iac/account/login/>. Multimedia presentations can be uploaded in the Speaker Preparation Room. Your presentation will be automatically preloaded on the computer in the Technical Session Room. Please note that speakers are not allowed to insert USB memory sticks into the computers in the Technical Session rooms. Therefore, all updates need to be uploaded before the Technical Session takes place. Our help desk team will assist you in uploading presentations during operating hours. Speakers are requested to report to their allocated Technical Session room 20 minutes prior to the start of their session to meet with their Session Chair and to check their presentation. Do not forget to bring two printed courtesy copies of your manuscript and a backup-copy of your presentation. Some Session Chairs might also ask you for a short biography to introduce you at the session.

1.2 Congress Proceedings and Virtual Technical Gallery

The IAC 2022 Proceedings are available on a password protected site. The Congress participants will be provided with a link and online password to login and access the Congress Proceedings. If you did not receive the password, please contact: digital.library@iafastro.org. IAC papers will be indexed in the largest cited reference enhanced multidisciplinary databases: Elsevier's SCOPUS and Compendex.

The materials published as part of the Technical Programme (Lightning Talks, Video Lectures and Papers) will be made available to the Congress Delegates through the [IAC 2022 Virtual Technical Gallery](#).

1.3 Speaker Preparation Room

Authors who missed the deadline for presentation submission or who wish to update/review their presentation can do so in the Speaker Preparation Room. Authors are required to bring a back-up copy of their presentation on a USB Memory Stick. Video content should be saved as separate files.

Location: Paris Convention Center, Hall 7.3

Opening hours:

Saturday 17 September, 14:00-18:00

Sunday 18 September - Wednesday 21 September, 08:30-18:00

Thursday 22 September, 08:30-13:00

1.4 IAF App

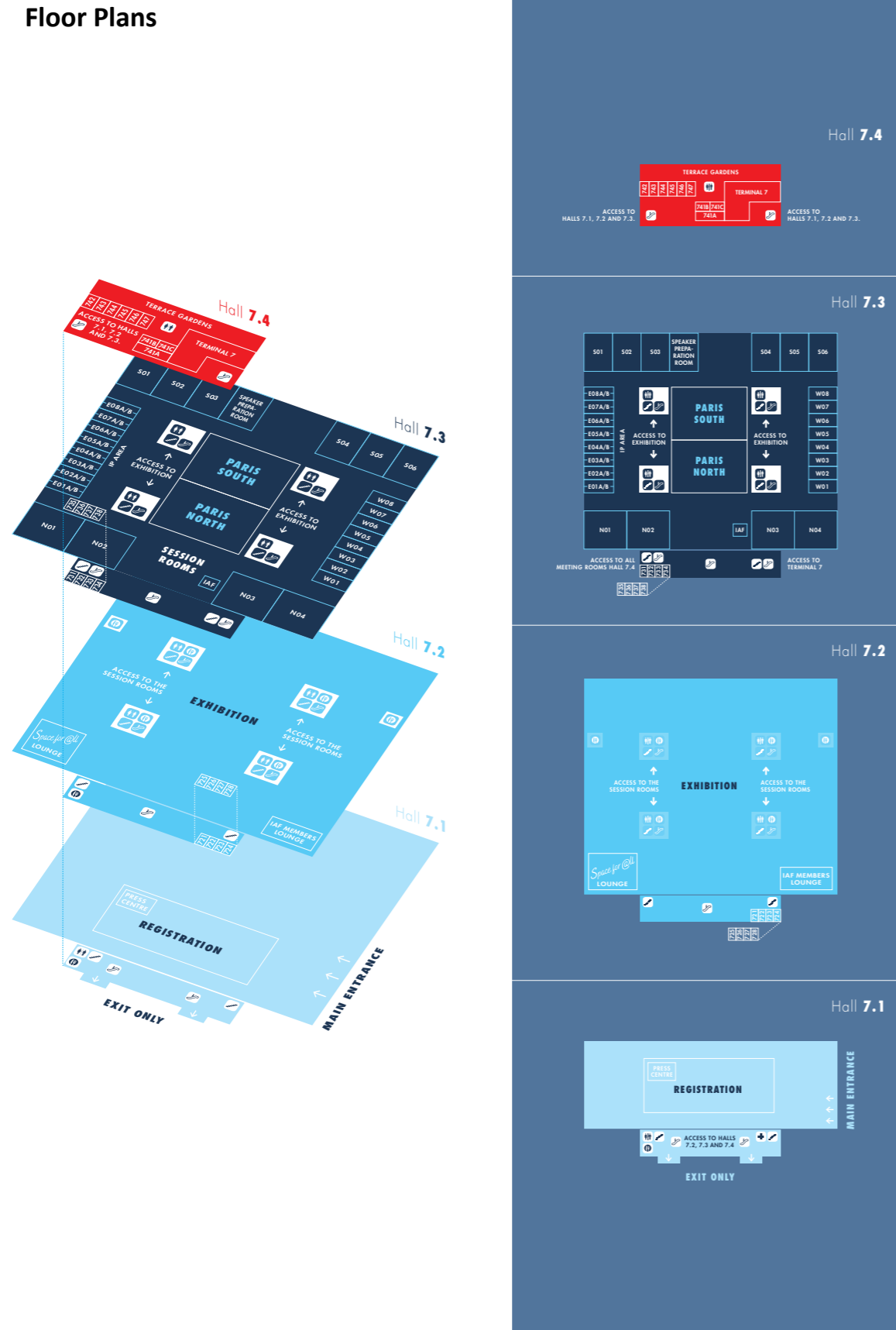
The full Technical Programme is also incorporated within the IAF App, which will make it easier to follow the entire content and enable you to best plan your participation and choose the events from the Technical Programme to attend.



1.5 Certificates of Attendance and Presentation

Certificates of Attendance and Presentation are available on request at the IAF Secretariat Office. Claims of hours of applicability toward professional education requirements are the responsibility of the participant.

1.6 Floor Plans



2 Technical Sessions

2.1 Technical Sessions at a Glance

Date	18/09/2022	19/09/2022	19/09/2022	20/09/2022	20/09/2022	21/09/2022	21/09/2022	22/09/2022	22/09/2022
Time / Room Number	15:15-17:45	10:15-12:45	15:00-17:30	10:15-12:45	15:00-17:30	10:15-12:45	15:00-17:30	10:15-12:45	13:45-16:15
N04	A3.1	A3.2A	A3.2B	A3.3A	A3.3B	A3.4A	A3.5	A3.2C	A3.4B
S06	D2.1	D2.3	D2.2	D2.4	D2.5	D2.6	D2.7	D2.8/A5.4	D2.9/D6.2
S05	C1.1	C1.2	C1.3	C1.4	C1.5	C1.6	C1.7	C1.8	C1.9
S04	A6.7	A6.9	A6.4	A6.3	A6.2	A6.5	A6.6	A6.8/E9.1	A6.1
S03	B3.1	B3.2	B3.3	B3.4/B6.4	B3.5	B3.6/A5.3	B3.7	B3.8	A6.10/E10.2
S02	B4.2	B4.1	B4.3	B4.4	B4.5	B4.6B	B4.7	B4.8	B4.6A
S01	E7.1	E7.2	E7.3	E7.4	E7.5	E7.6/E3.5	E10.1	E7.5	E7.7
W08	C4.1	C4.3	C4.5	C4.2	C4.6	C4.7	C4.8/B4.5A	C4.9	C4.10/C3.5
W06	C2.1	C2.2	C2.3	C2.4	C2.5	C2.6	C2.7	C2.8	C2.9
W05	A1.1	A1.2	A1.3	A1.4	A1.4	A1.5	A1.6	A1.7	A1.8
W04	A2.1	A4.1	A4.2	A2.2	A2.3	A2.4	A2.5	A2.6	A2.7
W03	D1.1	D1.2	D1.3	A5.1	A5.2	D1.4A	D1.4B	D1.5	D1.6
W02	B1.1	C3.1	C3.2	B1.2	B1.3	B1.4	B1.5	B1.6	C3.4
E04B	E9.2	E3.1	E3.2	E3.3	E3.4	A7.1	E3.6	A7.2	E8.1
W01	E5.1	D5.1	E5.2	D5.2	E5.3	D5.3	E5.4	E5.5	E5.6
731/732	B5.1	B2.1	B2.2	B2.3	B2.4	B2.5	B2.6	B2.7	A7.3
E08B	E1.1	E1.2	E1.3	E1.4	E1.5	E1.6	E1.7	E1.9	E1.8
E06B	D4.1	D4.2	D4.3	D3.1	D3.2A	D4.4	D4.5	D3.2B	D3.3
E03A	E2.1	E2.2	B6.3	E2.4	B5.2	B5.3	B6.1	B6.2	B6.5
W07	B2.8/GTS.3	D6.1	E2.3/GTS.4	D6.3	E6.5/GTS.1	C3.3	B4.9/GTS.5	D5.4	B3.9/GTS.2
733/734	E6.4	E6.3	E6.2	E6.2	E4.1	E4.2	E6.1	E4.3	
ISZ								E1.8	



Category E: Space & Society
E1--> E10

Category C: Technology
C1--> C4

Category D: Infrastructure
D1--> D6

Category A: Science & Exploration
A1--> A7

Category B: Applications & Operations
B1--> B6

2.2 Technical Sessions by Day

No.	Title	Room
B3.IP	Interactive Presentations - IAF HUMAN SPACEFLIGHT SYMPOSIUM	IP Area

Sunday, 18 September 2022

15:15 Technical Sessions

No.	Title	Room
A1.1	Behaviour, Performance and Psychosocial Issues in Space	W05
A2.1	Gravity and Fundamental Physics	W04
A3.1	Space Exploration Overview	N04
A6.7	Operations in Space Debris Environment, Situational Awareness - SSA	S04
B1.1	International Cooperation in Earth Observation Missions	W02
B2.8-GTS.3	Space Communications and Navigation Global Technical Session	W07
B3.1	Governmental Human Spaceflight Programmes (Overview)	S03
B4.2	Small Space Science Missions	S02
B5.1	Tools and Technology in Support of Integrated Applications	731/732
C1.1	Attitude Dynamics (1)	S05
C2.1	Space Structures I - Development and Verification (Space Vehicles and Components)	W06
C4.1	Liquid Propulsion (1)	W08
D1.1	Innovative and Visionary Space Systems	W03
D2.1	Launch Vehicles in Service or in Development	S06
D4.1	Innovative Concepts and Technologies	E06B
E1.1	Ignition - Primary Space Education	E08B
E2.1	Student Conference - Part 1	E03A
E5.1	Space Architecture: Habitats, Habitability, and Bases	W01
E7.1	IISL Highlight lecture and Young Scholar session	S01
E9.2	Cyber-based security threats to space missions: establishing the legal, institutional and collaborative framework to counteract them	E04B

Monday, 19 September 2022

10:15 Technical Sessions

No.	Title	Room
A1.2	Human Physiology in Space	W05
A3.2A	Moon Exploration – Part 1	N04
A4.1	SETI 1: SETI Science and Technology	W04
A6.9	Orbit Determination and Propagation - SST	S04
B2.1	Advances in Space-based Navigation Technologies	731/732
B3.2	Commercial Human Spaceflight Programmes	S03
B4.1	23rd Workshop on Small Satellite Programmes at the Service of Developing Countries	S02
C1.2	Attitude Dynamics (2)	S05

No.	Title	Room
C2.2	Space Structures II - Development and Verification (Deployable and Dimensionally Stable Structures)	W06
C3.1	Solar Power Satellite	W02
C4.3	Solid and Hybrid Propulsion (1)	W08
D1.2	Space Systems Architectures	W03
D2.3	Upper Stages, Space Transfer, Entry & Landing Systems	S06
D4.2	Contribution of Moon Village to Solving Global Societal Issues	E06B
D5.1	Quality and Safety, a challenge for all in Space	W01
D6.1	Commercial Spaceflight Safety and Emerging Issues	W07
E1.2	Lift Off - Secondary Space Education	E08B
E2.2	Student Conference - Part 2	E03A
E3.1	International cooperation in using space for sustainable development: The "Space2030" agenda	E04B
E6.4	Strategic Risk Management for Successful Space & Defence Programmes	733/734
E7.2	Dispute Settlement	S01

15:00 Technical Sessions

No.	Title	Room
A1.3	Medical Care for Humans in Space	W05
A3.2B	Moon Exploration – Part 2	N04
A4.2	SETI 2: SETI and Society	W04
A6.4	Mitigation - Tools, Techniques and Challenges - SEM	S04
B2.2	Advances in Space-based Communication Systems and Services, Part 1	731/732
B3.3	Utilization & Exploitation of Human Spaceflight Systems	S03
B4.3	Small Satellite Operations	S02
B6.3	Mission Operations, Validation, Simulation and Training	E03A
C1.3	Guidance, Navigation and Control (1)	S05
C2.3	Space Structures - Dynamics and Microdynamics	W06
C3.2	Wireless Power Transmission Technologies and Application	W02
C4.5	Electric Propulsion (1)	W08
D1.3	Technologies to Enable Space Systems	W03
D2.2	Launch Services, Missions, Operations, and Facilities	S06
D4.3	Modern Day Space Elevators Entering Development	E06B
E1.3	On Track - Undergraduate Space Education	E08B
E2.3-GTS.4	Student Team Competition	W07
E3.2	The future of space exploration and innovation	E04B
E5.2	Is Space R&D Truly Fostering A Better World For Our Future?	W01
E6.3	Innovation: The Academics' Perspectives	733/734
E7.3	Balancing Needs: Protection of Space Science	S01

Tuesday, 20 September 2022

10:15 Technical Sessions

No.	Title	Room
A2.2	Fluid and Materials Sciences	W04
A3.3A	Mars Exploration – missions current and future	N04
A5.1	Human Exploration of the Moon and Cislunar Space	W03
A6.3	Impact-Induced Mission Effects and Risk Assessments	S04
B1.2	Future Earth Observation Systems	W02
B2.3	Advances in Space-based Communication Systems and Services, Part 2	731/732
B3.4-B6.4	Flight & Ground Operations aspects of Human Spaceflight - Joint Session of the IAF Human Spaceflight and IAF Space Operations Symposia	S03
B4.4	Small Earth Observation Missions	S02
C1.4	Guidance, Navigation and Control (2)	S05
C2.4	Advanced Materials and Structures for High Temperature Applications	W06
C4.2	Liquid Propulsion (2)	W08
C4.4	Solid and Hybrid Propulsion (2)	W05
D2.4	Future Space Transportation Systems	S06
D3.1	Strategies & Architectures as the Framework for Future Building Blocks in Space Exploration and Development	E06B
D5.2	Knowledge management in the digital transformation	W01
D6.3	Enabling safe commercial spaceflight: vehicles and spaceports	W07
E1.4	In Orbit - Postgraduate Space Education	E08B
E2.4	Educational Pico and Nano Satellites	E03A
E3.3	Economic analysis of both actual and potential future benefits from space activities and applications to nations and peoples.	E04B
E6.2	Finance and Investment: The Practitioners' Perspectives	733/734
E7.4	Space Sustainability	S01

15:00 Technical Sessions

No.	Title	Room
A1.4	Medicine in Space and Extreme Environments	W05
A2.3	Microgravity Experiments from Sub-Orbital to Orbital Platforms	W04
A3.3B	Mars Exploration – Science, Instruments and Technologies	N04
A5.2	Human Exploration of Mars	W03
A6.2	Modeling and Risk Analysis	S04
B1.3	Earth Observation Sensors and Technology	W02
B2.4	Advances in Space-based Communication Systems and Services, Part 3	731/732
B3.5	Astronaut Training, Accommodation, and Operations in Space	S03
B4.5	Access to Space for Small Satellite Missions	S02
B5.2	Integrated Applications End-to-End Solutions	E03A
C1.5	Guidance, Navigation & Control (3)	S05
C2.5	Advancements in Materials Applications and Rapid Prototyping	W06
C4.6	Electric Propulsion (2)	W08
D2.5	Technologies for Future Space Transportation Systems	S06

No.	Title	Room
D3.2A	Systems and Infrastructures to Implement Sustainable Space Development and Settlement - Systems	E06B
E1.5	Enabling the Future - Developing the Space Workforce	E08B
E3.4	Assuring a Safe, Secure and Sustainable Environment for Space Activities	E04B
E4.1	Memoirs & Organisational Histories	733/734
E5.3	Contemporary Arts Practice and Outer Space: A Multi-Disciplinary Approach	W01
E6.5-GTS.1	Entrepreneurship Around the World	W07

Wednesday, 21 September 2022

10:15 Technical Sessions

No.	Title	Room
A1.5	Radiation Fields, Effects and Risks in Human Space Missions	W05
A2.4	Science Results from Ground Based Research	W04
A3.4A	Small Bodies Missions and Technologies (Part 1)	N04
A6.5	Post Mission Disposal and Space Debris Removal 1 - SEM	S04
A7.1	Space Astronomy missions, strategies and plans	E04B
B1.4	Earth Observation Data System Development and Management	W02
B2.5	Advances in Space-based Communication Technologies, Part 1	731/732
B3.6-A5.3	Human and Robotic Partnerships in Exploration - Joint session of the IAF Human Spaceflight and IAF Exploration Symposia	S03
B4.6B	Generic Technologies for Nano/Pico Platforms	S02
B5.3	Satellite Commercial Applications	E03A
C1.6	Mission Design, Operations & Optimization (1)	S05
C2.6	Space Environmental Effects and Spacecraft Protection	W06
C3.3	Advanced Space Power Technologies	W07
C4.7	Hypersonic Air-breathing and Combined Cycle Propulsion, and Hypersonic Vehicle	W08
D1.4A	Space Systems Engineering - Methods, Processes and Tools (1)	W03
D2.6	Future Space Transportation Systems Verification and In-Flight Experimentation	S06
D4.4	Strategies for Rapid Implementation of Interstellar Missions: Precursors and Beyond	E06B
D5.3	Prediction, Testing, Measurement and Effects of space environment on space missions	W01
E1.6	Calling Planet Earth - Space Outreach to the General Public	E08B
E4.2	Scientific and Technical Histories	733/734

13:30 Technical Sessions

No.	Title	Room
A1.IP	Interactive Presentations - IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM	IP Area
A2.IP	Interactive Presentations - IAF MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM	IP Area
A3.IP	Interactive Presentations - IAF SPACE EXPLORATION SYMPOSIUM	IP Area
A4.IP	Interactive Presentations - 51st IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) – The Next Steps	IP Area
A5.IP	Interactive Presentations - 25th IAA SYMPOSIUM ON HUMAN EXPLORATION OF THE SOLAR SYSTEM	IP Area
A6.IP	Interactive Presentations - 20th IAA SYMPOSIUM ON SPACE DEBRIS	IP Area
A7.IP	Interactive Presentations - IAF SYMPOSIUM ON FUTURE SPACE ASTRONOMY AND SPACE PHYSICS	IP Area
B1.IP	Interactive Presentations - IAF EARTH OBSERVATION SYMPOSIUM	IP Area
B2.IP	Interactive Presentations - IAF SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM	IP Area
B4.IP	Interactive Presentations - 29th IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS	IP Area
B5.IP	Interactive Presentations - IAF SYMPOSIUM ON INTEGRATED APPLICATIONS	IP Area
B6.IP	Interactive Presentations - IAF SPACE OPERATIONS SYMPOSIUM	IP Area
C1.IP	Interactive Presentations - IAF ASTRODYNAMICS SYMPOSIUM	IP Area
C2.IP	Interactive Presentations - IAF MATERIALS AND STRUCTURES SYMPOSIUM	IP Area
C3.IP	Interactive Presentations - IAF SPACE POWER SYMPOSIUM	IP Area
C4.IP	Interactive Presentations - IAF SPACE PROPULSION SYMPOSIUM	IP Area
D1.IP	Interactive Presentations - IAF SPACE SYSTEMS SYMPOSIUM	IP Area
D2.IP	Interactive Presentations - IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM	IP Area
D3.IP	Interactive Presentations - 20th IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT	IP Area
D4.IP	Interactive Presentations - 20th IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE	IP Area
D5.IP	Interactive Presentations - 55th IAA SYMPOSIUM ON SAFETY, QUALITY AND KNOWLEDGE MANAGEMENT IN SPACE ACTIVITIES	IP Area
D6.IP	Interactive Presentations - IAF SYMPOSIUM ON COMMERCIAL SPACEFLIGHT SAFETY ISSUES	IP Area
E1.IP	Interactive Presentations - IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM	IP Area
E3.IP	Interactive Presentations - 35th IAA SYMPOSIUM ON SPACE POLICY, REGULATIONS AND ECONOMICS	IP Area
E4.IP	Interactive Presentations - 56th IAA HISTORY OF AERONAUTICS SYMPOSIUM	IP Area
E5.IP	Interactive Presentations - 33rd IAA SYMPOSIUM ON SPACE AND SOCIETY	IP Area
E7.IP	Interactive Presentations - IISL COLLOQUIUM ON THE LAW OF OUTER SPACE	IP Area
E9.IP	Interactive Presentations - IAF SYMPOSIUM ON SECURITY, STABILITY AND SUSTAINABILITY OF SPACE ACTIVITIES	IP Area
E10.IP	Interactive Presentations - IAF SYMPOSIUM ON PLANETARY DEFENSE AND NEAR-EARTH OBJECTS	IP Area

15:00 Technical Sessions

No.	Title	Room
A1.6	Astrobiology and Exploration	W05
A2.5	Facilities and Operations of Microgravity Experiments	W04
A3.5	Solar System Exploration including Ocean Worlds	N04
A6.6	Post Mission Disposal and Space Debris Removal 2 - SEM	S04
B1.5	Earth Observation Applications, Societal Challenges and Economic Benefits	W02
B2.6	Advances in Space-based Communication Technologies, Part 2	731/732
B3.7	Advanced Systems, Technologies, and Innovations for Human Spaceflight	S03
B4.7	Constellations and Distributed Systems	S02
B4.9-GTS.5	Small Satellite Missions Global Technical Session	W07
B6.1	Ground Operations - Systems and Solutions	E03A
C1.7	Mission Design, Operations & Optimization (2)	S05
C2.7	Space Vehicles – Mechanical/Robotic/Thermal/Fluidic Systems	W06
C4.8-B4.5A	Joint Session between IAA and IAF for Small Satellite Propulsion Systems	W08
D1.4B	Space Systems Engineering - Methods, Processes and Tools (2)	W03
D2.7	Small Launchers: Concepts and Operations	S06
D4.5	Space Resources, the Enabler of the Earth-Moon Ecosphere	E06B
E1.7	New Worlds - Non-Traditional Space Education and Outreach	E08B
E3.6	Financial Viability and Supplier monitoring in times of economic vulnerability	E04B
E5.4	Space Assets and Disaster Management	W01
E6.1	Entrepreneurship and Innovation: The Practitioners' Perspectives	733/734
E10.1	Planetary Defense from Asteroids and Comets	S01

Thursday, 22 September 2022

10:15 Technical Sessions

No.	Title	Room
A1.7	Life Support, habitats and EVA Systems	W05
A2.6	Microgravity Sciences on board ISS and beyond	W04
A3.2C	Moon Exploration – Part 3	N04
A5.4-D2.8	Space Transportation Solutions for Deep Space Missions	S06
A6.8-E9.1	Political, Legal, Institutional and Economic Aspects of Space Debris Mitigation and Removal - STM Security	S04
A7.2	Science Goals and Drivers for Future Exoplanet, Space Astronomy and Space Physics	E04B
B1.6	Mitigating the Climate Crisis from Space	W02
B2.7	Advances in Space-based Navigation Systems, Services, and Applications	731/732
B3.8	Human Space & Exploration	S03
B4.8	Small Spacecraft for Deep-Space Exploration	S02
B6.2	Innovative Space Operations Concepts and Advanced Systems	E03A
C1.8	Orbital Dynamics (1)	S05
C2.8	Specialized Technologies, Including Nanotechnology	W06
C4.9	New Missions Enabled by New Propulsion Technology and Systems	W08
D1.5	Lessons Learned in Space Systems: Achievements, Challenges, Best Practices, Standards	W03

No.	Title	Room
D3.2B	Systems and Infrastructures to Implement Sustainable Space Development and Settlement - Technologies	E06B
D5.4	Cybersecurity in space systems, risks and countermeasures	W07
E1.8	Hands-on Space Education and Outreach	International Student Zone
E4.3	History of French Contribution to Astronautics	733/734
E5.5	Sharing space achievements and heritage: space museums and societies	W01
E7.5	Safety Zones on Celestial Bodies and in Outer Space	S01

13:45 Technical Sessions

No.	Title	Room
A1.8	Biology in Space	W05
A2.7	Life and Physical Sciences under reduced Gravity	W04
A3.4B	Small Bodies Missions and Technologies (Part 2)	N04
A6.1	Space Debris Detection, Tracking and Characterization - SST	S04
A7.3	Technology Needs for Future Missions, Systems, and Instruments	731/732
B3.9-GTS.2	Human Spaceflight Global Technical Session	W07
B4.6A	Generic Technologies for Small/Micro Platforms	S02
B6.5	Large Constellations & Fleet Operations	E03A
C1.9	Orbital Dynamics (2)	S05
C2.9	Smart Materials and Adaptive Structures	W06
C3.4	Space Power System for Ambitious Missions	W02
C4.10-C3.5	Joint Session on Advanced and Nuclear Power and Propulsion Systems	W08
D1.6	Cooperative and Robotic Space Systems	W03
D2.9-D6.2	Emerging Space Ventures, including Space Logistics and Space Safety for Sustainability	S06
D3.3	Space Technology and System Management Practices and Tools	E06B
E1.9	Space Culture – Public Engagement in Space through Culture	E08B
E5.6	Simulating Space Habitation: Habitats, Design and Simulation Missions	W01
E7.7	Current Developments in Space Law with Special Emphasis on National Space Legislation	S01
E8.1	Multilingual Astronautical Terminology	E04B
E10.2-A6.10	Joint Technical Session: "Near-Earth Objects & Space Debris"	S03

3 Keynote Speakers

Keynotes

Sunday 18 September

B1	IAF EARTH OBSERVATION SYMPOSIUM	Date	Time	Room
	Session: International Cooperation in Earth Observation Missions	2022-09-18	15:15	W02



Selma Cherchali
Head of the Earth Observation Department,
Centre National d'Etudes Spatiales (CNES),
France

KEYNOTE: B1.1 Committee on Earth Observation Satellites (CEOS): 2022 Report of Activities to the 73rd International Astronautical Congress

Abstract

As the 2022 CEOS Chair, CNES is pleased to provide an overview of the ongoing activities of CEOS to the IAC. CEOS ensures international coordination of civil space-based Earth observation programmes and promotes exchange of data to optimise societal benefit and inform decision-making for a prosperous and sustainable future for humankind. For well over three decades, CEOS, which today consists of 34 Members and 29 Associates, substantively advances space-based Earth observation efforts that no one country can do alone. As the challenges affecting the planet become more pronounced, more frequent, and more acute, this international cooperation continues to elevate societal benefit at multiple scales. Over the past year, CEOS has significantly contributed to the advancement of space-based Earth observation community efforts, provides an established means of communicating with external organisations, and enables CEOS membership to understand and to act upon these organisations' Earth observation needs and requirements. CNES will outline the key initiatives undertaken in 2022 by the CEOS Chair and CEOS Strategic Implementation Team, and will present important highlights of the CEOS organisation. Priorities for 2022 are placed under the banner "Paths to Sustainability: from Strategy to Practical Measures", with an emphasis on the evolution of R&D and demonstration activities to applications and services.

B3	IAF HUMAN SPACEFLIGHT SYMPOSIUM	Date	Time	Room
	Session: Governmental Human Spaceflight Programmes (Overview)	2022-09-18	15:15	S03



David PARKER
Director of Human and Robotic Exploration,
European Space Agency (ESA),
Netherlands

KEYNOTE: B3.1 ESA's Terrae Novae Exploration Programme: Status and Strategy 2030+

Abstract

ESA's space exploration programme "Terrae Novae" encompasses all human and robotic activities related to the exploration and utilisation of LEO, Moon and cis-lunar space, and Mars. Its vision is to expand Europe's human presence into the solar system using robotic missions as precursors and a balance of partnerships and European-led missions for Moon and Mars activities, aiming at the horizon goal of human Mars exploration. These exploration activities promise scientific discoveries, economic benefits, promotion of global cooperation and inspiration for society and future generations.

Many elements of the Terrae Novae programme are already at full swing. We look back at more than 20 years of ISS operations, European astronaut flights and research in LEO, as we extend the utilisation of the ISS and its benefits until 2030 together with our partners. We carry the partnership forward to the Moon with the development of two European-led elements of the Gateway, namely the international habitat I-HAB and the refuelling element ESPRIT, as well as the continued production of the European Service Module for the NASA Orion system. These elements secure the first European Astronaut missions to cis-lunar space and open access to European scientists for human-assisted science and research in deep space, while European industrial competence is contributing to many more international elements of cis-lunar exploration. Important design consolidation and preparatory activities are ongoing in the programme, like the development of the European Large Logistics Lander (EL3) to deliver about 1.5 tons of cargo and science to the lunar surface repeatedly from 2029, the definition of an ISRU demonstration payload to fly in the mid-2020s, and the construction of the ESA-DLR LUNA analogue facility for lunar operations, training and technology maturation. European contributions to the Mars Sample Return campaign in partnership with NASA are being developed for the next leap in understanding the red planet after the European flagship mission ExoMars with Roscosmos launches this fall.

In 2020, ESA has engaged in a two-year project to define the Terrae Novae long-term strategy, looking to 2030 and beyond, and informing the near-term decisions at the ESA council meeting at ministerial level in 2022. This strategy provides a long-term perspective to maintain European capabilities in LEO within the growing LEO economy and identifies European roles and contributions in Moon and Mars exploration. A first iteration of the strategy roadmap was published in December 2021, supporting the ambition of ESA's Agenda 2025 to send a European astronaut to the Moon surface by 2030 and to participate to human Mars exploration, and it will be refined and challenged throughout this year.

E5	33rd IAA SYMPOSIUM ON SPACE AND SOCIETY	Date	Time	Room
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Session: Space Architecture: Habitats, Habitability, and Bases

2022-09-18

15:15

W01

Jacques ROUGERIE
President,
Fondation Jacques Rougerie,
France

KEYNOTE: E5.1 Sea Space Generation

Abstract

My talk will share my dreams and passions for underwater and space research related to bio-inspired architecture and my conviction: "It is from the ocean and from space that the destiny of future civilizations will be born".

Space and ocean exploration are two great human adventures from which we are witnessing the emergence of a new civilization. They produce new scientific and technological knowledge and open new perspectives on earth with a direct and increasingly visible impact on our current lifestyles: communication, mobility, urbanism, architecture, thus shaping the future of our societies... My bio-inspired architecture work led for example to an underwater village off the Virgin Islands for the training of astronauts under the sea in order to study the similarities of life in extreme space and ocean environments. SeaOrbiter is my ultimate project, a synthesis of more than 30 years of work and experiments under the sea, an oceanic research station drifting in the heart of the oceans like ISS does in space. It will include a permanent underwater station to study the similarities of life in the two extreme environments.

I will mention some of my experiences living in extreme environments such as my participation in underwater habitats (Aquarius of NOAA/NASA and The Chalupa in Florida) together with astronauts and cosmonauts. I would also like to share artistic and cultural activities, which are inseparable from the great explorations and human adventures such as the musical creation of the abysses, in Tokyo Bay, which I imagined to listen to the heartbeat of the earth.

The presentation will address several other projects: the solar sail race to the moon (visible to the naked eye from the earth); the lunar village that can accommodate up to 250 international multidisciplinary astronauts for scientific and human research; the prototype lunar module "Eurohab" awarded by my Foundation.

The Jacques Rougerie Foundation is dedicated to supporting the momentum of the young generation to make the necessary breaks, to give support to international young architects, engineers, international designers who wish to build future new worlds and to the artists who accompany them. It encourages at the international level the audacity and the architectural innovation as well as the artistic creation related to the world of the Sea and Space in order to discover the new visionaries. I will present the Foundation's International Awards for Architecture and Art in the Sea and in Space whose winners' projects are promoted in major international conferences and exhibitions as well as through publications in the media around the world.

E7	IISL COLLOQUIUM ON THE LAW OF OUTER SPACE	Date	Time	Room
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Session: IISL Highlight lecture and Young Scholar session

2022-09-18

15:15

S01

Armel KERREST
Professor,
University of Paris I,
France

KEYNOTE: E7.1 Highlight Lecture by Prof. Armel Kerrest

Abstract

This lecture examines the process of space law as it has developed in the past, and takes a perspective on how it stands to develop over the next seventy years. With much written about commercial space and the increased presence of space in the modern media, space has become closer to the people. It delivers indispensable means for communication, navigation and timing services, and important public services such as weather forecasting. It is also a horizon that is open to further scientific research and exploration. This talk highlights some of the future challenges already under discussion today, such as resources mining, space traffic management, and longer-term missions. It examines these within the light of the legal parameters applicable to commercial space, in the framework of general international law, taking into consideration the former experiences in the law of the High Sea and Antarctica.

Monday 19 September

A4	51st IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) – The Next Steps	Date	Time	Room
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Session: SETI Science and Technology

2022-09-19

10:15

W04

Karen PEREZ
Student,
Columbia University,
United States

KEYNOTE: A4.1 Pesek Lecture: Breakthrough Listen Search for Intelligent Life in the Galactic Plane with the Parkes Telescope

Abstract

Over the last decade, discoveries of numerous Earth-type exoplanets have extended the possibility of other life-bearing worlds. However, the question of the existence of intelligent life might remain elusive unless a dedicated attempt is made to extensively Search for Extraterrestrial Intelligence (SETI). The Breakthrough Listen (BL) program is a 10-year effort to conduct the most sensitive, comprehensive, and intensive search for advanced intelligent life on other worlds ever performed. One of the primary targets of the BL program is a comprehensive blind survey of the entire Galactic Plane to search for artificial narrowband transmitters from ETIs (Isaacson et al. 2017). The Galactic Plane is an ideal direction to search for such signals due to the increased likelihood that transmitters would emit toward this region as opposed to random directions (Grimaldi 2020). Here, we discuss our findings from two full scans of the Galactic Plane over 1200–1550 MHz using the Parkes Telescope's 21cm Multibeam Receiver, covering roughly 3000 square degrees over Galactic longitudes $-174^\circ < l < 60^\circ$ and latitudes $|b| < 6.5^\circ$ during 1200 hours and observing billions of stars in the Milky Way in the process. This is one of the largest and most sensitive blind surveys ever performed to search for signs of intelligent life. Moreover, the Parkes 13-beam receiver allows a unique opportunity to discriminate terrestrial interferences from truly sky localized signals among all 30 million hits. We have extended the multibeam coincidence rejection technique used for detecting Fast Radio Bursts to scrutinize narrowband signals detected across 13-beams. Such techniques have never been used in the search for ETIs before and has allowed some of the best possible ways to reject large fractions of false positives. I will review our strategy and search results, as well as its applications going forward as we look towards expanding our search with other multibeam telescopes.

A4	51st IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) – The Next Steps	Date	Time	Room
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Session: SETI and Society

2022-09-19

15:00

W04

Daniela DE PAULIS
IAA Permanent SETI Committee,
Netherlands

KEYNOTE: A4.2 Billingham Cutting Edge Lecture: A Sign in Space - An Interdisciplinary Exploration of the Potential Reception of an Extraterrestrial Signal

Abstract

A Sign in Space is a project by media artist Daniela de Paulis, in collaboration with INAF, the Italian National Institute for Astrophysics. The project consists in transmitting a simulated extraterrestrial message as part of a live performance, using a Mars rover. The objective of the project is to involve the Search for Extraterrestrial Intelligence world-wide community, professionals from different fields and the general public, in the reception, decoding and interpretation of the message. This process will require global cooperation, bridging a conversation around the topics of SETI, space research and society, across multiple languages and fields of expertise. The first test for the project was conducted in collaboration with satellite company D-Orbit on 30 July 2021. As part of the test, the Arecibo message was transmitted by the satellite and it was successfully received by the Medicina and the Sardinia Radio Observatories. The last phase of the project is the actual live cosmic performance, with the active transmission of a message by a satellite or ideally a Mars rover. For the performance, a global network of radio telescopes will be involved in the reception of the signal. The message transmitted as part of the live cosmic performance will be developed by media artist Daniela de Paulis, in collaboration with a team of specialists representing different cultural backgrounds and disciplines.

C4	IAF SPACE PROPULSION SYMPOSIUM	Date	Time	Room
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Session: Solid and Hybrid Propulsion (1)

2022-09-19

10:15

W08

Dario SCOCCIMARRO
Senior Solid Propulsion Engineer,
European Space Agency (ESA),
France

KEYNOTE: C4.3 P120C Solid Rocket Motor: Development and Qualification of a Common Propulsive SRM for Ariane 6 and VEGA C

Abstract

The P120C SRM development was decided at the ESA Ministerial Council in November 2014. This new SRM is intended to be the Common Solid Propulsive Module to be used as strap-on booster on Ariane 6 Launch Vehicle for both 62 and 64 versions and as first stage for Vega Consolidation and Vega Evolution vehicles (VEGA C and VEGA E).

The overarching aim of the new launchers is to provide guaranteed access to space for Europe at a competitive price in exploitation. Strengthened commonality is a key driver for the development of the new European launch vehicles, in particular for achieving non-recurring cost and recurring cost objectives. The P120C Solid Rocket Motor (SRM) is the main common element developed for VEGA and Ariane 6.

One of the main drivers for the achievement of P120C Programme objectives is an increased responsibility allocated to industry, from design to exploitation provided that it leads to cost reductions in development and in exploitation. Therefore, the Design Definition Authority of the P120C SRM is entrusted to Europropulsion by the two launcher system prime contractors. Europropulsion is responsible for the development and production of the P120C SRM, with the support of Avio and ArianeGroup.

The main objectives of the P120C Programme are:

- To develop the P120C Solid Rocket Motor (SRM)
- To develop the P120C Thrust Vector Control Systems (TVC/TVAS)

The P120C development and qualification was driven by the following drivers:

- to ensure the product commonality for both families of European Launch Systems, Ariane 6 and Vega C/E;
- to phase the P120C development with the development milestones of both Ariane 6 (A-64 and A-62) and VEGA C;
- to fulfil the requirements of time to market, low recurring cost, high production rate, while complying with non-recurring cost constraints.

To further improve P120C versatility, in order to increase the market opportunities for A62 (mainly for Galileo missions), at the SRM CDR (mid 2015) it was decided to develop also a second motor configuration characterised by higher MEOP (110 bar vs 105 bar of the standard configuration) and shorter combustion time.

After the Preliminary Design Reviews, development and industrialization activities progressed up to the design and manufacturing of first inert (ILM) and active (DM) P120C SRM models that allowed also to validate the innovative technology of SRM assembling in horizontal position.

The first (DM) Static Firing Test (SFT) was successfully performed in July 2018, followed by the CDR held in November 2018. The second (QM1) SFT was successfully performed in January 2019, confirming the soundness of the SRM design. The first step of the Ground Qualification Review was completed in October 2019 declaring the P120C flight worthiness for VEGA C and allowing starting the manufacturing of the SRM for VEGA C maiden flight. The third (QM2) SFT was successfully performed in October 2020, testing the High Performance configuration (higher MEOP, shorter combustion time). QM2 after-firing analyses permitted to consolidate the SRM development files that were presented at the Ground Qualification Review Step 2, started in March 2021. The final close-out held in December 2021 finally declared P120C SRM as qualified also for the A6 launcher and authorised the manufacturing of the SRMs for A6 maiden flight.

VEGA C Maiden Flight is planned to take place in Q2 2022. This will be also the P120C Maiden Flight. The integration campaign on the launch vehicle is foreseen in April.

After the recall of the European context and the need for a common SRM for VEGA and Ariane 6, the paper will detail the Development and Qualification of P120C, the milestones, the achievements and the overall Programmatic Management up to the final Ground Qualification. Finally, the main results of P120C Maiden Flight will be presented.

D4	20th IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE	Date	Time	Room
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Session: Modern Day Space Elevators Entering Development

2022-09-19

15:00

E06B

Peter SWAN
Senior Vice President,
Galactic Harbour Associates, Inc.,
United States

KEYNOTE: D4.3 Space Elevators as a Transformational Leap for Human Movement Off-Planet

Abstract

The thesis of this research is that a Permanent Space Infrastructure would enable massive movement of cargo to GEO and beyond in a safe, environmentally friendly, inexpensive, daily and routine way – thus transforming the approach for humanity to escape the Earth's gravity. How many dreams can come true when you can lift 30,000 tonnes to GEO and beyond per year at initial operational capability (170,000 at full operational capability)? The restrictions of rocket launches are well understood; but, when you beat gravity you:



- enable Space Solar Power while supporting the Paris Accords
- lift payloads as the Green Road to Space, helping to save our atmosphere
- improve life on Earth with major accomplishments, in space
- enable early completion of massive projects, such as lunar villages
- shorten the time for delivery of 1,000,000 tonnes to Mars
- enable early development of an L-5 settlement with millions of inhabitants


A Mars settlement will be used as an example: The most remarkable strengths of Space Elevators relate to being permanent transportation infrastructures. A recent study completed by the Arizona State University and the International Space Elevator Consortium illuminated some remarkable conclusions about supporting settlements on Mars (as an example of developing off-planet development). This movement off planet includes Space Elevators':


- Daily departures from the Apex Anchor towards Mars at great velocity (7.76 km/sec).
- Support interplanetary missions (Fastest transit is 61 days to Mars, with a range of travel times during the 26-month planetary dance).
- Supply massive payloads daily (170,000 tonnes per year from three Galactic Harbours).
- Enable carbon negative operations for deliveries to Mars
- Exit the gravity well while avoiding the burden of the rocket equation.
- And, accomplish this daily, routinely, inexpensively and carbon neutrally.


Indeed, Space Elevators are the Transformational Leap For Human movement off-planet.

Tuesday 20 September

A3	IAF SPACE EXPLORATION SYMPOSIUM	Date	Time	Room
	<p>Session: Mars Exploration – Missions Current and Future</p> <p>Francois SPOTO Mars Programme Group Leader, European Space Agency (ESA), Netherlands</p>	2022-09-20	10:15	N04
	<p>Jeff GRAMLING Director, Mars Sample Return Program National Aeronautics and Space Administration (NASA) United States</p> <p>KEYNOTE: A3.3A Mars Sample Return: An International Round Trip to Another Planet</p> <p>Abstract NASA's Perseverance mission arrived at Jezero Crater on Mars in February 2021 and began scientific studies and acquisition of Martian samples for return to Earth by future missions, consistent with the recommendations of the U.S. science community in the previous Planetary Science Decadal Survey. NASA and ESA have established a joint Mars Sample Return (MSR) program to safely deliver these samples back to Earth, allowing researchers to use advanced scientific instrumentation that cannot be transported on robotic spacecraft and enable future studies of carefully curated samples using capabilities that have not yet been developed.</p> <p>The MSR architecture consists of two flight elements to follow Perseverance, the NASA-led Sample Retrieval Lander (SRL) and the ESA-led Earth Return Orbiter (ERO). The ERO is designed to orbit Mars and provide relay services for the SRL, including its ESA Sample Fetch Rover (SFR) and the NASA Mars Ascent Vehicle (MAV). The SRL deploys the SFR to retrieve Martian samples cached by the Perseverance rover and then returns the samples to the Orbiting Sample container (OS) on board the MAV using the ESA Sample Transfer Arm (STA). Independently, Perseverance could also deliver samples retained onboard to the OS. The MAV would launch and release the OS into low Mars orbit for rendezvous with the ERO. Upon successful capture of the OS in the ERO's primary payload, the NASA Capture/Containment Return System (CCRS), the OS would be safely contained and loaded into the Earth Entry System (EES). The ERO will leave Mars orbit and release the EES on Earth approach on a ballistic reentry trajectory through the Earth's atmosphere for landing in the United States. Following return of the samples to Earth, the samples would be protected, preserved, assessed, curated, and made available to the international science community for scientific research and analysis.</p> <p>The NASA SRL and ESA ERO missions are expected to launch as early as 2026, with the return of Martian samples to Earth as early as 2031. MSR's primary objective is the return of scientifically selected Mars samples for detailed investigation in terrestrial laboratories. The mission would also further inform the design of future human missions. The Mars Sample Return campaign is underway with the successful collection of several scientifically selected samples in Jezero Crater. The MSR Program is working towards a confirmation review in 2023 for the remaining flight elements.</p>			

A6	20th IAA SYMPOSIUM ON SPACE DEBRIS	Date	Time	Room
	<p>Session: Impact-Induced Mission Effects and Risk Assessments</p> <p>Donald J. KESSLER Astrophysicist, National Aeronautics and Space Administration (NASA), United States</p> <p>KEYNOTE: A6.3 A Short History of the Orbital Debris Program</p>	2022-09-20	10:15	S04

C1	IAF ASTRODYNAMICS SYMPOSIUM	Date	Time	Room
	<p>Session: Guidance, Navigation and Control (2)</p> <p>Jesus PELAEZ Professor of Aerospace Engineering, Technical University of Madrid (UPM), Spain</p> <p>KEYNOTE: C1.4 "The John V. Breakwell Memorial Lecture" on Electrodynamic Tethers and Orbit Propagation</p> <p>Abstract A bare electrodynamic tether (EDT) is a conductive thin wire or tape up to several kilometers long, which is kept taut in space by gravity gradients or by spinning, and is left bare of insulation allowing it to collect (and carry) current as a cylindrical Langmuir probe in an ambient magnetized plasma. Two main elements are essential for EDT's: magnetic field and plasma density. In environments where these are present conductive tethers can provide both power and propulsion, and this makes them especially attractive for planetary exploration. Whereas the use of electrodynamic tethers is readily possible for Jupiter, the case for the other three Outer Giant Planets, Saturn, Uranus and Neptune, presents issues because their magnetic fields are much weaker.</p> <p>From the orbital point of view, capture is the most essential issue for a tether mission to Saturn or the Ice Giants, because there will be only one opportunity for success. Once the tethered spacecraft is captured by the gravity of the planet, a space tether could carry a spacecraft through the neighborhood requiring neither propellant nor power supply. The basic scenario for such captures have been described in several papers for the case of Jupiter. Lately, such analysis has also been adapted to Saturn and Neptune.</p> <p>In the case of Saturn, for example, capture requires the reduction of the relative velocity of the S/C. Tether drag can be used to perform such a reduction, however this is a real challenge due to the smallness of Saturn's magnetic field B. To enable this requires innovative trajectory design to develop the proper conditions to maximize an EDT's effectiveness.</p> <p>To help with such developments, an orbital propagator was developed by the SDG-UPM based on a set of redundant variables including Euler parameters, called DROMO1. It is closely related to the concept of ideal frame introduced by Hansen in the XIX century. In addition to offering numerical solutions with remarkable speed and precision, the theory on which DROMO rests allows obtaining analytical and semi-analytical solutions of some interest.</p>	2022-09-20	10:15	S05

C2	IAF MATERIALS AND STRUCTURES SYMPOSIUM	Date	Time	Room
	<p>Session: Advanced Materials and Structures for High Temperature Applications</p> <p>André PREUMONT Professor Emeritus, Université Libre de Bruxelles, Belgium</p> <p>KEYNOTE: C2.4 Paolo Santini's Memorial Lecture: Active Damping, Vibration Isolation and Shape Control of Space Structures</p> <p>Abstract The lecture reviews the contributions of the author to the control of precision space structures during the past 35 years. The first part is devoted to the active damping of space trusses with emphasis on robustness. Guaranteed stability is achieved by using decentralized collocated actuator-sensor pairs. The so-called "Integral Force Feedback" (IFF) is simple and effective, and the performances can be predicted easily with simple formulae based on modal analyses. These predictions have been confirmed by numerous experiments. The damping strategy for trusses has been extended to cable structures, also confirmed experimentally. The second part addresses the problem of vibration isolation: isolating a sensitive payload from the vibration induced by the spacecraft (i.e. unbalanced mass of attitude control reaction wheels and gyros). A six-axis isolator based on a Gough-Stewart platform is discussed; once again, the approach emphasizes robustness. Two different solutions are presented: The first one (active isolation) uses a decentralized controller with collocated pairs of actuator and force sensor, with IFF control. It is demonstrated that this special implementation of the "sky-hook", unlike the classical one, has guaranteed stability, even if the two substructures it connects are flexible (typical of large space structures). A second approach (passive) discusses an electromagnetic implementation of the "Relaxation Isolator" where the classical dash-pot of the linear damper is substituted by a Maxwell unit, leading to an asymptotic decay rate of -40 dB/decade, similar to the sky-hook (although much simpler in terms of electronics). The third part of the lecture summarizes more recent work done on the control of flexible mirrors: (i) flat mirrors for adaptive optics (AO) controlled by an array of piezoelectric ceramic (PZT) actuators and (ii) Spherical thin shell polymer reflectors controlled by an array of piezoelectric polymer actuators (PVDF-TrFE); aimed at being deployed in space.</p>	2022-09-20	10:15	W06

C4	IAF SPACE PROPULSION SYMPOSIUM	Date	Time	Room
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Session: Electric Propulsion (2)

2022-09-20

15:00

W08

Mariano ANDRENUCCI

KEYNOTE: C4.6 Evolutionary Trends in Hall Thruster Technology

Abstract

The emergence of the Hall thruster concept from the jealously guarded arena of the former Soviet Union to the worldwide space technology scene around the early 1990s triggered a revolution. It was decisive in allowing Electric Propulsion as a whole to unchain from the stigma of research-bound, ever-immature technology that had characterized it for almost fifty years, and gain the role of key enabler of future in-space propulsion applications.

When the Hall thruster concept took hold in western countries it started undergoing a new evolutionary phase. Simple replications of the SPT 100 archetype that had served as a reference in this migration, left the floor to early attempts to explore novel implementations of the concept, especially in terms of extension of thruster power level. For several years the standard remained focused around the 1.35 kW of the SPT 100. Then, the emphasis gradually shifted towards the 4-to-5 kW range intended for all-electric Telecom satellites; then up to the 10-to-15 kW that might find use in early deep-space forays and more recently to levels in excess of 20 kW to be possibly employed in future exploration missions. It is interesting to see how this process developed. For many years since the beginning of the worldwide spreading of Hall thruster technology, the design of new thrusters was based on the so-called scaling approach. The scaling methodology was based on the basic criterion to try and preserve as far as possible, in the discharge channel, the set of intensive [local] parameters that had proved to be effective and guarantee stable operation in the reference thruster. This methodology was particularly studied in Pisa since the early 2000s and subsequently improved through a series of theoretical refinements and practical implementations.

Unfortunately, this approach cannot be retained beyond certain limits; if the thruster physical dimensions are increased as required to accommodate larger power levels, the increase of the thruster dimensions according to geometrical similarity would necessarily entail accepting larger and larger values of Specific Impulse. Alternatively, one could abandon geometrical similarity to keep the Specific Impulse at the desired level, at the price of accepting larger values of the channel width-to-length ratios, with obvious consequences in terms of plume configuration and divergence.

In other words, for any desired level of Specific Impulse, the method shows that it is practically impossible to retain at a larger scale the same values of the intensive parameters typical of smaller devices while remaining close to geometrical similarity. Thus, larger thrusters of practical design would only be feasible upon adopting adequately modified physical conditions. This approach would consist in identifying – through modeling and testing – a different combination of intensive parameters that can guarantee efficient performance and stable operation in thrusters intended for much higher power levels within reduced physical dimensions with respect to the current standard. Considering how long it took for the legion of scientists of the former USSR to optimize the SPT type Hall thruster that has served as a reference ever since, it may be understood that such an approach might prove not trivial, despite the improved expertise, the larger specialists community and the more advanced means available nowadays. In the long run, the capability to develop Hall-type single thruster units capable to process larger power levels will prove essential. This is the challenge we will have to face.

E1	IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM	Date	Time	Room
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Session: In Orbit - Postgraduate Space Education

2022-09-20

10:15

E08B

Shinichi NAKASUKA

Professor,
The University of Tokyo,
Japan

KEYNOTE: E1.4 Practical and Effective Education Based on Micro/Nano/Pico-Satellites and Their Contributions

Abstract

University of Tokyo launched and operated the world first CubeSat in 2003, and since then we have been developing 13 micro/nano-satellites less than 100kg, with various missions including space engineering education, in-orbit experiments, remote sensing, space science and exploration, entertainment, and capacity building for foreign countries, etc. These activities contribute not only to technological development, creation of new type of missions and business but also “education.” Satellite development is an excellent educational material for systems engineering as well as “training of problem solving skills,” which can contribute to capacity building for various engineering fields and levels. Failures experienced in small project can contribute a lot to the development of human skills required for space projects. Considering such merits, I have been using micro/nano-satellites to educate many young students and engineers in Japan as well as in foreign countries, with significant effects. To accelerate such activities, university community is very effective. International space community consisting of more than 180 universities called “UNISEC-GLOBAL” was established in 2013, and has been playing a unique role for technology development as well as capacity building especially for emerging countries, in which various completion style educational events have been organized such as mission idea contest, CanSat comeback competition, debris mitigation contest, etc. In the plenary talk, the history of University of Tokyo’s micro/nano-satellites development as well as various domestic and international educational activities will be shown, followed by discussions as to how and why micro/nano-satellites and university space community can play unique roles for education.

E6	IAF BUSINESS INNOVATION SYMPOSIUM	Date	Time	Room
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Session: Finance and Investment: The Practitioners’ Perspectives

2022-09-20

10:15

733/734

Nancy WOLFSON

American Institute of Aeronautics and Astronautics (AIAA),
United States



Rainer HORN

Managing Partner,
SpaceTec Capital,
Germany

KEYNOTE: E6.2 New Economy for Commercial Sustainability Driving Space Resources Utilization and PPP

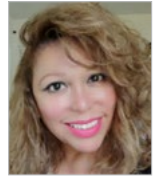
Abstract

The space economy is evolving and marked by increased public and private partnerships (PPP). Our government agencies are actively welcoming the investment community to enhance the development of the commercial potential of space and space-related markets. The new space finance and investment approach foster a profound transformation of the space industry. With more countries and companies looking to launch ambitious extended-duration missions in space, the Moon, and beyond, there is a need for a more global, accessible, and diverse new space economy. Therefore exploring space resource utilization is highly relevant to our time wherein States have not only legally accounted for future resource exploitation but in which many countries and companies plan to establish permanent infrastructure in multiple off-world locations.

The proliferation of disruptive aerospace companies in the USA, such as SpaceX and others, is indeed a prime example of how PPPs can help turn innovative ideas into revolutionary technologies. This presentation will address how PPPs can be leveraged to drive innovation and potential ways to bring together the public and private sectors to exploit extra-terrestrial resources to meet the ever-increasing demands of humanity. Private companies are already outlining business plans to harvest oxygen and water bound up in all the minerals on the Moon, asteroids, and Mars using cost-effective exploration technologies. The speakers will further address the evolution of funding opportunities for new markets and space start-ups. Providing resources from beyond the Earth is now being seen as a logical step forward in the new space economy.

Wednesday 21 September

E3	35th IAA SYMPOSIUM ON SPACE POLICY, REGULATIONS AND ECONOMICS	Date	Time	Room
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Session: Financial Viability and Supplier monitoring in times of economic vulnerability

2022-09-21 15:00 E04B

Nancy WOLFSON
American Institute of Aeronautics and Astronautics (AIAA),
United States

KEYNOTE: E3.6 Recalibrating the Space Sector Procurement Practices to Better Prepare after COVID-19

Abstract

The Coronavirus disrupted the various sectors of the global economy with varying degrees of impact, challenging supply chain reliability, and had a significant effect on the global financial markets. Procurement functions are facing demand imbalances leading to inventory challenges and the risk to the supplier in single-source supplier situations. The space industry is also being impacted, forced to postpone launches, space supply chains being slowed down, with a reduction of the production activities or being on hold, the survival of start-ups being challenged, and manufacturing plants on hold for primes and suppliers and more. But the space industry is resilient. Therefore we will examine some of the measures adopted by small and medium enterprises and start-ups to mitigate the financial impact and some of the best practices currently adopted to better prepare for a still unpredictable period of crisis after the shock. We will further outline for our audience some of the current adjustments that deal with the procurement impact as the space industry transitions to a new operating model that could fit the “next normal” after COVID 19.

E10	IAF SYMPOSIUM ON PLANETARY DEFENSE AND NEAR-EARTH OBJECTS	Date	Time	Room
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Session: Planetary Defense from Asteroids and Comets

2022-09-21 15:00 S01

Alex KARL
Operations Engineer,
Space Applications Services,
Belgium

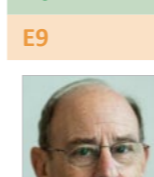
KEYNOTE: E10.1 Summary and Highlights of the 2021 IAA Planetary Defense Conference

Abstract

The 2021 International Academy of Astronautics (IAA) Planetary Defense Conference (PDC) was held virtually on April 26 through 30, 2021 and was hosted by the United Nations Office of Outer Space Affairs (UNOOSA). The conference was sponsored by 13 organizations, over 900 individuals registered (there was no fee), and total attendance included over 700 individuals, with 250 to 300 individuals participating at any given time. Since the conference was held virtually, it was possible to design the conference program so that individuals in nearly all parts of the world could attend. This plan enabled participation by individuals from 50 nations and 97 technical papers were presented. This paper provides a summary of activities at the conference and highlights the realistic but fictitious Asteroid Threat Exercise that examined the threat mitigation and disaster management responses to a six-month warning of a potential asteroid impact on our planet. A highlight of the conference was a panel that included representatives of seven national space agencies, UNOOSA, and two astronautical institutes. Panel discussions demonstrated their awareness and support of Planetary Defense activities. A primary outcome of the conference was unanimous attendee support for an International Year of Planetary Defense (IYOPD, name TBC) similar to the 2009 International Year of Astronomy. The 2029 close passage of asteroid Apophis is a natural opportunity to hold the event, raise awareness about the hazard, demystify the topic, and connect current and future communities. In closing, the UNOOSA announced that it will again host the Planetary Defense Conference in 2023 and hopes that the 2023 conference will include in-person attendance at the UN facility in Vienna, Austria. Given the positive comments from attendees at the 2021 conference, it is likely that the 2023 conference will offer virtual attendance opportunities as well.

Thursday 22 September

A6	20th IAA SYMPOSIUM ON SPACE DEBRIS	Date	Time	Room
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Session: Political, Legal, Institutional and Economic Aspects of Space Debris Mitigation and Removal - STM Security

2022-09-22 10:15 S04

Henry HERTZFELD
Research Professor,
Space Policy Institute, George Washington University,
United States

KEYNOTE: A6-8-E9.1 Addressing Space Debris: A Simple Beginning to a Very Complex Problem

Abstract

The space debris issue has evolved from a theoretical to a true threat to long-term sustainability of space activities. Over the last 25 years there have been many U.N. and international studies, conferences, guidelines, recommendations, documents, and plans devoted to this topic. There have even been some national regulations and laws passed to minimize future debris. But these are characterized by broad principles, vague requirements (often with waivers and loopholes embedded) and truly little action. Debris mitigation technologies are still in the early R&D stages, and funding has been inadequate, both nationally and internationally. Thus, the technology to remove debris from space remains immature, unproven, risky, and expensive. Human nature itself works against taking regulatory or international actions when there has been no life lost or major interference with the space activities nations wish to accomplish. The purpose of this paper is to encourage nations to stop talking and start acting before even more irrevocable damage occurs. It will demonstrate that there are relatively inexpensive, practical, and effective terrestrial initiatives to mitigate space debris. These are readily available and can be effectively implemented over the next few years with little technical or economic risk. Efforts in this respect have begun to emerge in a few nations, but the efforts have been ad hoc and uncoordinated. Early adaptation of some of these simple and inexpensive actions is suggested. For instance: I) nations internally can adjust regulatory and management/financial incentives such as quality control in manufacturing satellites and electronics for use in space; II) the development and open publication of better monitoring and data about space activities including more accurate warnings about conjunction risks; III) increasingly using AI, as well as coordinated international standards for space equipment; IV) planning for the near-term removal of as many large defunct spacecraft as funding and technology can safely complete. Other actions such as international R&D programs, fast adaptation of new technologies with stricter regulations and licensing, more precise and accurate clearing of air space for launches and more effective implementation of treaty obligations are other examples of using existing methods and norms to take actions very soon while other longer-term debris mitigation techniques are perfected. If all nations don't begin with the easy steps now, using this “low hanging fruit picking” approach, the long-term cleanup of outer space will be more difficult, more expensive, and less effective.

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	Date	Time	Room
A6	20th IAA SYMPOSIUM ON SPACE DEBRIS;		
E10	IAF SYMPOSIUM ON PLANETARY DEFENSE AND NEAR-EARTH OBJECTS		



Session: Joint Technical Session: "Near-Earth Objects & Space Debris" 2022-09-22 13:45 S03

Elena VELLUTINI
Researcher,
Italian Space Agency (ASI),
Italy

KEYNOTE: A6.10-E10.2 Exploiting the Synergies of Observing NEO and Space Debris with the Flyeye Telescope

Abstract

The Italian scientific community has a long-lasting tradition in orbital dynamics and in the observation of natural and artificial objects. This has allowed the Italian Space Agency to assume a leadership role within the European programs devoted to monitoring NEOs and the space debris population.

Planetary Defense has been addressed through the Italian participation to the SSA (now "Space Safety") Programme of the European Space Agency. The establishment of the NEO Coordination Center at ESRIN (Frascati, Italy) strongly relies on the heritage of NEODyS, the first impact monitoring system in the world developed at the University of Pisa. As for the sensors, the realization of an extremely wide-field high-sensitivity telescope based on an innovative optical design conceived by INAF (the National Institute for Space Astrophysics) and OHB-I as prime-contractor, is nearing completion. This telescope, dubbed "Flyeye" because the incoming light is distributed over 16 different cameras, will allow ESA to enter the NEO discovery scenario, focusing on the detection of small yet potentially dangerous objects passing close to our planet. The technical characteristics of the Flyeye are such that the telescope can be also designed to carry out optical surveys of the space debris population with an unprecedented efficiency. This makes it an important asset both at national level and within the Space Surveillance programs of the European Union, such as the EUSST initiative and its future evolution.

Therefore, ASI is launching an initiative which encompasses a broad spectrum of activities. Hosting the first ESA Flyeye telescope at its Space Geodesy Center located in Matera (Italy) for a temporary installation will allow to both, carry out an extensive testing of its performances for NEO detection in an ideal logistic site, and figure out the possible applications for space surveillance in a realistic environment. The experience gained will lead to the adapted design and to the realization at a national level of the first Flyeye for space objects observations. In particular it is expected that it will be able to maintain a catalogue of MEO objects above a threshold size of 35 cm.

This paper describes the main characteristics of the Flyeye telescope and provides an estimation of the added value for SST application in terms of cataloguing capabilities of High-LEO and MEO objects. The deployment of a network of Flyeye telescopes and its impact on the European cataloguing capabilities will also be presented.

	Date	Time	Room
C4	IAF SPACE PROPULSION SYMPOSIUM		



Session: New Missions Enabled by New Propulsion Technology and Systems 2022-09-22 10:15 W08

Georg HERDRICH
Head Plasma Wind Tunnels and Electric Propulsion,
Institute of Space Systems, University of Stuttgart,
Germany

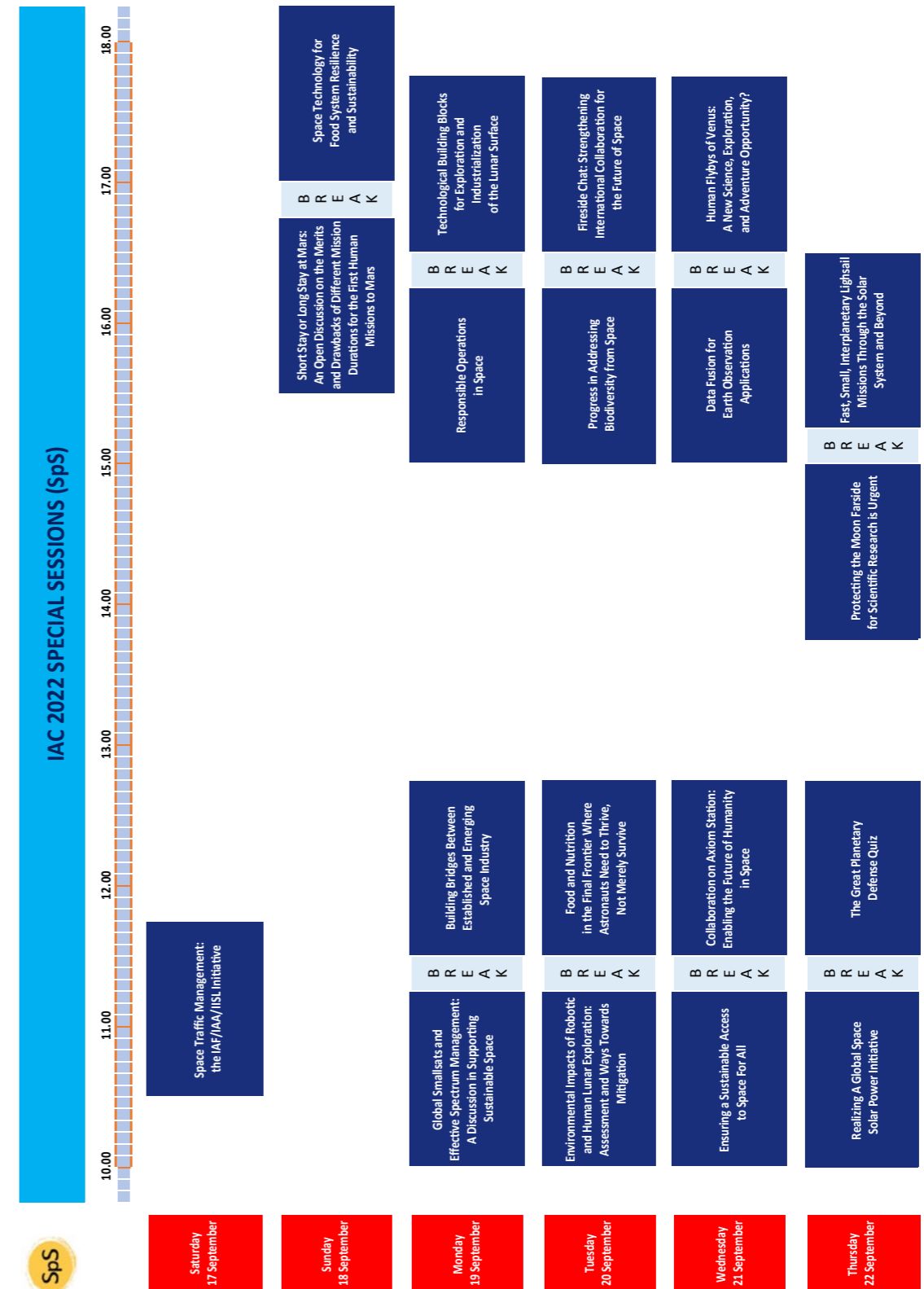
KEYNOTE: C4.9 Platform and System Design Study of a Vleo Satellite Platform Using the IRS RF Helicon-Based Plasma Thruster

Abstract

To achieve a feasible lifetime of several years, most satellites are deployed in orbits higher than 400 km. Drag of residual atmosphere causes a slow orbit decay, resulting in the deorbit of the spacecraft. However, e.g. optical instruments or communication devices would significantly benefit from lower altitudes in the range of 150-250 km. A solution to achieve this could be the application of atmosphere breathing electric propulsion (ABEP), where the residual atmosphere is used to generate continuous thrust that compensates the drag. Within the EU-funded DISCOVERER project, the Institute of Space Systems (IRS) developed an electrode-less RF Helicon-based Plasma Thruster (IPT) suitable for such applications. Ignition and preliminary discharge characterizations of the IPT have been carried out at IRS facilities, using Argon, Nitrogen and Oxygen as propellant. A follow-on activity is the plasma plume characterization. Two measurement methods have been selected to perform the experiments in the frame of this project. First, a method to derive thruster related properties is employed. The momentum flux in the plasma jet is measured by means of a torsional pendulum. A plate facing the thruster exit plane direction is fixed to the balance arm to counteract the plume jet, allowing for local momentum flux detection. Second, a method of characterizing the IPT as a source of propagating helicon waves is of high scientific interest. This is to be performed by using a three-axis magnetic inductive probe (B-dot probe), where the time-varying magnetic fields in the plume can be extracted. Furthermore, various intake designs to collect atmospheric particles were investigated, opening the possibility to conduct studies on potential satellite designs. Using the above mentioned ABEP system, a design study of a satellite for Earth Observation and Telecommunication applications in the altitude range of 150 to 250 km and prolonged mission durations of up to 12 years is currently being carried out. The first system assessment focused on the comparison of different spacecraft configurations ("slender body" configurations, similar to GOCE's design, and "flat body" configurations with several ABEP systems next to each other) and intake designs (using specularly or diffusely reflecting materials) with regard to overall drag and ABEP performance requirements. Drag coefficients for these configurations were determined using panel method calculations and the particle-based simulation code PICLas.

4 Special Sessions

4.1 Special Sessions at a Glance



4.2 Special Sessions per Day

Saturday 17 September

10:30 - 12:00 Space Traffic Management: The IAF/IAA/IISL Initiative

Room: W02

Format: Workshop

Organizers:



Christophe BONNAL
Chair,
IAF Space Traffic
Management Committee,
France



Darren MCKNIGHT
Senior Technical Fellow,
LeoLabs,
United States

If you are worried about the sustainability of future space operations, if you wonder what can be done to face the dramatic increase in new spacecraft, if you want to have the conclusion of the exercise presented in Dubai, then join us and be part of the discussion. You will hear about the latest status of the IAF effort in Space Traffic Management, prepared by some 135 experts coming from 24 countries.

Sunday 18 September

15:15 - 16:25 Short Stay or Long Stay at Mars: an Open Discussion on the Merits and Drawbacks of Different Mission Durations for the First Human Missions to Mars

Room: N03

Format: Campfire

Organizer:



Erin MAHONEY
Communications
Specialist,
National Aeronautics and
Space Administration
(NASA),
United States

How long is long enough? Join this session to tell us how long you think is enough or not enough time for astronauts to spend at Mars on the first human missions to the Red Planet. Experts in human health and performance, human-rated space systems, and Mars analogs will begin this interactive discussion to provide up-front facts. The majority of the time is reserved to hear from you – from your expert, personal, and cultural perspectives.

Speakers:



Michelle RUCKER
Lead of Mars
Integration Group,
National Aeronautics and
Space Administration
(NASA),
United States



Jancy McPhee
Human Research Program
Associate Chief Scientist,
National Aeronautics and
Space Administration
(NASA),
United States



Livio NARICI
Professor of
Applied Physics,
Italian Space Agency (ASI),
Italy



Adnan AL RAIS
Program Manager
- Mars 2117,
Mohammed Bin Rashid
Space Centre (MBRSC),
United Arab Emirates



Pietro DI TILLIO
Geoscientist &
GIS Analyst,
Langan Engineering,
United States

16:35 - 17:45 Space Technology for Food System Resilience and Sustainability

Room: N03

Format: Design Sprint

Organizers/Moderators:



Larissa ZHOU
Food Scientist &
PhD Student,
Harvard University,
United States



Maggie COBLENTZ
Researcher & Designer,
Massachusetts Institute
of Technology,
United States

Calling on engineers, scientists, artists, designers, and all around problem solvers to join us in co-designing the future of sustainable food technology. How can technologies designed for feeding humans in space be developed to benefit communities on Earth? This session starts with short presentations by the speakers, followed by an interactive activity involving all participants. We invite you to imagine a future of sustainable space food technology that addresses environmental and social sustainability.

Monday 19 September

10:15 - 11:25 Global Smallsats and Effective Spectrum Management: A Discussion in Supporting Space Sustainability

Room: N03

Format: Campfire

Organizers/Moderators:



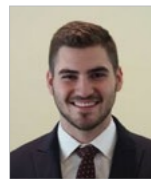
Matteo CAPPELLA
Regulatory Affairs Specialist, Secretary, Leaf Space, CSSMA, Italy



Laura CUMMINGS
Regulatory Affairs Counsel, Astroscale, United States

The backbone of wireless communications, radiofrequency spectrum's availability is challenged by the explosion of new space activities, with relevant considerations for space sustainability. Covering trends as commercial lunar activities, on-orbit servicing, and optical communications, this session invites you to learn about global efforts in spectrum management and potential contributions to a sustainable future in space. Join to hear from, and brainstorm with, experts and NewSpace startups. Supporting Space for @II, the session is designed to be technically accessible.

Speakers:



Ryan FIELDER
Mission Coordinator, HawkEye 360, United States



Assia BAHRI
Head of Regulations and Spectrum Affairs, Kinéis, France



Simon MOLGAT LAURIN
Regulatory Associate, Kepler Communications Inc., Canada



Krystal AZELTON
Director of Space Applications Programs, Secure World Foundation, United States



Dan ADAMS
General Manager, KSAT USA, United States

11:35 - 12:45 Building Bridges Between Established and Emerging Space Industry

Room: N03

Format: Campfire

Organizers/Moderators:



Daniel SAGATH
International Cooperation Manager, Slovak Investment and Trade Development Agency (SARIO) - Slovak Space Office, Slovakia



Michal BRICHTA
Head, Slovak Investment and Trade Development Agency (SARIO) - Slovak Space Office, Slovakia

The space sector is attracting more and more businesses from an ever-increasing number of countries, rather new to the ecosystem of well-established partnerships. The Special Session on Building bridges between established and emerging space industry will provide participants a unique opportunity to discuss and learn from business and institutional representatives about the most efficient mechanisms for integration to established value chain networks in established space markets.

Speakers:



Olivier LEMAITRE
Secretary General, Eurospace, France



Annalisa DONATI
Secretary General, EURISY, France



Allison AREIAS-VOGEL
Strategic Partnerships and Initiatives Expert, United Nations Office for Outer Space Affairs (UNOOSA), Austria



Jonathan HUNG
Founder & Executive Chairman, Singapore Space and Technology Limited (SSTL), Singapore



Raycho RAYCHEV
CEO, EnduroSat AD, Bulgaria



Temidayo ONIOSUN
Managing Director, Space in Africa, Nigeria



Veronica LA REGINA
CEO - Europe, Nanoracks, Italy



Matias CAMPOS
CEO & Founder, Astralintu Space Technologies, Ecuador

15:00 - 16:10 Responsible Operations in Space

Room: N03

Format: Workshop

Organizers/Moderators:



Audrey L. ALLISON
Senior Policy Analyst,
Center for Space
Policy and Strategy,
The Aerospace
Corporation,
United States



Angie BUKLEY
Principal Engineer,
Center for Space
Policy and Strategy,
The Aerospace
Corporation,
United States



Robin DICKEY
Member of Technical Staff,
Center for Space
Policy and Strategy,
The Aerospace
Corporation,
United States

Are you a new space actor or interested in becoming one? If so, this workshop is for you. The “Responsible Space Operations” workshop is designed for governments beginning to develop national space policies as well as start-up companies, universities, and other entities making their first forays into the space enterprise. Participants will be introduced to responsible operations in space grounded in a range of space laws and policies. The concepts discussed will be further explored and reinforced through an interactive simulated crisis scenario.

16:20 - 17:30 Technological Building Blocks for Exploration and Industrialization of the Lunar Surface

Room: N03

Format: Campfire

Organizer/Facilitator:



John H. SCOTT
Principal Technologist,
Power and Energy
Storage,
National Aeronautics and
Space Administration
(NASA),
United States

Principal Technologists and Capability Leaders from NASA’s Space Technology Mission Directorate will describe the current priorities for the development of technological building blocks to enable infrastructure for the exploration and industrialization of the Lunar surface. Core to this infrastructure is to be an electric power grid, serving human habitation and laboratory facilities, in-situ resource utilization (ISRU) plants, construction activities, and space transportation assets. This power grid may enable the expansion of exploration and industrial activity from the Lunar pole toward the equator.

Speakers:



Gerald B. SANDERS
System Capability Leader,
In-situ Resource
Utilization,
National Aeronautics and
Space Administration
(NASA),
United States



Mark W. HILBURGER
Principal Technologist,
Structures and Materials,
National Aeronautics and
Space Administration
(NASA),
United States



John W. DANKANICH
System Capability Leader,
In-space Transportation,
National Aeronautics and
Space Administration
(NASA),
United States

Tuesday 20 September

10:15 - 11:25 Environmental Impacts of Robotic and Human Lunar Exploration: Assessment and Ways Towards Mitigation

Room: N03

Format: Campfire

Organizer:



Michel BLANC
Professor Emeritus,
Institut de Recherche
en Astrophysique et
Planétologie (IRAP),
France

Facilitator:



Bernard FOING
Executive Director,
International Lunar
Exploration Working
Group (ILEWG),
EuroMoonMars,
Chair,
IAF ITACCUS Committee
Netherlands

If you are involved in space exploration, share its excitement and contribute to its development, if you are interested in a sustainable development of Earth and Moon environments to preserve their beauty and habitability for future generations, this Special Session is yours: please join and contribute to share with a panel of experts of the different future Moon-based activities an inventory of the problems to address, and some of the most promising avenues towards solutions.

Speakers:



Stefaan DE MEY
Senior Strategy
Officer for Human and
Robotic Exploration,
European Space
Agency (ESA),
Netherlands



Maria Antonietta PERINO
Director for Space
Economy Exploration and
International Network,
Thales Alenia Space Italia,
Italy



Jean BLOUVAC
Human Spaceflight and
Exploration Activities
Programme Manager,
Centre National d’Etudes
Spatiales (CNES),
France



Tanja MASSON-ZWAAN
Assistant Professor and
Deputy Director of the
International Institute of
Air and Space Law (IIASL),
Leiden University,
Netherlands



David KORSEMEYER
Director of Engineering,
National Aeronautics and
Space Administration
(NASA),
United States



Thomas SCHRAGE
GEO Information Services
Programme Manager,
Airbus Defence
and Space SAS,
Germany



Barbara IMHOF
Co-Founder &
Co-Managing Director,
LIQUIFER Systems
Group (LSG),
Austria



Eric SMITH
Director of Artificial
Intelligence and
Data Analytics,
Lockheed Martin
Corporation,
United States

11:35 - 12:45 Food and Nutrition in the Final Frontier Where Astronauts Need to Thrive, Not Merely Survive

Room: N03

Format: Fishbowl

Organizers:



Aaron H. PERSAD
Research Scientist,
Massachusetts Institute
of Technology,
United States



Anilkumar DAVE
Space Strategy Lead,
Astreas,
Partner,
Open Innovation and
Space Economy,
Senior Advisor,
Infinite Area,
United States



Waylon LEE
Aerospace engineering
Ph.D. Student,
Texas A&M University,
United States

Facilitator:



Lucie CAMPAGNOLO
CEO,
SpaceFounders France,
France

Join us for an exclusive Special Session on Space Food that kicks off with a visual experience that will take you into space as we give you a glimpse into the future of food technology. With more humans embarking upon longer space missions, astronauts are no longer just concerned with eating; they want to eat well.

Some of the world's most talented chefs are working with cutting-edge deep tech startups to develop delicious steaks and fine chocolates for the next generation of space travelers. Providing food that meets strict nutritional requirements while being stable in a microgravity environment is no easy feat. Colour, smell, and texture all contribute to the enjoyment of food but also pose tremendous challenges for chefs as they work to meet their own high standards. However, the rewards are worth it; research shows that cooking and eating together strengthens astronauts' mental health and group dynamics, which in turn improves their performance in space. It requires both scientific expertise and creative thinking.

Learn about the challenges and innovations in space food for long-duration missions and how food science and culinary experiences are pushing the boundaries to overcome space constraints. And if you're a chocolate lover, you're in luck! We will feature a tasting of Space Truffles as the future of next-generation functional food designed for astronauts!

Speakers:



Pascal ROSENFELD
Deputy VP Space &
New Ventures,
Aleph Farms,
France



Shahreen REZA
CEO,
Astreas,
United States



Veronica LA REGINA
CEO - Europe,
Nanoracks,
Italy



Michael RECCHIUTI
Chocolatier,
Recchiuti Confections,
United States



Annahita NEZAMI
Founder,
VROE,
United Kingdom

15:00 - 16:10 Progress in Addressing Biodiversity From Space

Room: N03

Format: Workshop

Organizers/Facilitators:



James GRAF
Director,
Earth Science and
Technology, NASA Jet
Propulsion Laboratory,
United States



Harry CIKANEK
Chair,
IAF Earth Observations
Committee,
United States

Earth's biodiversity is reducing dramatically and rapidly. All of life on Earth is pressured by the changing climate and other human actions. Space-based observations are essential to understanding the state of biodiversity and the impacts of climate change and other factors affecting biodiversity so that informed action can mitigate this challenge. Hear Agency leaders for Earth Observations provide an integrated view of this much needed application of the unique capabilities of space-based observations.

Speakers:



Selma CHERCHALI
Head of the Earth
Observation Department,
Centre National d'Etudes
Spatiales (CNES),
France



Karen ST. GERMAIN
Director for Earth Science,
National Aeronautics and
Space Administration
(NASA),
United States



Takeshi HIRABAYASHI
Senior Chief Officer
of Earth Observation
Missions,
Japan Aerospace
Exploration Agency (JAXA),
Japan



Stephen VOLZ
Assistant Administrator of
National Environmental
Satellite and Information
Service (NESDIS),
National Oceanic
and Atmospheric
Administration (NOAA),
United States



Simonetta CHELI
Director of Earth
Observation Programmes
and Head of ESRIN,
European Space
Agency (ESA),
Italy

16:20 - 17:30 Fireside Chat: Strengthening International Collaboration for the Future of Space

Room: N03

Format: Fireside chat

Join two globally respected leaders, Pascale Ehrenfreund and Robert Lightfoot, as they share their perspectives on how international cooperation and collaboration in the space arena can change the future of Space. They will highlight some of the recent successes in the exploration sector, discuss what it means to have a sustainable space domain, and also dive in to some of the challenges and opportunities in our industry today. Through leaning in to transformation and new ways of working, they will explore how industry, government and academia alike are taking new approaches to make space data – and space – accessible to all.

Speakers:



Pascale EHRENFREUND
President,
International Astronautical
Federation (IAF),
Austria



Robert LIGHTFOOT
Executive Vice President,
Lockheed Martin
Corporation

Wednesday 21 September

10:15 - 11:25 Ensuring a Sustainable Access to Space for All

Room: N03

Format: Pub Quiz

Organizers/Facilitators:



Nicole VIOLA
Associate Professor,
Politecnico di Torino,
Italy



Mathieu UDRIOT
Systems Engineer,
Ecole Polytechnique
Fédérale de
Lausanne (EPFL),
Switzerland



**Andrea JAIME
ALBALAT**
Business Developer,
Isar Aerospace,
Germany



Mathieu CHAIZE
Institutional Relations
Manager,
ArianeGroup SAS,
France



Christie MADDOCK
Assistant Professor,
University of Strathclyde,
United Kingdom

Quiz time! What pollutes more: an Ariane6 launch to LEO or a flight between New York and San Francisco? Through an interactive and interdisciplinary group quiz, this session will increase your awareness of sustainability and environmental impact of access to space. It will boost your knowledge on possible strategies and solutions to contribute to the global different Green Deals and good behaviours in Space. Guest experts will interact with you through the questions and answers. Come, form a team and join the challenge! There will be prizes for the winners!

Speakers:



Rada POPOVA
Legal Counsel,
Isar Aerospace,
Germany



Florian MICCO
Project Manager
Sustainability Rating,
Ecole Polytechnique
Fédérale de
Lausanne (EPFL),
Switzerland



Elwyn SIRIEYS
Graduate Research
Assistant,
Massachusetts Institute
of Technology,
United States



Maud SAINT-AMAND
Social Responsibility
Manager,
ArianeGroup SAS,
France



Andrew WILSON
Research Associate
from the Advanced
Space Concepts Lab,
University of Strathclyde,
United Kingdom

11:35 - 12:45 Collaboration on Axiom Station: Enabling the Future of Humanity in Space

Room: N03

Format: Campfire

Organizer/Facilitator:



Mary Lynne DITTMAR
Chief Government and
External Relations Officer,
Axiom Space, LLC,
United States

Axiom Space is building the next generation space station – Axiom Station - in low Earth orbit (LEO), with Space For All! Using an innovative approach to “campfire storytelling”, combining Virtual Reality (VR) and facilitated audience interaction, participants in this Special Session will join with key Axiom leaders and astronauts to explore humanity’s future in LEO, ‘touring’ Axiom Station in VR and brainstorming new uses and users of space infrastructure. Join us as we engage in virtual envisioning, designing, and exploring our next home in LEO!

Speakers:



**Michael
LOPEZ-ALEGRIA**
Chief of the Astronaut
Office and Ax-1 Mission
Commander,
Axiom Space, LLC,
United States



Matt ONDLER
Chief Technology
Officer and Director
of Engineering,
Axiom Space, LLC,
United States



Christian MAENDER
Executive Vice President
of In-Space Solutions,
Axiom Space, LLC,
United States

15:00 - 16:10 Data Fusion for Earth Observation Applications

Room: N03

Format: Workshop

Organizer:



Irene BENITO
Senior Manager
European Affairs,
Planet,
Germany

Facilitator:



**Agnieszka
ŁUKASZCZYK**
Vice President
Government
Affairs EMEA,
Planet

The rapid increase in availability, volume, and variety of public and commercial Earth observation datasets has given rise to an explosion of sensor data fusion. Combining datasets acquired at different spatial, spectral, and temporal resolutions, is leading to the creation of extremely powerful data products. In this session, leading global figures in Earth Observation will showcase the value of EO data fusion and its potential to become a catalyser for the two major transformations of our time: the digital and sustainability transitions.

Speakers:



Simonetta CHELI
Director of Earth Observation Programmes and Head of ESRIN, European Space Agency (ESA), Italy



Thomas ZURBUCHEN
Associate Administrator for the Science Mission Directorate, National Aeronautics and Space Administration (NASA), United States



Robbie SCHINGLER
Co-Founder and Chief Strategy Officer, Planet, United States



Grega MILCINSKI
Chief Executive Officer and Co-Founder, Sinergise



Peter MARQUEZ
Head of Space Policy, Amazon Web Services, United States

16:20 - 17:30 Human Flybys of Venus: A New Science, Exploration, and Adventure Opportunity?

Room: N03

Format: Campfire

Organizer:



Alexander MACDONALD
Chief Economist, National Aeronautics and Space Administration (NASA), United States

Facilitators:



Noam IZENBERG
Co-Chair of Venus Exploration Analysis Group, The Johns Hopkins University Applied Physics Laboratory, United States



Kurt VOGEL
Director of Space Architectures, National Aeronautics and Space Administration (NASA), United States

Do you have a passion for missions to the planet Venus? Have you ever thought about the potential for a near-term human mission that would fly-by or orbit Venus? Do you have opinions about whether or not such a mission is a good idea? Do you have interest in directly supporting such a mission? If you answer 'yes' to any of these, this campfire discussion on human flyby and orbital mission opportunities for Venus is for you.

Thursday 22 September

10:15 - 11:25 Realizing a Global Space Solar Power Initiative

Room: N03

Format: Orca Bowl

Organizers/Facilitators:



John C. MANKINS
Vice President, Moon Village Association (MVA), President, ARTEMIS Innovation Management Solutions, United States



Kevin BARRY
Co-Founder, LightBridge Strategic Consulting LLC, United States



Eduardo PINEDA
Co-Founder, LightBridge Strategic Consulting LLC, Spain

Investments to develop space solar power are increasing, and the need for carbon net-zero energy has never been greater. However, many of the challenges of this concept can only be overcome through coordinated global efforts. This special session will present the first-ever international working discussion on the central question: is now the time for a global program to develop SSP to benefit people everywhere? The "Orca Bowl" will help facilitate discussion in a large group by having just 2-3 people ("Fish") presenting the idea of SSP to a group of 4-5 potentially-skeptical questioners ("Orcas") in front of a live audience.

11:35 - 12:45 The Great Planetary Defense Quiz

Room: N03

Format: Educational Quiz

Organizers:



Alex KARL
Operations Engineer, Space Applications Services, Belgium



Alissa J. HADDAJI
Lecturer on Space Law, Policy and Ethics, Harvard University, United States

Want to know more about asteroids and the risks of them impacting the Earth? Have you seen "Don't Look Up"? Want to know what is fact, what is fiction in case of a possible asteroid impact scenario? Join "The Great Planetary Defense Quiz" and learn more about everything you have ever wanted to know about "Armageddon" and how to prevent it through a fun quiz led by world experts in the field of planetary defense.

Speakers:



Alissa J. HADDAJI
Lecturer on Space Law, Policy and Ethics, Harvard University, United States



Mariella GRAZIANO
Executive Director Space Systems and Robotics, GMV Aerospace & Defence SAU, Spain



Patrick MICHEL
Hera Mission Principal Investigator, Centre National de la Recherche Scientifique (CNRS), France



Alex KARL
Operations Engineer, Space Applications Services, Belgium

13:45 - 14:55 Protecting the Moon Farside for Scientific Research Is Urgent

Room: N03

Format: Workshop

Organizers:



Claudio MACCONE
Director for Scientific Space Exploration and Chair, International Academy of Astronautics (IAA), Italy



Jack O. BURNS
Professor, Department of Astrophysical and Planetary Sciences, Colorado Center for Astrodynamics Research, University of Colorado, United States

Facilitator:



Bernard FOING
Executive Director, International Lunar Exploration Working Group (ILEWG), EuroMoonMars, Chair, IAF ITACCUS Committee, Netherlands

Over the next several years governments and commercial operators are planning to place as many as 100,000 new satellites into near-Earth orbits to provide global high-speed internet access, telephony services, Earth observation, etc. Astronomers are already experiencing a low level of a new pollution, contamination of astronomical observations due to new satellite constellations and orbital debris. The big question that scientists are facing is: How do we fix it?

Starlink, OneWeb, Kuiper, and SatNet are examples of four new mega-constellations that will be launching thousands of satellites over the next few years. There are already more than 3,000 active satellites in low-Earth orbits, more than 3 times the number just a few years ago. And, this is just the beginning. The first generation of SpaceX's Starlink, when completed, will populate space with around 12,000 satellites. The second generation may add 30,000 more. The other three mentioned constellations, may deploy a total of over 20,000 satellites. Prior to 2018, the largest constellation was Iridium which totaled around 70 satellites. Even if the debris population is ignored, every active satellite represents a source of contamination. For example, satellite bodies as well as solar panels reflect sunlight. Think of a typical astronomer trying to capture faint objects in outer space. When a satellite constellation crosses a telescope's field of view multiple obscuring streaks may appear, interfering with astronomical observations. Can Mega-Satellite Constellations Destroy Astronomy? Satellite operators argue that only certain kinds of observation programs will be at risk. However, it is extremely difficult to predict just how bad the situation will get until all of the planned satellites are in orbit. Unfortunately, by that time it might be too late to fix the problem.

Now about the Moon Farside Protection. This Special Session advocates the support to the Moon Farside Protection by all scientists working in four different areas of science: Cosmology, Astrobiology, SETI and Planetary Defense: 1) COSMOLOGY needs the radio quietness on and above the Moon Farside to pick up the extremely feeble radiation of the hydrogen line at 1420 MHz as down-shifted to much smaller frequencies, MHz or kHz, by the 14 billion years of universe expansion. 2) ASTROBIOLOGY studies pre-biological interstellar molecules by virtue of their roto-vibrational spectra: a delicate search for feeble spectral lines that only advanced radio telescopes and the Moon Farside radio silence may achieve. 3) SETI needs radio quietness to possibly detect Alien Civilizations "signatures" that reach us very feeble because of the huge distances among stars in the Milky Way, if not from other galaxies. The discovery of one or more ExtraTerrestrial Civilizations in this or other galaxies would change the history of Humankind. 4) PLANETARY DEFENSE. The seeing from the Moon is wonderful (though the micro-meteorite risk is high). Thus, optical telescopes pointing at the (blocked) Sun would enable high-accuracy measurements of the orbital parameters of NEOs, greatly improving all data for Planetary Defense.

Speakers:



Kai-Uwe SCHROGL
President, International Institute of Space Law (IISL), Germany



Chuen Chern LOO
Head, Space Publication and Registration Division, Radiocommunication Bureau, International Telecommunication Union (ITU), Singapore



Jing PENG
Deputy Chief Designer of the Spacecraft System of the 3rd Phase of China's Lunar Exploration Program, China Academy of Space Technology, China

15:05 - 16:15 Fast, Small, Interplanetary Lighsail Missions Through the Solar System and Beyond

Room: N03

Format: Workshop

Organizers:



James SCHALKWYK
Programme Manager, Breakthrough Initiatives, United States



Kyran GRATTAN
Associate Director, Breakthrough Initiatives, Luxembourg

Facilitator:



James SCHALKWYK
Programme Manager, Breakthrough Initiatives, United States

Solar sails coupled with interplanetary smallsats can achieve extremely high velocities by first passing close to the Sun. Soon, technology demonstrations will achieve speeds twice that of Voyager, allowing travel to Jupiter in a year. Infinitely reproducible at low cost, these "Sundiver" spacecraft open a new paradigm for fast, frequent mission in the Solar System and beyond. What are the science possibilities? What new participants will it enable? What collaborations and partnerships might it form? Will it pave our way to the stars? A collaborative workshop will introduce this exciting concept and answer these questions.

Speakers:



Pete WORDEN
Executive Director, Breakthrough Initiatives, United States



Slava TURYSHEV
Senior Research Scientist, NASA's Jet Propulsion Laboratory, United States



Andreas HEIN
Associate Professor, University of Luxembourg, Luxembourg



Sarah GIBSON
Senior Scientist, National Center for Atmospheric Research High Altitude Observatory (HAO), United States



Raycho RAYCHEV
CEO, EnduroSat AD, Bulgaria



Phil MAUSKOPF
Professor, Arizona State University, United States

5 Interactive Presentations Sessions

5.1 Category Coordinators and Members of the IP Award Committee



Chairman of the Interactive Presentations Award Committee

Christophe Bonnal
Centre National d'Études Spatiales (CNES),
France

Category A SCIENCE AND EXPLORATION



Maria-Antonietta Perino
Thales Alenia Space,
Italy

Category B APPLICATIONS AND OPERATIONS



Igor V. Sorokin
S.P. Korolev Rocket and Space Corporation Energia
Russian Federation

Category C TECHNOLOGY



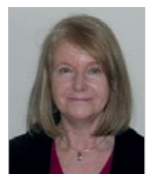
John C. Mankins
Vice President President, Moon Village Association (MVA)
Vice President, ARTEMIS Innovation Management Solutions
United States

Category D INFRASTRUCTURE



Roberta Mugellesi-Dow
Integrated Applications Manager,
European Space Agency (ESA)
United States

Category E SPACE AND SOCIETY

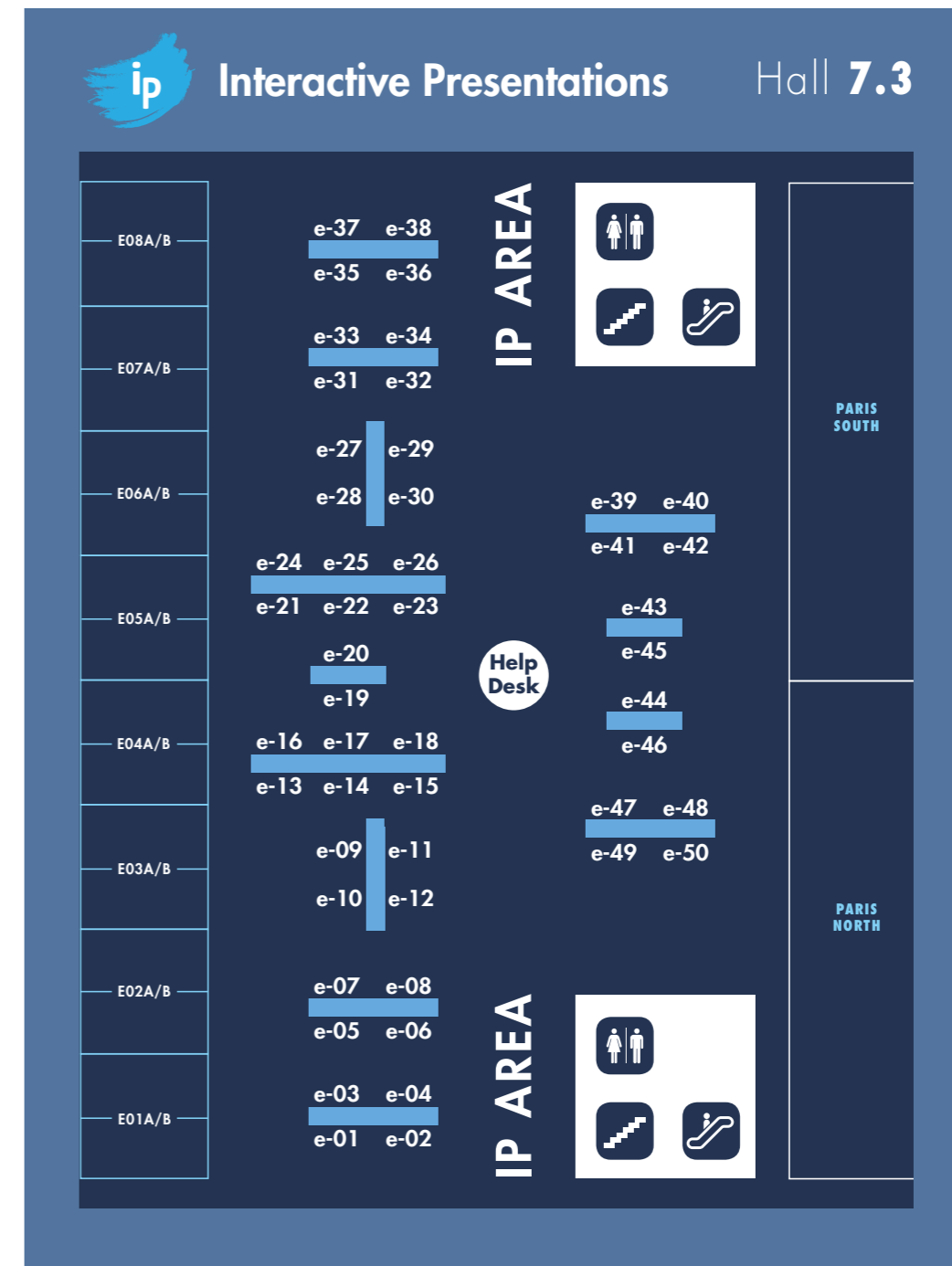


Lyn Wigbels
American Astronautical Society (AAS),
United States

5.2 IP Sessions and IP Award Ceremony

IP Session Monday 19 September, 12:50 – 13:30 (IP Area)
IP Session Tuesday 20 September, 12:50 – 13:30 (IP Area)
IP Award Ceremony Wednesday 21 September, 13:00 – 13:30 (Room N02)
IP Session Wednesday 21 September, 13:30 – 15:00 (IP Area)

5.3 Interactive Presentations Floor Plans



5.4 Interactive Presentations Schedule

Please check the IAF App to get the latest updates on the Interactive Presentations.

Monday 19 September 2022

SCREEN #1

12:50-13:00 IAC-22/E7/IPB/70403
COMBINING AIR AND SPACE OR HOW TO START REGULATING SPACE NAVIGATION AT THE INTERNATIONAL LEVEL?
Ruslan Konygin, Peoples' Friendship University of Russia (RUDN University), Russian Federation

13:00-13:10 IAC-22/A1/IPB/70689
WEARABLE FOR HEALTH CONTROL IN ASTRONAUTS AND ALSO TO DETECT AND MONITOR COVID-19 IN PATIENTS.
Axel Núñez Arzola

13:10-13:20 IAC-22/A1/IPB/73403
EEG SIGNAL SYNTHESIS AND RECOGNITION OF INTELLIGENT HEALTH MONITORING IN LONG-TERM SPACE FLIGHT
Gu Tianhao

13:20-13:30 IAC-22/A1/IPB/67265
TRANSFORMING NEAR-FIELD MICRO-GRAVITY SOURCES INTO FAR-FIELD LIFE SUPPORT SYSTEMS
Nghi Nguyen

SCREEN #2

12:50-13:00 IAC-22/E7/IPB/67999
THE NEW BRAZILIAN NATIONAL PROGRAM OF SPACE ACTIVITIES - PNAE (2022-2031): WHAT TO EXPECT
Ian Grosner, Brazilian Space Agency (AEB), Brazil

13:00-13:10 IAC-22/A1/IPB/73894
REMOTE HEALTH DATA ANALYSIS OF HAND AND WRIST MUSCULOSKELETAL INJURIES IN ASTRONAUTS DURING IN-FLIGHT AND POST-FLIGHT PERIODS WITH DIGITAL HEALTH SOFTWARE SOLUTION USING AIML ALGORITHM FOR PROGNOSIS
Sucheshnadevi Patil

13:10-13:20 IAC-22/A1/IPB/69470
EFFICIENT LIFE SUPPORT SYSTEM
Paul Iacomi

13:20-13:30 IAC-22/A1/IPB/69542
IMMUNO NUTRITION: CONTRAMEASURE AGAINST IMMUNE SYSTEM DYSREGULATION DURING LONG-TERM SPACEFLIGHT. PROPOSAL.
Luisa Garcia Rojas Vazquez

SCREEN #3

12:50-13:00 IAC-22/E7/IPB/69768
COULD THE WORKING PAPER LEAD TO A UNIFIED LEGAL REGIME?: TO RESOLVE LEGAL CHALLENGES WITH RESPECT TO AEROSPACE OBJECTS
Nayoung Youn, Institute of Air and Space Law, University of Cologne, Germany

13:00-13:10 IAC-22/A1/IPB/70172
DEEP SPACE HABITATION SYSTEMS - A TECHNOLOGICAL REVIEW
Sara Sabry

13:10-13:20 IAC-22/A1/IPB/70896
REGIONAL ANESTHESIA IN SPACE
Wendy Yao

13:20-13:30 IAC-22/A1/IPB/70560
FEASIBILITY OF LIFE SUPPORT FOR HUMANS IN SPACE WITH AN OXYGEN BATTERY SYSTEM WITH THE MICROALGAE CHLORELLA VULGARIS GERMAN
Sarmiento

SCREEN #4

12:50-13:00 IAC-22/E7/IPB/70669
HUMAN HERITAGE IN SPACE: UNTAPPED POTENTIAL
Bailey Cunningham, United States

13:00-13:10 IAC-22/A1/IPB/67960
SPACE AND HUMAN ETHOLOGY IN THIRTY KEYWORDS
Carole Taffarin

13:10-13:20 IAC-22/A1/IPB/73503
ANALYSIS OF SPACE DRAGONS: A FRAMEWORK FOR PSYCHOLOGICAL SAFETY FOR LONG DURATION SPACEFLIGHT
Aoife van Linden Tol

13:20-13:30 IAC-22/A1/IPB/72114
APPLICATION OF THE BIOPSYCHOSOCIAL APPROACH TO THE IDENTIFICATION AND STRENGTHENING OF ADAPTATION MECHANISMS OF HUMAN AND A SMALL SOCIAL GROUP DURING THE ISOLATION EXPERIMENT SIRIUS 2017 - 2023
Katerina Bernardova-Sykorova

SCREEN #5

13:00-13:10 IAC-22/A1/IPB/67557
MORPHOFUNCTIONAL ADAPTATION OF THE MURINE INTESTINE OVER 30 DAYS OF SIMULATED MICROGRAVITY
Evgeniya Lagereva

13:10-13:20 IAC-22/A1/IPB/72038
LAB-PAYLOAD FOR BIOLOGICAL CUBESAT SATELLITE
Patrycja Sniadek

13:20-13:30 IAC-22/A1/IPB/73376
AGRICULTURAL SYSTEM ON MARS: A LIFE-SUPPORT SYSTEM FOR MARTIAN'S SETTLERS
Maria Grulich

Monday 19 September 2022

SCREEN #6

12:50-13:00 IAC-22/A1/IPB/68542
A UNIVERSAL MODEL ON SPACE POLICY: FRAMEWORK FOR EMERGING NATIONS IN SPACE WITH CASE STUDIES ON INDIA, POLAND AND AFRICA
Tanushri Joshi

13:00-13:10 IAC-22/A1/IPB/72082
LAB-ON-CHIP PLATFORMS FOR SPACE BIOLOGY APPLICATIONS
Agnieszka Podwin

13:10-13:20 IAC-22/A1/IPB/72041
SPACE RADIATION SAFETY FOR FEMALE ASTRONAUTS: A THOROUGH STUDY ON RADIATION-INDUCED CANCER
Newsha Haghgo

13:20-13:30 IAC-22/A1/IPB/70391
AQUAPONIC FARMING- A CONTINUOUS SUPPLY OF FOOD FOR SPACE COLONIES
Sharry Kapoor

SCREEN #7

12:50-13:00 IAC-22/LBA/E7/74558
NEWSPACE: THE STAR WARS SOLDIER OF THE FUTURE?
Katja Grünfeld, Slovenia

13:00-13:10 IAC-22/A1/IPB/69487
DESIGN AND DEVELOPMENT OF A HEALTH MONITORING COMPANION ROBOT FOR CREW MEMBERS IN SPACE
Shreya Santra

13:10-13:20 IAC-22/A3/IPB/67421
MOON EXPLORATION ACCELERATION : THE CONCEPT OF THE FLIGHT DATA RECORDER FOR SPACE MISSIONS
Jamel Metmati

13:20-13:30 IAC-22/A3/IPB/72466
MARTIAN INTERIOR INVESTIGATION USING DISTRIBUTED GEODETIC SENSOR NETWORK IN THE THARSIS REGION OF MARS
Julian Rothenbuchner

SCREEN #8

12:50-13:00 IAC-22/LBA/E7/74552
CYBER WARFARE AND SECURITY OF SPACE ASSETS: UNRAVELLING THE CHALLENGES CONCERNING ATTRIBUTION IN LIGHT OF THE VIASAT ATTACK
Ishita Das, NALSAR University of Law, India

13:00-13:10 IAC-22/A3/IPB/70808
ASTEROID IMPACTOR SAMPLE RETURN MISSION CONCEPT
Jekanthan Thangavelautham

13:10-13:20 IAC-22/A3/IPB/73929
NOVEL DESIGN REQUIREMENTS FOR NANO LUNAR ROVERS
Robert Mahoney

13:20-13:30 IAC-22/A3/IPB/73924
CUBER - A SOLUTION FOR LUNAR EXPLORATION
Robert Mahoney

SCREEN #9

12:50 - 13:00 IAC-22/E7/IPB/73351
WASTE STUDIES' INSIGHT INTO ORBITAL DEBRIS: A UNITED ARAB EMIRATES CASE STUDY
Alyssa Goessler, United States

13:00-13:10 IAC-22/A3/IPB/70047
UTILIZATION OF STEREO LITHOGRAPHY-BASED ADDITIVE MANUFACTURING APPROACH FOR MANUFACTURING OF LUNAR REGOLITH CERAMICS
Maxim Isachenkov

13:10-13:20 IAC-22/A3/IPB/72600
IN-SITU DETECTION OF PLANETARY ROVER CATASTROPHIC FAILURES USING MACHINE LEARNING
Simon Engler

13:20-13:30 IAC-22/A3/IPB/69869
A SYSTEMS-LEVEL APPROACH TO EXTRACTING OXYGEN FROM LUNAR REGOLITH VIA MOLTEN REGOLITH ELECTROLYSIS.
Kirby Runyon

SCREEN #10

13:00-13:10 IAC-22/A3/IPB/67926
DE - CENTRALIZED NETWORK FOR CO-ORDINATED LUNAR ROBOTIC ACTIVITY
Prathmesh Barapatre

13:10-13:20 IAC-22/A3/IPB/67757
A COMPARATIVE TECHNICAL ANALYSIS ON THE OCCURRENCE, ABUNDANCE, AND PROSPECTION OF WATER ICE ON THE LUNAR AND MARTIAN EXTERIORITIES.
Mrityunjai Verma

13:20-13:30 IAC-22/A3/IPB/68749
BASALT FIBER COMPOSITES FOR THE ROBOTIC FABRICATION OF A LUNAR HABITAT
Ina Cheibas

SCREEN #11

13:00-13:10 IAC-22/A3/IPB/73765
ARTEMIS LUNAR STUDENT DRILL: A NOVEL DRILL SEARCHING FOR LUNAR VOLATILES IN THE LUNAR SOUTH POLE
Charmaine Neufeld

13:10-13:20 IAC-22/A3/IPB/73150
MALAPERT MOUNTAIN: MOON HIGH GROUND POINT E AWAITS LANDERS
Steve Durst

13:20-13:30 IAC-22/A3/IPB/72027
DEVELOPMENT OF A LOW GRAVITY AIRBEARING SURFACE
Leonard Vance

SCREEN #12

13:00-13:10 IAC-22/A3/IPB/69832
ANALYSIS OF APPROACHES TO ENSURING THE RETURN OF A SEGMENTAL-CONICAL SHAPE RE-ENTRY VEHICLE FROM A LUNAR ORBIT WITHOUT DESTRUCTION OF THE THERMAL PROTECTION COATING
Victor Leonov

13:10-13:20 IAC-22/A3/IPB/69734
LUNAR LEAPER: A LOCOMOTIVE VEHICLE FOR EXPANDED OUTREACH OF LUNAR ENVIRONMENT WITH DUAL OPERATIONS
Yashika Paharia

13:20-13:30 IAC-22/A3/IPB/71529
WATER MAPPING NEUTRON SPECTROMETER HARDPIX FOR EL3 POLAR EXPLORER
Robert Filgas

Monday 19 September 2022

SCREEN #13

13:00-13:10 IAC-22/A3/IPB/71146
THE IMPACT OF SLIP AND ROVER MOBILITY IMPLEMENTATION CONSTRAINTS ON PLANETARY ROVER PATH PLANNING
Rima Ghosh

13:10-13:20 IAC-22/A3/IPB/69573
HIGH-FIDELITY ROBUST 3-D LUNAR ENVIRONMENT GENERATION PLATFORM FOR MICRO-ROVER SIMULATION-BASED TASKS
Watcharawut Masawat

13:20-13:30 IAC-22/A3/IPB/69545
HAZARD DETECTION & AVOIDANCE INTEGRATION AND DEMONSTRATION FOR AUTONOMOUS MOON LANDING
Jean-Francois Hamel

SCREEN #14

13:00-13:10 IAC-22/A3/IPB/72590
SOIL PENETRATION DARTS (SPDS) FOR DEEP SOIL SAMPLING
Viduranga Landers

13:10-13:20 IAC-22/A3/IPB/69374
ROBUST PLACE RECOGNITION WITH GAUSSIAN PROCESS GRADIENT MAPS FOR TEAMS OF ROBOTIC EXPLORERS IN CHALLENGING LUNAR ENVIRONMENTS
Riccardo Giubilato

13:20-13:30 IAC-22/A3/IPB/73185
PHASE-A DESIGN OF A MARS SOUTH POLE EXPLORATION MISSION: MARS PENGUIN
Francesco Ventre

SCREEN #15

13:00-13:10 IAC-22/A3/IPB/70249
RUBITICS: THE SMARTER GCMS FOR MARS
Harshini K Balaji

13:10-13:20 IAC-22/A3/IPB/67195
VAMI - AN EXPLORATION OF VALLES MARINERIS
Raj Kedia

13:20-13:30 IAC-22/A3/IPB/70601
AUTONOMOUS PERCEPTION AND TERRAIN RECONSTRUCTION OF UNSTRUCTURED LUNAR COMPLEX ENVIRONMENT: A REVIEW
Qiming Liang

SCREEN #16

13:00-13:10 IAC-22/A3/IPB/67611
ANALYSIS OF THE ELECTROMAGNETIC BEHAVIOR OF LUNAR SOIL FOR FUTURE MOBILE TELECOMMUNICATION SYSTEMS IN THE 1-6 GHZ FREQUENCY BAND
Andrea Delfini

13:10-13:20 IAC-22/A3/IPB/67980
PROOF-OF-CONCEPT TABLETOP TUNABLE DIODE LASER ABSORPTION SPECTROMETER INSTRUMENT (TDLAS) FOR THE DETECTION OF H₂O(V) IN LUNAR REGOLITH FOR THE CANADIAN MULTIPURPOSE AUTONOMOUS PENETRATOR FOR LUNAR EXPLORATION (MAPLE) PROJECT
Alexander Gmerek

13:20-13:30 IAC-22/A3/IPB/68220
VISION-BASED NAVIGATION SUPPORTED BY CONVOLUTIONAL NEURAL NETWORKS FOR LUNAR AND PLANETARY LANDING MISSIONS
Pedro Pinheiro

SCREEN #17

13:00-13:10 IAC-22/A3/IPB/69704
FEASIBILITY STUDY FOR LUNAR RESOURCES TRANSPORT AND DELIVERY THROUGH A PATH CLEARANCE VEHICLE (PCV)
Martin Chaillet

13:10-13:20 IAC-22/A5/IPB/73101
LUNAR OASIS – ARCHITECTURAL VISIONS FOR AN INTEGRATED LUNAR HABITAT
Sandra Haeuplik-Meusburger

13:20-13:30 IAC-22/A5/IPB/68314
ASCLEPIOS II: SECOND ITERATION OF THE STUDENT-LED ANALOG MISSION SIMULATING A HUMAN EXPEDITION TO THE LUNAR SOUTH POLE
Orlandi Veronica

SCREEN #18

13:00-13:10 IAC-22/A6/IPB/70152
RESULTS OF SATELLITE IDENTIFICATION AND POSITIONING BY PSEUDORANGING MEASUREMENTS TARGETING ONLY RADIO TRANSMISSIONS PREAMBLES WITH HIGHLY-UNCERTAIN TIME-SYNCHRONIZATION AT THE GROUND-SEGMENT
Andreas Hornig

13:10-13:20 IAC-22/A6/IPB/73800
NOVEL LOW-COST LIGHTWEIGHT LASER RETROREFLECTORS FOR A SUSTAINABLE NEW-SPACE ERA
David Gooding

13:20-13:30 IAC-22/A6/IPB/70959
RESEARCH ON THE INTERPOLATION OF THE GRAVITATIONAL POTENTIAL OF THE EARTH
Aleksandr Kuznetsov

SCREEN #19

13:00-13:10 IAC-22/A6/IPB/69295
A STANDARD INTERCONNECT BENCHMARK FOR A EUROPEAN IN-ORBIT SERVICES, MANUFACTURING AND ASSEMBLY (ISMA) DEMONSTRATOR
Wiebke Brinkmann

13:10-13:20 IAC-22/A6/IPB/69583
EFFECT OF LINEAR AND NONLINEAR PROPAGATION OF UNCERTAINTY ON OPTIMAL COLLISION AVOIDANCE MANEUVERS
Shrouti Dutta

13:20-13:30 IAC-22/A6/IPB/71301
ADEO – THE AUTOMATIC DE-ORBIT SAIL SUBSYSTEM – ENABLING SPACE DEBRIS MITIGATION FOR BIG- AND SMALLSATS, ROCKET BODIES, CUBESATS, AND CONSTELLATIONS
Daniel Stelzl

SCREEN #20

13:00-13:10 IAC-22/A6/IPB/70746
A DYNAMICAL SYSTEMS ANALYSIS OF THE EFFECTS OF LAUNCH RATE DISTRIBUTION ON THE STABILITY OF A SOURCE-SINK ORBITAL DEBRIS MODEL
Celina Pasiecznik

13:10-13:20 IAC-22/A6/IPB/71769
DEMONSTRATION OF SPACE DEBRIS OBSERVATION CAPABILITIES OF THE ESA IZN-1 ROBOTIC OPTICAL GROUND STATION
Emiliano Cordelli

13:20-13:30 IAC-22/A6/IPB/73790
KASIOPEIA: KASI'S ORBIT PROPAGATION & ESTIMATION, INTEGRATED ANALYSIS SYSTEM FOR SPACE SITUATIONAL AWARENESS
Eun Jung Choi

SCREEN #21

13:00-13:10 IAC-22/A6/IPB/70664
FORMATION KEEPING CONTROL FOR SIMULTANEOUS DEORBIT USING LASER ABLATION
Shun Isobe

13:10-13:20 IAC-22/A6/IPB/73061
THE UK SPACE AGENCY'S ACTIVE DEBRIS REMOVAL PHASE 0/ PHASE A STUDIES
Adam Camilletti

13:20-13:30 IAC-22/A6/IPB/73593
DATA FUSION OF MULTIPLE ORBITAL DATA SOURCES FOR OPTIMUM COLLISION AVOIDANCE SERVICES AT EUSST
Cristina Pérez Hernández

SCREEN #22

13:00-13:10 IAC-22/A3/IPB/67327
STUDY ON PLANUM BOREUM MARTIAN ICE-COLUMN DISTRIBUTION USING A COMBINATION OF MID-UV AND RGB BAND FROM EMIRATES EXPLORATION IMAGER (EXI)
Sathiyagayathiri Subramanian, Amity University, Dubai, United Arab Emirates

13:10-13:20 IAC-22/A6/IPB/70684
ESTIMATION OF ORBITAL PARAMETERS OF BROKEN-UP OBJECT USING IN-SITU DEBRIS MEASUREMENT SATELLITE
Mahiro Tanahashi

13:20-13:30 IAC-22/A6/IPB/70887
COMPLIANCE CONTROL OF DUAL-ARM SPACE ROBOT CAPTURE SATELLITE OPERATION BASED ON BARRIER LYAPUNOV FUNCTION
An Zhu

SCREEN #23

13:00-13:10 IAC-22/A6/IPB/73340
SPACE CLEANER: A NEW MAGNETIC CONTACTLESS WAY TO RECOVER SPACE DEBRIS
Andrea Riccobelli

13:10-13:20 IAC-22/A6/IPB/72935
DEVELOPMENT OF IDENTIFIABILITY SCORES FOR THE DETECTABILITY, IDENTIFIABILITY, AND TRACKABILITY ANALYSIS OF THE SPACE SUSTAINABILITY RATING
Scott Dorrington

13:20-13:30 IAC-22/B1/IPB/73807
SPACE BIG DATA IN THE SERVICE OF THE SPACE2030 AGENDA
Dimitra Stefoudi

SCREEN #24

13:00-13:10 IAC-22/B1/IPB/72635
ANALYSIS OF THE SPREAD OF THE CALLAO OIL SPILL OFF THE COAST OF LIMA, PERU USING EARTH OBSERVATION DATA
Zahra Okba

13:10-13:20 IAC-22/B1/IPB/68773
POTABLE WATER LEAK DETECTION BASED ON L-BAND SAR TECHNOLOGY
Yuval Lorig

13:20-13:30 IAC-22/B1/IPB/68832
COFFI: AN IMAGE CLASSIFICATION GUI FOR FOREST FIRE IMAGERY APPLYING CONVOLUTION NEURAL NETWORKS
Muhammad Hasif bin Azami

SCREEN #25

13:00-13:10 IAC-22/B1/IPB/68841
GENETIC ALGORITHM-BASED CONSTELLATION ORBIT DESIGN FOR EFFICIENT INTEGRATED OPERATION OF SINGLE SATELLITES AND INCREASE OF THE TEMPORAL RESOLUTION OF SATELLITE INFORMATION
Insik Jung

13:10-13:20 IAC-22/B1/IPB/69082
DETECTION AND REMOVAL OF CARS FROM SATELLITE IMAGERY OF URBAN AREAS WITH IMAGE RECONSTRUCTION USING DEEP LEARNING TECHNIQUES
Szymon Bogus

13:20-13:30 IAC-22/B1/IPB/69135
RECENT DEVELOPMENTS OF SPACE OPTICS AT SAFRAN REOSC
Eric Ruch

SCREEN #26

13:00-13:10 IAC-22/B1/IPB/70390
NORTH STAR: DATA-DRIVEN SAILING FOR AN EFFICIENT AND SAFE PASSAGE IN THE ARCTIC OCEAN
Paola Breda

13:10-13:20 IAC-22/B1/IPB/71102
NOVEL EDGE DATA PROCESSION SYSTEM FOR EO APPLICATIONS
Patrik Sandin

13:20-13:30 IAC-22/B1/IPB/71913
LINEAR REGRESSION STATISTICS IN RELATION TO VEGETATION AND RAINFALL/TEMPERATURE.
Andy Wolloh, Mesue Ngoumbah

SCREEN #27

13:00-13:10 IAC-22/B1/IPB/72058
ANALYZING THE IMPACTS OF CLIMATE CHANGE ON N2O EMISSIONS FROM SOIL USING SMALL SATELLITES
Kiran Mankame

13:10-13:20 IAC-22/B1/IPB/72547
BOOSTING REFORESTATION BY ESTIMATION OF SOIL FERTILITY USING SATELLITE IMAGING TECHNIQUES
Prajakta Ranade

13:20-13:30 IAC-22/B1/IPB/72835
KADMOS PDGS-AS-SERVICE FOR THE PRISMA MISSION
Luigi Agrimano

SCREEN #28

13:00-13:10 IAC-22/B2/IPB/72293
A DEEP LEARNING BASED VISUAL NAVIGATION SYSTEM FOR DEEP SPACE NAVIGATION
Mattia Varile

13:10-13:20 IAC-22/B2/IPB/72264
A MECHATRONIC ENGINEERING APPROACH ON THE DESIGN OF A TELEMETRY, TRACKING, AND COMMAND SYSTEM FOR THE MONITORING OF A 3U CUBESAT NANOSATELLITE
Irvine Monroy

13:20-13:30 IAC-22/B2/IPB/67286
THE VISION - CONCEPT OF LASER CROSSLINK SYSTEMS USING NANOSATELLITES IN FORMATION FLYING
Geuk-Nam Kim

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SCREEN #29

13:00-13:10 IAC-22/B2/IPB/73516
PERFORMANCE BOUNDS FOR COOPERATIVE LOCALISATION IN STARLINK
Calum Turner

13:10-13:20 IAC-22/B2/IPB/70714
CHECKOUT AND TESTING EQUIPMENT(CTE)FOR INTER-SATELLITE LINK (ISL) COMMUNICATION SUBSYSTEM
Somaia Mohamed

13:20-13:30 IAC-22/B2/IPB/73468
STARSHIP IMPACT ON THE SATCOM INDUSTRY
Justin Ahwah

SCREEN #30

13:00-13:10 IAC-22/B2/IPB/72778
AN ANALYSIS OF CONSTELLATION CONFIGURATIONS FOR A LUNAR NAVIGATION SATELLITE SYSTEM
Abigail MacGillivray

13:10-13:20 IAC-22/B2/IPB/67870
GEOMETRICAL COMPARISON OF DIFFERENT LOCALIZATION METHODS FOR LUNAR NAVIGATION EXPLOITING ELFO AND HALO ORBITS
gheorghie sirbu

13:20-13:30 IAC-22/B3/IPB/72676
VIRTUAL REALITY MULTIUSER SIMULATION OF SURFACE OPERATIONS FOR ARTEMIS AND MARS MISSIONS
Waylon Lee

SCREEN #31

13:00-13:10 IAC-22/B3/IPB/72434
ELECTROENCEPHALOGRAPHY (EEG), ELECTROMYOGRAPHY (EMG) AND EYE- TRACKING FOR ASTRONAUT TRAINING AND SPACE EXPLORATION
Leonie Becker

13:10-13:20 IAC-22/B3/IPB/68973
THE USE OF VIRTUAL REALITY IN MICROGRAVITY ENVIRONMENTS FOR ASTRONAUT TRAINING
Flavie Aditya Annick Suzanne Davida Tohotaua Rometsch

13:20-13:30 IAC-22/B3/IPB/70020
USING THE METHOD OF LOCI IN VIRTUAL REALITY TO REDUCE ROBOTIC OPERATIONS TRAINING TIME FOR ASTRONAUTS
Martial Costantini

SCREEN #32

13:00-13:10 IAC-22/B3/IPB/72756
THE RECEIPT AND ANALYSIS OF WEATHER DATA IN A SIMULATED MARTIAN ENVIRONMENT
Kieron van Buchstab

13:10-13:20 IAC-22/B4/IPB/73562
PRODUCT ASSURANCE FOR SMALL SATELLITES IN RESPONSIVE SPACE WITH MODULAR PAYLOAD AND COTS-PLATFORM
Alexander Schmidt

13:20-13:30 IAC-22/B6/IPB/67212
MANAGE THE WORK FLOW OF DATA SPACE OPERATIONS IN THE NEW SPACE
Jamel Metmati

SCREEN #33

13:00-13:10 IAC-22/B6/IPB/72913
FUTURE GROUND SEGMENTS WITH STANDARDIZED INTERFACES: THE DOMINO-X PROJECT
Daniel Novak

13:10-13:20 IAC-22/B6/IPB/70579
A MULTI-AGENT PLANNING METHOD ON DEEP REINFORCEMENT LEARNING FOR LUNAR ROVERS COLLABORATED OPERATION WITH UNCERTAINTY
Siyao Lu

13:20-13:30 IAC-22/B6/IPB/70308
PODIUM: A PULSAR NAVIGATION UNIT FOR SCIENCE MISSIONS
Francesco Cacciatore

SCREEN #34

13:00-13:10 IAC-22/B6/IPB/67786
ON-BOARD RE-PLANNING OF AN EARTH OBSERVATION SATELLITE FOR MAXIMISATION OF OBSERVATION CAMPAIGN GOALS
Cheyenne Powell

13:10-13:20 IAC-22/B6/IPB/73287
ATTITUDE DISTURBANCE CAUSED BY PROPELLANT MASS CONTAMINATION AND SUBLIMATION FROM SATELLITE EXTERNAL SURFACES DURING ORBITAL CONTROL OPERATIONS.
Damiano Errico

13:20-13:30 IAC-22/C1/IPB/74060
DESIGN DRIVERS OF AN ATTITUDE CONTROL SYSTEM FOR SMALL CUBESATS USING MAGNETORQUERS
Gabrielle Witt

SCREEN #35

13:00-13:10 IAC-22/C1/IPB/69315
DESIGN, DEVELOPMENT AND ANALYSIS OF GEAR BASED VARIABLE SPEED CONTROL MOMENT GYROS
Priyank Dubey

13:10-13:20 IAC-22/C1/IPB/69591
APPLICATION AND ANALYSIS OF NEURAL NETWORKS FOR UNMODELED DYNAMICS IN THE CIRCULAR RESTRICTED THREE BODY PROBLEM
Kyle Messick

13:20-13:30 IAC-22/C1/IPB/71401
EXPLOITING COHERENT PATTERNS FOR THE ANALYSIS OF QUALITATIVE MOTION AND THE DESIGN OF BOUNDED ORBITS AROUND SMALL BODIES
Nicolò Bernardini

SCREEN #36

13:00-13:10 IAC-22/C1/IPB/68600
ROBUST DESIGN OF INTERPLANETARY TRAJECTORIES UNDER SEVERE UNCERTAINTY VIA META-REINFORCEMENT LEARNING
Lorenzo Federici

13:10-13:20 IAC-22/C1/IPB/72087
IMPROVING ON-BOARD ATTITUDE KNOWLEDGE ACCURACY BY REAL-TIME LEARNING AND COMPENSATION OF MEASUREMENT ERRORS FOR HIGH ACCURACY SATELLITES
ASHOK KUMAR K

13:20-13:30 IAC-22/C1/IPB/71381
NONLINEAR OBSERVER AND MPC-BASED ALGORITHMS FOR RENDEZVOUS MANEUVER WITH TUMBLING TARGET
Elisa Capello

SCREEN #37

13:00-13:10 IAC-22/C1/IPB/69697
SPACECRAFT FORMATION FLYING CONFIGURATION DESIGN FOR SPACE-BASED GRAVITATIONAL WAVE OBSERVATORY
Zhengxu Pan

13:10-13:20 IAC-22/C1/IPB/71732
SATELLITE ATTITUDE DETERMINATION ALGORITHMS BASED ONLY ON STAR TRACKER MEASUREMENTS USING TRIAD AND Q-METHOD
Elhassen Benfriha

13:20-13:30 IAC-22/C1/IPB/68189
EFFECTS OF PRIMARY SHADOWING ON ASTEROID EJECTA CAPTURED INTO PERIODIC ORBITS
Anivid Pedros-Faura

SCREEN #38

13:00-13:10 IAC-22/C1/IPB/69241
ON THE ORBIT CONTROL OF NEAR REPEAT CYCLE ORBITS: THE CASE OF THE BIOMASS MISSION
Sérgio Brás

13:10-13:20 IAC-22/C1/IPB/73897
MULTIPLE-SHOOTING CONTINUATION OF SUN-ASSISTED LUNAR TRANSFERS FROM THE PLANAR BICIRCULAR TO THE EPHEMERIS MODEL
Anastasia Tselousova

13:20-13:30 IAC-22/C1/IPB/69254
HARDWARE-IN-THE-LOOP SIMULATION FRAMEWORK FOR CUBESATS PROXIMITY OPERATIONS: APPLICATION TO THE MILANI MISSION
Antonio Rizza

SCREEN #39

13:00-13:10 IAC-22/C1/IPB/71391
SENSITIVITY ANALYSIS OF ASTEROID EJECTA MODELS FOR FUTURE IN-ORBIT SAMPLE COLLECTION MISSION
Mirko Trisolini

13:10-13:20 IAC-22/C1/IPB/69357
TO THE EXTENDED RUTHERFORD'S FORMULA AND ITS APPLICATION IN THE INTERPLANETARY MISSION DESIGN USING MULTIPLE GRAVITY ASSISTS
Alexey Grushevskii

13:20-13:30 IAC-22/C1/IPB/71120
COORDINATION AND REACTIVE CONTROL OF MULTI-SPACECRAFT FORMATIONS FOR EARTH OBSERVATION
Claudio Vela

SCREEN #40

13:00-13:10 IAC-22/C1/IPB/67224
RESONANT ORBIT FOR THE EXPANSION OF ACHIEVABLE LANDING AREAS ON THE VENUS SURFACE IN FRAMEWORK OF VENERA-D PROJECT
Vladislav Zubko

13:10-13:20 IAC-22/C1/IPB/72589
FRAMEWORK FOR ANALYZING THE COMPLEX INTERACTIONS BETWEEN SPACECRAFT MOTION AND SLOSH DYNAMICS IN LOW-G ENVIRONMENTS
William Elke

13:20-13:30 IAC-22/C1/IPB/67873
SIX DOF ANALYSIS FOR ASTEROID AUTONOMOUS EXPLORATION
Rodolfo Batista Negri

SCREEN #41

13:00-13:10 IAC-22/C1/IPB/71903
GNC OF AN CARGO SPACECRAFT ON-ORBIT SERVICING HERSCHEL AT L2
Davide Menzo

13:10-13:20 IAC-22/C1/IPB/67749
DIRECT PHASING MANEUVER IN CIS-LUNAR SPACE: SENSITIVITY AND ROBUSTNESS ANALYSIS
Catarina Antunes da Silva

13:20-13:30 IAC-22/C2/IPB/72934
ENHANCEMENT OF PASSIVE DAMPING BY USING MULTILAYERED SUPERELASTIC SHAPE MEMORY ALLOY FOR VIBRATION SUPPRESSION OF SOLAR PANEL
Jae-Hyeon Park

SCREEN #42

13:00-13:10 IAC-22/C2/IPB/69915
SPACE STRUCTURE BUILDING BLOCK INSPIRED BY DEEP-SEA GLASS SPONGES
Nedal Lehlooh

13:10-13:20 IAC-22/C2/IPB/68340
DEVELOPMENT OF THE THERMAL CONTROL UNIT USING THE SOLID-LIQUID PHASE CHANGE MATERIAL FOR MULTI-HEAT SOURCES INSTALLED ON THE KOREAN NEXTSAT-2
Taig Young Kim

13:20-13:30 IAC-22/C2/IPB/68252
INVESTIGATION ON HEAT TRANSFER CHARACTERISTIC OF PODS AT LOW TEMPERATURE
Zhenjun Zhou

SCREEN #43

13:00-13:10 IAC-22/C3/IPB/70904
THE EFFECT OF SELF-SHADOWING ON CUBESATS POWER GENERATION
Doaa Halwish

13:10-13:20 IAC-22/C3/IPB/70613
NON-UNIFORM HEATING IMPACT ON SPECIFIC IMPULSE IN NUCLEAR THERMAL PROPULSION ENGINES
Spencer Christian

13:20-13:30 IAC-22/C3/IPB/74085
THE IMPORTANCE OF EXPORT COMPLIANCE REGARDING NUCLEAR ENERGY SYSTEMS AND ITS USE IN THE SPACE INDUSTRY
Giorgio Cardile

SCREEN #44

13:00-13:10 IAC-22/C3/IPB/73311
SPACECRAFT INTEGRATED SYSTEM MODEL FOR NTP POWERED PLANETARY SCIENCE MISSIONS
Saraj Kumar

13:10-13:20 IAC-22/C3/IPB/68377
NUCLEAR BATTERIES FOR SPACE APPLICATIONS: FROM 1913 TO THE MOON AND BEYOND
Lucia Bonventre

13:20-13:30 IAC-22/C3/IPB/69269
WIPThERM: A NOVEL ENERGY HARVESTING PARADIGM FOR CUBESATS
Fermin Navarro-Medina

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SCREEN #45

13:00-13:10 IAC-22/C4/IPB/70242
NUMERICAL MODEL FOR THE PREDICTION OF THE REGRESSION RATE IN HYBRID ROCKET KICK-MOTORS WORKING WITH LIQUID NITROUS OXIDE
Giuseppe Gallo

13:10-13:20 IAC-22/C4/IPB/68246
COMPUTATIONAL STUDY OF PLASMA DETACHMENT FROM MAGNETIC NOZZLES IN APPLIED FIELD MPD THRUSTERS USING LATTICE BOLTZMANN METHOD
Hamda Al-Ali

13:20-13:30 IAC-22/C4/IPB/70469
HYBRID ROCKET ENGINES AS AN OPTION TO FUTURE APPLICATION FOR THE BRAZILIAN SPACE SECTOR
Artur Bertoldi

SCREEN #46

13:00-13:10 IAC-22/C4/IPB/72754
THERMAL ANALYSIS OF THE SCRAMJET ENGINE SYSTEM WITH BURNING FUEL
Lucas Pádua

13:10-13:20 IAC-22/C4/IPB/70105
EXPERIMENTAL STUDY ON THE INFLUENCE OF DIFFERENT OSCILLATION AMPLITUDE ON THE COMBUSTION CHARACTERISTICS OF PROPELLANT ALUMINUM PARTICLES
Jiang Yuan

13:20-13:30 IAC-22/C4/IPB/69962
FUEL REGRESSION CHARACTERISTICS OF AXIAL-INJECTION END-BURNING HYBRID ROCKETS USING NITROUS OXIDE
Mai Fukada

SCREEN #47

13:00-13:10 IAC-22/A6/IP/71421
DEVELOPMENT OF MICROSATELLITE TO DEMONSTRATE SPACE DEBRIS REMOVAL TECHNOLOGIES
Toshihisa Tanaka, Kawasaki Heavy Industries, Ltd., Japan

13:10-13:20 IAC-22/E5/IP/67566
LAGRANGE ASTEROID CITY (LAC) – ASTEROPOLIS: THE O'NEILL'S SPACE URBAN MODEL REVISITED
Werner Grandl, Space Renaissance International, Italy

13:20-13:30 IAC-22/E9/IP/70633
TOWARD A BLOCKCHAIN-SPACE NEXUS: CHALLENGES AND OPPORTUNITIES TO SECURITY, STABILITY, AND SUSTAINABILITY ON THE FINAL FRONTIER
Benjamin Shapiro, United States

SCREEN #48

13:00-13:10 IAC-22/C4/IPB/68401
STUDY OF EFFECT ON COMBUSTION FLOW-FIELD DUE TO VARIATION OF INLET BOUNDARY CONDITIONS IN DUAL-CAVITY SCRAMJET COMBUSTOR
Sourin Das, Bharati Vidyapeeth's College of Engineering, India

13:10-13:20 IAC-22/C2/IP/72677
TESTING AND MANUFACTURING OF A HYPERSONIC ROCKET FINS MOHAMMED
Mohammed Omar Nawaz, Concordia University, Canada

13:20-13:30 IAC-22/D4/IP/72331
THE WHOLE IS MORE THAN THE SUM OF ITS PARTS: UPDATES FROM THE TURTLE GROUP TOWARDS THE GLOBAL DEVELOPMENT OF A LUNAR EXPLORATION TECHNOLOGY ADAPTIVE ROADMAP
Antonino Salmeri, Polytechnic of Turin, Italy

SCREEN #49

13:00-13:10 IAC-22/E7/IP/67631
THE MULTI-LEVEL SYSTEM OF SPACE MINING: REGULATORY ASPECTS AND ENFORCEMENT OPTIONS
Antonino Salmeri, University of Luxembourg, Italy

13:10-13:20 IAC-22/A1/IP/68759
CORRELATION BETWEEN AUDIOLOGICAL AND PSYCHOPHYSIOLOGICAL STRESS PROFILE AMONG ASTRONAUTS DURING LONG-DURATION SPACEFLIGHT MISSIONS
Aya Hesham, Ain Shams University, Egypt

13:20 - 13:30 IAC-22/E5/IP/68605
GAIA: A HOLISTIC APPROACH TO ASSESS THE LOGISTICS OF MENSTRUATION IN SPACE TO DRAW PARALLELS ON EARTH
Sejal Budholiya, Space Generation Advisory Council (SGAC), India

SCREEN #50

13:00-13:10 IAC-22/E7/IPB/72091
THE PROTECTION OF A DARK AND QUIET SKY THROUGH HUMANKIND'S LEGAL LENS
Andrew Simon-Butler, University of British Columbia, Canada

13:10-13:20 IAC-22/E7/IPB/71148
SUSTAINABLE DEVELOPMENT AND SCIENTIFIC RESEARCH IN OUTER SPACE
Maria Elena De Maestri, Università degli Studi di Genova, Italy

13:20-13:30 IAC-22/E7/IPB/67839
HUMAN PLANETARY SETTLEMENTS: LEGAL ASPECTS OF FUTURE CELESTIAL GOVERNANCE
Miraslava Kazlouskaya, Space Generation Advisory Council (SGAC), Belarus

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SCREEN #1

13:00-13:10 IAC-22/C4/IPB/68383
DEVELOPMENT OF A VALIDATED MODULAR DESIGN TOOL FOR ABS-NITROUS HYBRID ROCKET ENGINES
Rolf Wubben

13:10-13:20 IAC-22/C4/IPB/70285
INTERSTELLAR SPACE EXPLORATION USING PHOTON PROPULSION
Rithika S

13:20-13:30 IAC-22/C4/IPB/69947
EXPERIMENT AND SIMULATION FOR DYNAMIC CHARACTERISTICS OF DUAL-MODE SPACE PROPULSION SYSTEM PRESSURIZED BY ELECTRIC PUMP
Chuang Zhou

SCREEN #2

13:00-13:10 IAC-22/C4/IPB/73103
ASSESSING IMPURITY EFFECTS ON LO-X/METHANE AND LO-X/ NATURAL GAS MIXTURES IN ROCKET PROPULSION SYSTEMS
Jessica Baker

13:10-13:20 IAC-22/C4/IPB/69126
ATOMISATION AND COMBUSTION OF THE ONERA / CNES HIGH PERFORMANCE GREEN MONOPROPELLANT
Lorenzo Byrde

13:20-13:30 IAC-22/C4/IPB/68061
CHALLENGES AND OPPORTUNITIES FOR ORBITAL PROPULSION
Ulrich Gotzig

SCREEN #3

13:00-13:10 IAC-22/C4/IPB/73825
CFD OPTIMIZATION OF FILM COOLING IN GREEN STORABLE BIPROPELLANT ROCKET THRUSTERS
Cezary Chmielewski

13:10-13:20 IAC-22/D1/IPB/67336
INTERNATIONAL SPACE STATIONS COMMUNICATION SYSTEM TO THE EARTH : THE EUROPEAN DATA RELAY SYSTEM FOR THE ASTRONAUTS ON ORBIT.
Jamel Metmati

13:20-13:30 IAC-22/D1/IPB/74233
OUROBOROS - A CASE STUDY IN DISTRIBUTED AGILE CONCURRENT ENGINEERING (DACE) OF SPACE MISSIONS
Daniel Erkel

SCREEN #4

13:00-13:10 IAC-22/D1/IPB/71520
A FRAMEWORK FOR COLLECTING LESSONS LEARNED FOR UNIVERSITY CUBESAT PROJECTS
Evelyn Honore-Livermore

13:10-13:20 IAC-22/D1/IPB/73606
PHOTOMETRIC ANALYSIS FOR TESTING STARLINK SOLUTIONS TO LIGHT REFLECTION MITIGATION
Lorenzo Cimino

13:20-13:30 IAC-22/D1/IPB/68681
LESSON LEARNED INNOVATIONS IN THE EUROPEAN SPACE AGENCY - FIRST STEPS IN THE APPLICATION OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING FOR IMPROVED CAPTURE OF AND LEARNING FROM OUR PAST EXPERIENCE
Andrew Herd

SCREEN #5

13:00-13:10 IAC-22/D1/IPB/74221
SOFTWARE DEVELOPMENT LESSONS LEARNED IN VOLUNTEER STUDENT-DRIVEN CUBESAT MISSIONS
Magnus Mæhlum

13:10-13:20 IAC-22/D1/IPB/68680
MOTION PLANNING OF SPACE ROBOT BASED ON GAT
Jie Li

13:20-13:30 IAC-22/D1/IPB/73767
STASIS: AN ATTITUDE TESTBED FOR HARDWARE-IN-THE-LOOP SIMULATIONS OF AUTONOMOUS GUIDANCE, NAVIGATION, AND CONTROL SYSTEMS
Gianfranco Di Domenico

SCREEN #6

13:00-13:10 IAC-22/D1/IPB/74332
REAL-TIME REMAINING USEFUL LIFE PREDICTION OF SPACECRAFT REACTION WHEELS USING HYBRID MODEL BASED ON ARTIFICIAL INTELLIGENCE TECHNIQUES
Krishna Kumar

13:10-13:20 IAC-22/D1/IPB/70503
SAFETY GUIDED SYSTEM DESIGN FOR SATELLITE MEGA-CONSTELLATIONS
Woo Seok Park

13:20-13:30 IAC-22/D1/IPB/74176
SPACECRAFT PRELIMINARY SIZING FORMULATION METHODS
Johannes Norheim

SCREEN #7

13:00-13:10 IAC-22/D1/IPB/71812
AGILE-SYSTEMS ENGINEERING FOR SUB-CUBESAT SCALE SPACECRAFT
Konstantinos Kanavouras

13:10-13:20 IAC-22/D1/IPB/73279
AN INTEGRATED DESIGN PLATFORM TO ANALYZE AND SIZE PLANETARY EXPLORATION SYSTEMS APPLIED TO LUNAR LAVA TUBE EXPLORATION.
André Roque

13:20-13:30 IAC-22/D2/IPB/69634
A SHRINKING HORIZON MODEL PREDICTIVE CONTROL FOR LANDING OF REUSABLE LAUNCH VEHICLES
Guillermo Zaragoza Prous

SCREEN #8

13:00-13:10 IAC-22/D2/IPB/67636
ON-BOARD GUIDANCE GAIN OPTIMIZATION FOR MARS EDL TRAJECTORY SHAPING
Shayna Hume

13:10-13:20 IAC-22/D2/IPB/69380
THE VERTICAL LANDING VEHICLES LIBRARY (VLVLIB): A MODELICA-BASED APPROACH TO HIGH-FIDELITY SIMULATION AND VERIFICATION OF GNC SYSTEMS FOR REUSABLE ROCKETS
Stefano Fari

13:20-13:30 IAC-22/D2/IPB/71033
DEVELOPMENT OF SIMPLE PAF: SATELLITE EMISSION SYSTEM AND ITS PERFORMANCE EVALUATION
Youichi Horie

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SCREEN #9

- 13:00-13:10** IAC-22/D2/IPB/71632
CONCEPTUAL DESIGN OF AUTONOMOUS MOBILE LANDING PLATFORM TO EXPEDITE MULTIPLE CREW AND CARGO LANDINGS.
Indra Muthuvijayan
- 13:10-13:20** IAC-22/D2/IPB/71527
STOCHASTIC CONTROL OF LAUNCH VEHICLE UPPER STAGE WITH CHANCE-CONSTRAINED SPLASH-DOWN
Boris Benedikter
- 13:20-13:30** IAC-22/D2/IPB/69867
MORAZÁN PROJECTS (MRZ-SAT): ACADEMIC FACILITIES OF THE GROUND SEGMENT OF SPACE MISSION.
Fernando José Zorto Aguilera

SCREEN #10

- 13:00-13:10** IAC-22/D2/IPB/73892
INSTANTANEOUS IMPACT POINT PREDICTION FOR SOUNDING ROCKET LAUNCH SAFETY
Maciej Michałow
- 13:10-13:20** IAC-22/D2/IPB/70100
PUNCTUAL LAUNCH STRATEGY RESEARCH OF TYPHOON RESPONSE FOR MARS EXPLORATION MISSION WITHIN ANNUAL LAUNCH WINDOW
Zheng Yan
- 13:20-13:30** IAC-22/D2/IPB/71193
CONTROL DESIGN FOR TRANSFER OF PAYLOAD BETWEEN REUSABLE ROCKET AND LOWER END OF THE SKYHOOK
Aditya Prakash

SCREEN #11

- 13:00-13:10** IAC-22/D2/IPB/67479
CISLUNAR SPACE TRANSPORTATION SYSTEM OF LARGE-SCALE CISLUNAR EXPLORATION AND EXPLOITATION IN FUTURE
Rong Chen
- 13:10-13:20** IAC-22/D2/IPB/71719
IMPACT OF LIFE CYCLE ASSESSMENT CONSIDERATIONS ON LAUNCH VEHICLE DESIGN
Thomas Bellier
- 13:20-13:30** IAC-22/D2/IPB/71742
SIRIUS SPACE SERVICES: A SUSTAINABLE AND AFFORDABLE ACCESS TO SPACE WITH A RANGE OF MINI-LAUNCH VEHICLES
Francois Maroquene-Froissart

SCREEN #12

- 13:00-13:10** IAC-22/D2/IPB/73270
DESIGN OF AN IN-SPACE TRANSPORTATION VEHICLE FOR A HUMAN EXPLORATION MISSION OF MARS
Jose Caverio
- 13:10-13:20** IAC-22/D2/IPB/72794
SPACE EXPLORATION VEHICLE EMERGENCY & NAVIGATION "SEVEN"
Natausha Chohan
- 13:20-13:30** IAC-22/D3/IPB/72639
INTERNAL CONCEPTUAL SYSTEM DESIGN OF AN INFLATABLE LUNAR SURFACE HABITAT, EUROHAB
Kyunghwan Kim

SCREEN #13

- 13:00-13:10** IAC-22/D3/IPB/70697
APPLICATION OF EMERGING INNOVATIONS IN MICROBIOME SCIENCE TO SPACE DEVELOPMENT AND SETTLEMENT SYSTEMS
Nicholas Nastasi
- 13:10-13:20** IAC-22/D3/IPB/70899
PLANETARY FOUNDATION SERVICES INFRASTRUCTURE: CURRENT STATUS AND DEVELOPMENT PATHWAYS
Jonathon Ralston
- 13:20-13:30** IAC-22/D3/IPB/67389
RECONFIGURABLE ROBOT FOR ON-ORBIT-SERVICING MODULAR SATELLITES.
Nicolas Hügel

SCREEN #14

- 13:00-13:10** IAC-22/D5/IPB/72405
CYBERSECURITY AND SPACE: ENSURING A SECURE SPACE AT THE OPERATIONAL SYSTEM LEVEL
Charles Mudd
- 13:10-13:20** IAC-22/D6/IPB/70654
REGULATING THE LIABILITY OF FUTURE IN-SITU SPACE OPERATIONS
Charles Mudd
- 13:20-13:30** IAC-22/D6/IPB/72505
A FEASIBILITY ANALYSIS OF DREAM CHASER LANDING IN AN AIRPORT IN NEPAL
Narayan Dhital

SCREEN #15

- 13:00-13:10** IAC-22/D6/IPB/71187
RAPID CONJUNCTION SCREENING BASED COLLISION AVOIDANCE FOR MEGA-CONSTELLATIONS WITH COVERAGE AND THRUST CONSTRAINTS
Hao Guo
- 13:10-13:20** IAC-22/D6/IPB/73977
OPPORTUNITIES FOR SPACE EXPLORATION UNDER THE UNITED NATIONS ACCESS TO SPACE FOR ALL INITIATIVE: ACHIEVEMENTS IN 2021-2022
Jorge Del Rio Vera
- 13:20-13:30** IAC-22/E1/IPB/72372
EXPERIENCE AND IMPACT OF THE AEROSPACE ENGINEERING GROUP (GIA) OF THE UNIVERSIDAD DE COSTA RICA FOR THE UNIVERSITY COMMUNITY AS TO THE DEVELOPMENT OF THE AEROSPACE INDUSTRY IN COSTA RICA
Leonora de Lemos

SCREEN #16

- 13:00-13:10** IAC-22/E1/IPB/72190
EFFECTIVE SCIENCE COMMUNICATION STRATEGIES TO PROMOTE SPACE SCIENCE VIA SOCIAL MEDIA
Grecia Olano O'Brien
- 13:10-13:20** IAC-22/E1/IPB/68839
NEW ASTRONOMY WITH THE UNISTELLAR NETWORK
Franck Marchis
- 13:20-13:30** IAC-22/E1/IPB/69118
COMMUNICATION IN A REMOTE WORLD: HOW DO WE TALK WHEN WE HAVEN'T MET EACH OTHER?
Melissa Sampson

Tuesday 20 September 2022

SCREEN #17

- 13:00-13:10** IAC-22/E1/IPB/71009
SUSTAINABLE DEVELOPMENT THROUGH SPACE EDUCATION FOR CHILDREN IN DEVELOPING COUNTRIES
Lily Rospeen Asongfac
- 13:10-13:20** IAC-22/E1/IPB/67954
THE STUTTGART SPACE STATION DESIGN WORKSHOP – CURRENT STATUS
Gisela Detrell
- 13:20-13:30** IAC-22/E1/IPB/70879
TEACHING AN INTERDISCIPLINARY COURSE TO A MULTIDISCIPLINARY AUDIENCE: SOCIAL STUDIES OF OUTER SPACE AT THE JAGIELLONIAN UNIVERSITY
Karlijn Korpershoek

SCREEN #18

- 13:00-13:10** IAC-22/E1/IPB/72481
LDE UNIVERSITIES SPACE FOR SCIENCE & SOCIETY PROGRAMME
Peter Batenburg
- 13:10-13:20** IAC-22/E10/IPB/71605
DO LOOK UP: A YOUNG GENERATION'S PERSPECTIVE ON PLANETARY DEFENSE
Alessia Gloder
- 13:20-13:30** IAC-22/E10/IPB/71048
ADDRESSING IMMINENT IMPACTORS THREAT FROM DISTANT RETROGRADE ORBITS (DRO).
Marta Ceccaroni

SCREEN #19

- 13:00-13:10** IAC-22/E10/IPB/71037
NEAR-EARTH ASTEROIDS SHORT-TERM EARLY WARNING AND DEFENSE BASED ON SUN-EARTH HALO ORBIT
Yu zhitong
- 13:10-13:20** IAC-22/E3/IPB/67849
THE BRAZILIAN SPACE PROGRAM: AN ANALYSIS ON INNOVATION, SPACE EXPLORATION AND ITS SOCIOECONOMIC BENEFITS
Erik Busnello Imbuzeiro
- 13:20-13:30** IAC-22/E3/IPB/74153
FRENCH VIEWS AND ACTIONS IN SPACE
Makena Young

SCREEN #20

- 13:00-13:10** IAC-22/E3/IPB/68503
MEXICO AND ITS RESOURCES FOR THE PREPARATION OF THE NEXT SPACE GENERATION.
Daniela Fernanda González Chávez
- 13:10-13:20** IAC-22/E3/IPB/71070
POLICY, REGULATORY AND DIPLOMATIC PERSPECTIVES ON THRESHOLD-BASED MODELS FOR SPACE SAFETY AND SUSTAINABILITY
Matija Rencelj
- 13:20-13:30** IAC-22/E3/IPB/69675
STEERING SPACE ACTIVITIES FOR GLOBAL BENEFITS: A CRITICAL STUDY OF THE ASIA-PACIFIC FRAMEWORK FOR PROSPECTIVE SPACE DEVELOPMENT
Naoko Sugita

SCREEN #21

- 13:00-13:10** IAC-22/E3/IPB/73783
CISLUNAR SPACE DOMAIN AWARENESS (SDA)
Francis Humphrey
- 13:10-13:20** IAC-22/E6/IPB/74287
IMPORTANCE OF GREEN FINANCE WITH PRIVATE ENTITIES' INVOLVEMENT IN THE SPACE ECONOMY
Swarnajyoti Mukherjee
- 13:20-13:30** IAC-22/E6/IPB/67705
MANAGING A STUDENT-LED TEAM TO A SUCCESSFUL SPACE MISSION: A FOCUS ON WELLBEING
Chelsea Bahenduzi

SCREEN #22

- 13:00-13:10** IAC-22/E6/IPB/72656
ENTERPRISE RISK MANAGEMENT AND INTERNAL AUDIT COLLABORATION IN AEROSPACE AND DEFENSE
Christopher Geiger
- 13:10-13:20** IAC-22/E6/IPB/68864
SCENARIO PLANNING FOR THE FUTURE OF INNOVATION IN SPACE AND EMERGING TECHNOLOGIES
S.W. Chiu
- 13:20-13:30** IAC-22/E6/IPB/73744
AN ANALYSIS OF THE REPUBLIC OF KOREA'S SPACE INDUSTRY ECOSYSTEM
Yeong-eun Hwang

SCREEN #23

- 13:00-13:10** IAC-22/E6/IPB/70701
CENTURY-SCALE SPACE ENGAGEMENT
Kevin Lewis
- 13:10-13:20** IAC-22/E6/IPB/72081
A CASE STUDY OF SMALL LAUNCH VEHICLE TECHNOLOGY ROADMAPING USING A WORKSHOP-BASED APPROACH
Junwoo Park
- 13:20-13:30** IAC-22/E6/IPB/72388
HOW TO BUILD A BOARD OF ADVISORS TO PROPEL YOUR SPACE STARTUP TO SUCCESS
Anushka Sharma

SCREEN #24

- 13:00-13:10** IAC-22/E7/IPB/70177
SPACE TRANSPORTATION SYSTEMS - LESSON LEARNED FROM PAST DEEP SPACE MISSIONS
Smit Patel, Deep Space Initiative, Germany
- 13:10-13:20** IAC-22/C1/IPB/70501
DEEP LEARNING BASED RELATIVE NAVIGATION ABOUT UNCOOPERATIVE SPACE OBJECTS
Massimo Piazza, Politecnico di Milano, Italy
- 13:20-13:30** IAC-22/LBA/C2/74587
HIGH-POWER ROCKETRY INNOVATION FOR DEVELOPMENT OF A SUSTAINABLE AEROSPACE MODEL
Diont Saharaby Landeros Ramírez, Universidad Nacional Autónoma de México (UNAM), Mexico

Tuesday 20 September 2022

SCREEN #25

13:00-13:10 IAC-22/C4/IP/70383
PROPELLANT GRAIN DESIGN FOR SOLID STRAP-ON BOOSTER OPERATING UNDER MARTIAN CONDITION AND SELECTING THE APPROPRIATE PROPELLANT.
Mahir Rawal, [unlisted], India

13:10-13:20 IAC-22/E7/IPB/70293
A COMMERCIAL SPACEFLIGHT MISSION DESIGN INCLUDING A MID-ATMOSPHERE DOCKING SYSTEM FOR A TOURIST CAPSULE AND LANDING VEHICLE
Spoorthi M.S.

13:20-13:30 IAC-22/C4/IPB/70922
ADVANTAGE OF USING TURBOPUMP IN HYBRID ROCKET APPLICATIONS
Mert Atasoy, Deltav Space Technologies, Inc., Turkey

SCREEN #26

13:00-13:10 IAC-22/C1/IPB/68607
THERE IS NO "I" IN SPACE: INTEGRATION OF PBL AND SEL IN THE RAMON SPACELAB
Lior Ron, Israel

13:20-13:30 IAC-22/E9/IPB/67270
ENSURING CYBERSECURITY IN SPACECRAFT SOFTWARE DEVELOPMENT PROCESSES: EXPERIENCE FROM INTERNATIONAL COOPERATION
Artem Lomakin

SCREEN #27

13:00-13:10 IAC-22/E9/IPB/69888
INTERNATIONAL NORM PROMOTION STRATEGIES FOR SPACE TRAFFIC MANAGEMENT
Quentin Verspieren

13:10-13:20 IAC-22/E9/IPB/72540
THE CONTRIBUTION OF SPACE OBJECTS INSURANCE REGULATIONS TO SPACE TRAFFIC MANAGEMENT
Luinaud Mathieu

13:20-13:30 IAC-22/LBA/A1/74411
BEXUS 30, SIMPLE STARDUST - INVESTIGATION OF MICROBES IN THE STRATOSPHERE
Marcin Jasiukowicz

SCREEN #28

13:00-13:10 IAC-22/LBA/A1/74408
INVESTIGATION OF THE IMPACT OF THE ROCKET'S SUBORBITAL FLIGHT ON BIOFILM, ENZYMES AND BIOSYNTHESIS ON AUTONOMOUS, MODULAR AND SCALABLE PLATFORM FOR CONDUCTING EXPERIMENTS OF AN ASTROBIOTECHNOLOGICAL NATURE
Bartosz Rybacki

13:10-13:20 IAC-22/LBA/A1/74509
HUMAN PERFORMANCE TRAINING FOR SPACE ANALOG MISSIONS
Emily Apollonio

13:20-13:30 IAC-22/LBA/A1/74467
TRANSCRIPTOMIC ANALYSIS OF ANGIOGENESIS ON DATASETS DERIVED FROM EXPERIMENTS PERFORMED ON MICE IN SPACE
Subhrajit Barua

SCREEN #29

13:00-13:10 IAC-22/LBA/A2/74538
SPINNER - CENTRIFUGAL FLUID TRANSFER IN MICROGRAVITY
Michael Luu

13:10-13:20 IAC-22/LBA/A2/74533
LARES 2 MISSION IN ORBIT: FIRST TRACKING RESULT AFTER THE LAUNCH.
Claudio Paris

13:20-13:30 IAC-22/LBA/A2/74475
DEVELOPMENT OF A LOW-COST APPARATUS TO ASSESS AUDITORY COGNITIVE RESPONSES IN MICROGRAVITY FLIGHTS
José Pedro Ferreira

SCREEN #30

13:00-13:10 IAC-22/LBA/A3/74434
MICROPHONES FOR FUTURE MARS MISSIONS AND BEYOND.
Anand Kumar Singh

13:10-13:20 IAC-22/LBA/A3/74588
THE LATEST ACTIVITIES AND INNOVATIONS FOR THE PARACHUTE-FREE LANDING ANALYSIS EFFORTS FOR MARS SAMPLE RETURN VEHICLE
Cameron Grace

13:20-13:30 IAC-22/LBA/A3/74519
QUICK SETUP LUNAR/MARTIAN BASE CAMP IMPLANTED INTO LAVA TUBE DERIVED FROM JASMINE DIMPLES AND LOW CURVATURE FOLDING
Jun Sato

SCREEN #31

13:00-13:10 IAC-22/LBA/A3/74561
DESIGN OF A MULTIPLE ASTEROID SAMPLE RETURN MISSION USING AN OPTIMAL FREE-RETURN FLYBY TRAJECTORY
Mehdi Lali

13:10-13:20 IAC-22/LBA/A4/74448
SEARCHING FOR TECHNOSIGNATURES IN ANOMALOUS TESS LIGHT CURVES: DATABASE AND FOLLOW-UP TECHNIQUES
Daniel Giles

13:20-13:30 IAC-22/LBA/A5/74495
NEUROFEEDBACK EEG LOWERS THE STRESS REACTION IN PSYCHOMOTORIC ABILITIES EXECUTION LEVEL DURING ANALOG MOON MISSION
Marcin Dornowski

SCREEN #32

13:00-13:10 IAC-22/LBA/A6/74473
QUANTIFYING SPACECRAFT DEMISE BYPRODUCTS IN THE ERA OF MEGA-CONSTELLATIONS
José Pedro Ferreira

13:10-13:20 IAC-22/LBA/A6/74395
DEEP LEARNING BASED REENTRY PREDICTION OF SPACE DEBRIS
Okchul Jung

13:20-13:30 IAC-22/LBA/A6/74421
SPACE DEBRIS LIMITATION IN LEO: A SURVEY OF RESPONSIBILITY AND INCENTIVES FROM THE U.S. BUSINESS PERSPECTIVE
Janet Tinoco

SCREEN #33

13:00-13:10 IAC-22/LBA/A7/74599
AMPLIFICATION OF THE ENERGY OF COSMIC RELIC NEUTRINOS
Vali Huseynov

13:10-13:20 IAC-22/LBA/B1/74577
A NEW DATA SET OF MULTI-MISSION/MULTI-FREQUENCY SAR DATA FOR MARITIME MONITORING: FIRST RESULTS AND CRITICAL ANALYSIS
Roberto Del Prete

13:20-13:30 IAC-22/LBA/B5/74562
ESA OPPORTUNITY: BUSINESS IDEAS FOR LUNAR ECONOMY APPLICATIONS
Christian Walter

SCREEN #34

13:00-13:10 IAC-22/LBA/C1/74549
RELATIVE MOTION BETWEEN HYPERBOLIC TRAJECTORIES
Robert G. Melton

13:10-13:20 IAC-22/LBA/C1/74504
DESIGN AND STUDY OF SATELLITE CONSTELLATIONS IN FROZEN LOW LUNAR ORBITS
Sergey Trofimov

13:20-13:30 IAC-22/LBA/C1/74494
A LAMBERT'S PROBLEM SOLUTION VIA THE KOOPMAN OPERATOR WITH ORTHOGONAL POLYNOMIALS
Julia Pasiecznik

SCREEN #35

13:00-13:10 IAC-22/LBA/C1/74438
A MULTISENSOR DATA FUSION APPROACH FOR SPACECRAFT CONTROL EXPERIMENTS WITH THE KNATTE PLATFORM
Cristóbal Nieto Peroy

13:10-13:20 IAC-22/LBA/C2/74567
SPACE ARCHITECTURE - ADVANCED MATERIAL HABITAT STRUCTURES
Daniel Inocente

13:20-13:30 IAC-22/LBA/C2/74502
THERMAL DESIGN OPTIMIZATION FOR MICROSATELLITE CONSTELLATIONS
Lysanne Page

SCREEN #36

13:00-13:10 IAC-22/LBA/C2/74483
ANALYSIS OF NATURAL FIBER MATERIALS WITH EPOXY MATRICES IN THE AEROSPACE SECTOR.
María Paulina Pantoja Gavidia

13:10-13:20 IAC-22/LBA/C2/74459
CIO PRESENTATION TO DEEP SPACE FOOD CHALLENGE NASA & CSA
Carlos Juan Jose Von Hauske

13:20-13:30 IAC-22/LBA/C2/74539
CO-SIMULATION OF SPACE ROBOTIC CONTACT TASKS USING REDUCED FLEXIBLE MODEL
Xu Dai

SCREEN #37

13:00-13:10 IAC-22/LBA/C4/74527
TOWARDS NEW HYPERGOLIC HYDROGEN PEROXIDE-BASED BI-PROPELLANTS
Stefania Carlotti

13:10-13:20 IAC-22/LBA/C4/74596
POST HOT FIRE ANALYSIS OF THE WORLD'S MOST POWERFUL STUDENT-BUILT ROCKET ENGINE.
Oleg Khalimonov

13:20-13:30 IAC-22/LBA/C4/74526
A NEW FIRING TEST CAMPAIGN ON THE 1000 N THRUST-CLASS HYPROB HYBRID ROCKET ENGINE
Daniele Cardillo

SCREEN #38

13:00-13:10 IAC-22/LBA/C4/74520
CONTROLLED COMBUSTION OF SOLID ROCKET PROPELLANTS WITH ELECTROMECHANICAL SUBSYSTEMS
Sriram Kumar

13:10-13:20 IAC-22/LBA/C4/74522
OVERVIEW OF TESTING AND MANUFACTURING OF AN ABLATIVE COMBUSTION CHAMBER FOR A LIQUID BI-PROPELLANT ROCKET ENGINE
George Defo

13:20-13:30 IAC-22/LBA/C4/74469
GREEN PROPELLANT FOR SPACE APPLICATIONS: LESSONS LEARNED
Djamal Darfilal

SCREEN #39

13:00-13:10 IAC-22/LBA/C4/74433
SURVEY ON THE GREEN PROPULSION SYSTEMS: FROM THE LAB SCALE TO THE PILOT SCALE-UP, HAN IS A GOOD EXAMPLE
Rachid Amrousse

13:10-13:20 IAC-22/LBA/D2/74488
DEVELOPMENT OF A CRYO-DOCK FOR REFUELING IN LOW EARTH ORBIT
William Notardonato

13:20-13:30 IAC-22/LBA/D3/74424
DEVELOPMENT OF A ROBOTIC FLUID TRANSFER INTERFACE BASED ON RIDER CONNECTOR
Gonzalo Guerra

SCREEN #40

13:00-13:10 IAC-22/LBA/D4/74593
SPACE STRATEGIES FOR EMERGING ACTORS - A PORTFOLIO-BASED APPROACH
Daniel Erkel

13:10-13:20 IAC-22/LBA/D4/74544
GEOSPATIAL MEDICINE AND NAVIGATIONAL TOOLS AS A WAY TO TRANSCEND LINEAR STUDY STRATEGIES IN THE LIGHT OF AMEIOBLASTIC CARCINOMA. A NEW APPROACH TO THE EPIDEMIOLOGICAL TREATMENT OF CANCER.
Jordi Sandalinas

13:20-13:30 IAC-22/LBA/D4/74514
IMPACT OF ARTIFICIAL SATELLITES CONSTELLATIONS ON HONEYBEES, AND ON CLIMATE CHANGE
Bernarda Loretto Sanjines

Tuesday 20 September 2022

SCREEN #41

13:00-13:10 IAC-22/LBA/D5/74580
EVALUATING A PHARMACY TO A SPACE ANALOG STATION
Julio Rezendé

13:10-13:20 IAC-22/LBA/E1/74430
SPACE IS FOR EVERYONE: CURRICULUM FOR CHILDREN ON SPACEPORTS AND CAREERS
Janet Tinoco

13:20-13:30 IAC-22/LBA/E1/74606
DEVELOPMENT OF A SEMI-AUTONOMOUS LOW-COST ROVER FOR PARTICIPATION IN THE EUROPEAN ROVER CHALLENGE (ERC) 2022
Juan Pablo Morales

SCREEN #42

13:00-13:10 IAC-22/LBA/E3/74398
ESTABLISHMENT OF KOREA'S NEW SPACE AGENCY
Jong-Bum Kim

13:10-13:20 IAC-22/LBA/E5/74600
THE HEAT IS ON: WILDFIRES IN PORTUGAL
I. Pessôa-Lopes

13:20-13:30 IAC-22/LBA/E5/74591
EVALUATION OF THE OVERVIEW EFFECT EXPERIENCE IN A SPACE ANALOG MISSION
Julio Rezendé

SCREEN #43

13:00-13:10 IAC-22/LBA/E5/74471
NEW FRONTIERS LUNAR SPACE ARCHITECTURE
Daniel Inocente

13:10-13:20 IAC-22/LBA/E5/74585
CONSTRUCTING NASA'S CREW HEALTH AND PERFORMANCE EXPLORATION ANALOG (CHAPEA): A 3D-PRINTED HABITAT BY ICON/BIG
Melodie Yashar

13:20-13:30 IAC-22/LBA/E5/74581
SPACE VEHICLE OUTFITTING AND INTERIORS: ESTABLISHING A PLATFORM FOR COLLABORATION BETWEEN INDUSTRY AND ACADEMIA AS AN ACCELERATOR FOR HUMAN-CENTERED DESIGN
Melodie Yashar

SCREEN #44

13:00-13:10 IAC-22/LBA/E5/74584
INNOVATION AND ANALYSIS OF EARLY CHILDHOOD EDUCATION METHODS FOR STIMULATION, INCLUSION AND REDUCTION OF THE GENDER GAP FOR GIRLS AND WOMEN IN THE AEROSPACE SECTOR
Valery Pérez Avendaño

13:10-13:20 IAC-22/LBA/E6/74399
EXPORT CONTROL AFTER THE WAR IN UKRAINE: THE END OF SPACE COOPERATION AS WE KNOW IT
Dimitra Stefoudi

SCREEN #45

13:10-13:20 IAC-22/A4/IP/72688
THE INVISIBLE SIGNS OF EXTRATERRESTRIAL INTELLIGENCE
Tudor-Sebastian Robu, Romania

13:20-13:30 IAC-22/A4/IP/67763
CONNECTING EARTHLINGS: FROM PEACE CRANES TO THE ARECIBO MESSAGE.
Elisabeth Pioletat, CNRS, France

SCREEN #46

13:00-13:10 IAC-22/A4/IP/70215
THEORETICAL AND PRACTICAL MODIFICATION OF DRAKE'S EQUATION
Rohan Gharate, India

13:10-13:20 IAC-22/A4/IP/71749
WHAT IF OUMUAMUA WERE AN ALIEN CRAFT? RESEARCH PROGRAMS ARISING.
Martin Elvis, Harvard-Smithsonian Center for Astrophysics (CfA), United States

13:20-13:30 IAC-22/A4/IP/67836
OTHER MINDS IN THE UNIVERSE?
Pauli Laine, Finland

SCREEN #47

13:00-13:10 IAC-22/LBA/E5/74573
HORTICULTURAL THERAPY IN SPACE ANALOG MISSIONS: LEARNINGS TO SPACE EXPLORATION
Natalia Hazbun, Brazil

13:10-13:20 IAC-22/A6/IPB/74274
ADR SPACECRAFT FOR DEBRIS REUSE AND REPURPOSING
Troy Morris, United States

13:20-13:30 IAC-22/A5/IP/68223
DIRECT OR NOT DIRECT, THAT IS THE CRITERION
Jean-Marc Salotti, Laboratoire de l'Intégration du Matériau au Système, France

SCREEN #48

13:00-13:10 IAC-22/B1/IP/73381
GXIBA-1 PROJECT, OBSERVATION AND THE ANALYSIS OF ASH DISPERSION EMITTED FROM ACTIVE VOLCANOES IN MEXICO.
Hector Simon, Vargas Martinez, Universidad Popular Autónoma del Estado de Puebla, Mexico

13:10-13:20 IAC-22/LBA/B1/74451
MWIR REMOTE SENSING MARKET AND TECHNOLOGIES
Uri Greisman Ran, Israel

13:20-13:30 IAC-22/LBA/B5/74419
SATELLITE-BASED AIR TRAFFIC MANAGEMENT (ATM) SYSTEMS' IMPACT ON CO2 EMISSIONS
Elias Montanari, Czech Republic

SCREEN #49

13:00-13:10 IAC-22/A5/IPB/68729
ADVANCED PROPULSION FOR FAST LUNAR MISSIONS
Giancarlo Genta, Italy

13:10-13:20 IAC-22/E6/IP/74248
ROBUST MONOCULAR POSE INITIALIZATION VIA VISUAL AND THERMAL IMAGE FUSION
Michele Bechini, Politecnico di Milano, Italy

13:20-13:30 IAC-22/E3/IP/68826
BRAZIL'S FIRST STEPS IN THE COMMERCIAL SPACE LAUNCH SECTOR: WHAT HAS BEEN DONE IN THE PAST TWO YEARS?
Thais Pedrosa, Brazilian Space Agency (AEB)

Wednesday 21 September 2022

SCREEN #1

13:30-13:40 IAC-22/A1/IP/67796
AN OCULAR METRIC STANDARD TO ASSESS THE PERFORMANCE OF OCULAR SYSTEM FOR LONG DURATION IN-FLIGHT USE
kimia seyedmadani, University of Houston, United States

13:40-13:50 IAC-22/A1/IP/67535
SPACEFLIGHT ASSOCIATED NEURO-OCULAR SYNDROME (SANS): A NEW SCALE TO DETECT THE INCIDENCE AND SEQUENCE OF SANS FINDINGS IN A SYSTEMATIC REVIEW AND META-ANALYSIS
Aya Hesham, Ain Shams University, Egypt

13:50-14:00 IAC-22/A1/IP/70942
MICROGRAVITY-INDUCED ALTERATIONS OF CARDIAC MECHANICAL ACTIVITY ASSESSED THROUGH THE ANALYSIS OF SEISMOCARDIOGRAPHIC SIGNAL MORPHOLOGY
Sarah Solbiati, Politecnico di Milano, Italy

14:00-14:10 IAC-22/A1/IP/73710
SPACE TRAVEL AND ITS IMPACT ON HUMAN PHYSIOLOGY: IS SPACE TRULY FOR ALL?
Rithika Chunduri, Spaceonova, India

14:10-14:20 IAC-22/A1/IP/74333
PROSPECT OF AGRONOMICS ON MARTIAN REGOLITH: ACCORDING TO APPROPRIATE MINERALOGICAL REGIONS OF BOTH SURFACE AND LAVA TUBES.
Adwait Sidhana, University of Petroleum and Energy Studies, India

14:20-14:30 IAC-22/A1/IP/71979
MENSTRUATION IN SPACE
Krishna Bulchandani, India

14:30-14:40 IAC-22/A1/IP/71762
EFFECTS OF LONG-DURATION SPACEFLIGHT ON GREY MATTER OF CNS
Krishna Bulchandani, India

14:40-14:50 IAC-22/A1/IP/71846
UNDERSTAND THE ORIGIN AND EVOLUTION OF LIFE ON MARS VIA EXTREMOPHILES
Krishna Bulchandani, India

14:50-15:00 IAC-22/A1/IP/67795
A THEORY FOR UNEXPLAINED VASODILATION WITH ELEVATED NORADRENALINE LEVELS IN SPACEFLIGHT.
Mimi Lan, Dartmouth College, United States

SCREEN #50

13:00-13:10 IAC-22/LBA/A3/74446
INTERSTELLAR PROBE: 15 YEARS TO THE INTERSTELLAR MEDIUM WITH AN ENHANCED NASA SPACE LAUNCH SYSTEM
Jennifer Bowman, United States

13:10-13:20 IAC-22/A3/IP/74032
CREATING A TERRESTRIAL ROVER PROTOTYPE FOR A TITAN ROVER CONCEPT
Chintan Rank, India

13:20-13:30 IAC-22/B2/IP/69493
SHARJAH-SAT-1 SPACE-TO-GROUND TELECOMMUNICATION OPERATIONS
Yousuf Faroukh Sharjah, Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

SCREEN #2

13:30-13:40 IAC-22/A1/IP/73015
WHY DOES CENTRAL VENOUS PRESSURE GO BELOW SUPINE LEVELS IN WEIGHTLESSNESS?
Mimi Lan, Dartmouth College, United States

13:40-13:50 IAC-22/A1/IP/71873
LONGITUDINAL BRAIN CONNECTIVITY CHANGES AFTER LONG-DURATION SPACEFLIGHT
Steven Jillings, University of Antwerp, Belgium

13:50-14:00 IAC-22/A1/IP/73691
AN EXAMINATION OF ARTERIAL BAROREFLEX AND HEART RATE VARIABILITY FOLLOWING INDIVIDUALISED ARTIFICIAL GRAVITY TRAINING IN MALES AND FEMALES
Donya Naz Divsalar, Simon Fraser University, Canada

14:00-14:10 IAC-22/A1/IP/69659
THE EFFECT OF PREVIOUS SPACEFLIGHT ON OTOLITH-MEDIATED OCULAR COUNTER-ROLL IN COSMONAUTS AFTER LONG DURATION SPACEFLIGHT
Catho Schoenmaekers, Belgium

14:10-14:20 IAC-22/A1/IP/67583
AN IN VITRO ANALYSIS OF OSTEOBLAST TRANSCRIPTION FACTORS IN LOW EARTH ORBIT VIA ISS INTERNAL PAYLOAD AND CUBESAT FORM FACTOR
Kevin Simmons, BLUECUBE Aerospace, United States

14:20-14:30 IAC-22/A1/IP/68908
BODY TILT IMPACTS OPERATORS' PERCEPTION OF REMOTE OBJECT'S ORIENTATION
Maëlis LEFEBVRE [unlisted], France

14:30-14:40 IAC-22/A1/IP/69798
IMPLEMENTING NEW FEATURES IN CIMON ROBOT FOR PROVIDING THERAPEUTIC ASSISTANCE TO ASTRONAUTS IN SITUATIONS OF EXTREME STRESS AND DEPRESSION.
Pallabi Das, Spaceonova, India

14:40-14:50 IAC-22/A1/IP/71540
THE ISSUES OF INTEGRATION AND COORDINATION OF SCIENTIFIC PROGRAMS IN LARGE-SCALE INTERNATIONAL BIOMEDICAL ANALOG RESEARCH
Anna Kussmaul, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation

14:50-15:00 IAC-22/A1/IP/67518
EFFECTS OF NEGATIVE AIR IONS (NAIS) AND ELECTRON DEPRIVATION ON HUMANS AND ORGANISMS ONBOARD INTERNATIONAL SPACE STATION
Kolemann Lutz, Mars University, United States

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SCREEN #3

13:30-13:40 IAC-22/A1/IP/72660
EFFECTS OF HYPOMAGNETIC FIELD AND PEMF ON PLANTS FOR LIFE SUPPORT
Kolemann Lutz, Mars University, United States

13:40-13:50 IAC-22/A1/IP/68013
DEEP SPACE MISSIONS: CAN A VIRTUAL REALITY (VR) BIOFEEDBACK PLATFORM BASED ON THE OVERVIEW EFFECT EXPERIENCE STRENGTHEN INTEROCEPTION, ELICIT PROSOCIAL EMOTIONS, AND STRENGTHEN ENVIRONMENTAL RELATEDNESS?
Annahita Nezami, City University of London, United Kingdom

13:50-14:00 IAC-22/A1/IP/73224
A FOOD AND NUTRITION PLAN FOR SPACE FLIGHT TO MARS - HEALTHY GUT MICROBIOME TAKES US TO MARS!
Zsuzsanna Benyó, [unlisted], Hungary

14:00-14:10 IAC-22/A1/IP/70416
TESTING LAB-ON-A-CHIP TECHNOLOGY FOR CULTURING HUMAN CANCER CELLS UNDER SIMULATED MICROGRAVITY
Dawid Przystupski, Wroclaw Medical University, Poland

14:10-14:20 IAC-22/A1/IP/67373
WHAT IF WE CAN'T? A REVIEW OF HUMAN PHYSIOLOGICAL LIMITATIONS TO LONG-TERM SPACE FLIGHT AND LIVING IN SPACE
Lawrence Winkler, Canada

14:20-14:30 IAC-22/A1/IP/72782
ELECTROPHYSIOLOGICAL RECORDING OF HUMAN NEURONAL NETWORKS DURING SUBORBITAL SPACEFLIGHT
Andie Padilla, The University of Texas at El Paso, United States

14:30-14:40 IAC-22/A1/IP/71107
COGNITIVE, EMOTIONAL AND SOCIAL SKILLS FOR AEROSPACE AND HIGH-PERFORMANCE TEAMS
Celia Avila-Rauch, ILEWVG EuroMoonMars, Germany

14:40-14:50 IAC-22/A1/IP/72370
ABSTRACT: AN APPROACH TO APPROPRIATE AND DIGNIFIED ASTRONAUT DEMISE MANAGEMENT FOR MARS MISSIONS.
Lisa McNamee, Ireland

14:50-15:00 IAC-22/A1/IP/71988
CARDIOVASCULAR DECONDITIONING DURING THE ARTIFICIAL GRAVITY BED REST EUROPEAN SPACE AGENCY (AGBRESA) STUDY - INSIGHTS FROM 4D-FLOW CARDIAC MRI
Margot Issertine, Université Libre de Bruxelles, Belgium

SCREEN #4

13:30-13:40 IAC-22/A1/IP/72543
MUSCLE ATROPHY TRANSCRIPTOME PHENOTYPE IS LINKED TO LIVER LIPID METABOLIC PROCESSES GENES EXPRESSION IN MICE DURING SPACEFLIGHT
Geraldine Vitry, International Space University (ISU), France

13:40-13:50 IAC-22/A1/IP/68840
PROFESSIONAL USE OF PARAPSYCHISM AT SPACE EXPLORATION
Anibal Bentes, Brazil

13:50-14:00 IAC-22/A1/IP/72612
BEING IN SPACE CAN INDUCE PHYSIOLOGICAL DE-CONDITIONING
Mario Itaque, [unlisted], Italy

14:00-14:10 IAC-22/A1/IP/72595
EXERCISE COUNTERMEASURES DO NOT PREVENT ORTHOSTATIC INTOLERANCE IN OLDER ADULTS AFTER TWO WEEKS OF HEAD-DOWN TILT BED REST
Eric Hedge, University of Waterloo, Canada

14:10-14:20 IAC-22/A1/IP/69576
SALMONELLA TYPHIMURIUM, SHEWANELLA ONEIDENSIS MR-1, AND ISS-ISOLATED STAPHYLOCOCCUS EPIDERMIDIS: THE EFFECT OF SIMULATED MICRO-, LUNAR, AND MARTIAN GRAVITIES ON GROWTH AND SIZE, AND PRACTICAL IMPLICATIONS
Lily A. Allen, University of Colorado Boulder, United States

14:20-14:30 IAC-22/A1/IP/72355
EFFECTS OF INHIBITING BONE RESORPTION ON MUSCLE ATROPHY DURING UNLOADING
Sophie Orr, UC Davis, United States

14:30-14:40 IAC-22/A1/IP/70505
EXPERIENCE OF ANALOG ASTRONAUTS IN BRAZIL: THE HABITAT MARS CASE STUDY
Lorraine Araujo, [unlisted], Brazil

14:40-14:50 IAC-22/A1/IP/71310
SERUM LEVELS OF BONE METABOLISM MARKERS IN RATS AFTER 7 AND 21 DAYS OF HINDLIMB SUSPENSION AGAINST A BACKGROUND OF VITAMIN D3 INTAKE
Nadezhda Lukicheva, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation

14:50-15:00 IAC-22/A1/IP/67262
KEY TECHNOLOGICAL DEVELOPMENTS ENABLING HUMAN COSMIC FLIGHT
Nghi Nguyen, [unlisted], United States

SCREEN #5

13:30-13:40 IAC-22/A1/IP/73872
MICROBIAL COLONIZATION OF MARS
Rakhya Ranjan Nanda, Spaceonova, India

13:40-13:50 IAC-22/A1/IP/74223
CACTUS ON MARS: CULTIVATING INDIGENOUS PLANTS ON MARS: EXPERIMENTS ON HABITAT MARTE SPACE ANALOG STATION
Julio Rezende, Federal University of Rio Grande do Norte (UFRN), Brazil

13:50-14:00 IAC-22/A1/IP/71801
IMPROVEMENT OF SUBJECTIVE TIME PERCEPTION AND WORK EFFICIENCY IN ISOLATION VIA DEDICATED BIOFEEDBACK ANDROID APPLICATION MSTPA (MOBILE SUBJECTIVE TIME PERCEPTION ANALYSIS)
Mateusz Daniol, AGH University of Science and Technology, Poland

14:00-14:10 IAC-22/A1/IP/70230
SYSTEMATIC REVIEW OF THE EFFECTIVENESS OF SPACEFLIGHT PASSIVE COUNTERMEASURES
Syed Ahmed, ESA, European Astronaut Centre (EAC), Canada

14:10-14:20 IAC-22/A1/IP/70994
ASTROLAND, A NEW CAVE SPACE ANALOG EXPERIENCE TO INVESTIGATE HUMAN PERFORMANCE IN ISOLATED AND CONFINED ENVIRONMENTS
Gabriel G. De la Torre, University of Cádiz, Spain

14:20-14:30 IAC-22/A1/IP/72425
MAGNETIC AND ELECTRIC NONINVASIVE TRANSCRANIAL AND PERIPHERAL STIMULATION PROPOSED APPLICATIONS FOR ORAL PHYSIOLOGY AND BIOMECHANICS RESEARCH IN MICROGRAVITY. LESSON LEARNED FROM ORAL PATHOLOGY AND AGEING STUDIES.
Cristian Vizitiu

14:30-14:40 IAC-22/A1/IP/70304
A NOVEL APPROACH TO MITIGATE MICROGRAVITY INDUCED BONE LOSS IN ASTRONAUTS
Archita V

14:40-14:50 IAC-22/A1/IP/70875
POSSIBILITY TO EXPAND OPPORTUNITY WITH LARGE-SCALE CENTRIFUGE FACILITY FOR THE INTERNATIONAL SPACE STATION AND BEYOND
Akihiro Takamura

14:50-15:00 IAC-22/A2/IP/71735
MICROGRAVITY-LIKE EFFECTS CAN BE SIMULATED VIA MENTAL IMAGERY: THE CASE OF WEIGHT ESTIMATION
Nicola Mammarella [unlisted], Italy

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SCREEN #6

13:30-13:40 IAC-22/A2/IP/68484
SURFACE ELECTROMYOGRAPHY PROVIDES NEUROMUSCULAR INSIGHTS FOR SKILL ACQUISITION IN MICROGRAVITY
Matthew Yough, West Virginia University, United States

13:40-13:50 IAC-22/A3/IP/69949
LUNAR CRATER RADIO TELESCOPE AND CRITICAL ENGINEERING ISSUES: PROBING THROUGH THE DAWN OF THE UNIVERSE
Jeyasiona M.J, Indian Institute of Technology Kharagpur, India

13:50-14:00 IAC-22/A3/IP/69242
DIRECTED ENERGY, MISSION TO A NEARBY STAR SYSTEM
kimberly kimsanton sofje, ISU, France

14:00-14:10 IAC-22/A3/IP/72669
A SOFT, BIOINSPIRED SWIMMING SPACE PROBE: A MISSION CONCEPT FOR THE EXPLORATION OF THE OUTER SOLAR SYSTEM'S OCEAN WORLDS.
Valentina Lo Gatto, The University of Bristol, United Kingdom

14:10-14:20 IAC-22/A3/IP/70015
QUANTUM TECHNOLOGY, ARTIFICIAL INTELLIGENCE, MACHINE LEARNING, AND ADDITIVE MANUFACTURING IN THE ASIA-PACIFIC FOR MARS EXPLORATION
Mikhael Sayat, University of Auckland, New Zealand

14:20-14:30 IAC-22/A3/IP/72323
LOW-COST TENSEGRITY DROP MODULE
Louis Rizzo, University at Buffalo, United States

14:30-14:40 IAC-22/A3/IP/72458
THE TUMBLEWEED MISSION: ENABLING NOVEL MARS DATA SETS THROUGH LOW-COST ROVER SWARMS
Julian Rothenbuchner, [unlisted], The Netherlands

14:40-14:50 IAC-22/A3/IP/67957
MARS HARD LANDER: A PARAMETRIC STUDY
Davide Coco, Student, Italy

14:50-15:00 IAC-22/A3/IP/74215
DEVELOPMENT OF SCIENTIFIC OBJECTIVES AND MISSION PROFILE FOR A TITAN ROVER CONCEPT
Roy Ramirez [unlisted], Costa Rica

SCREEN #7

13:30-13:40 IAC-22/A3/IP/72804
BIOMECHANICS EXPEDITION TECHNOLOGIES
Antony Ramirez, BioMechanics Expedition Technologies (BioMechaX), Costa Rica

13:40-13:50 IAC-22/A3/IP/69534
GEOPOLYMER LUNAR CONCRETE UNDER REDUCED-PRESSURE CURING AND VACUUM EXPOSURE
Peter Collins, Pennsylvania State University, United States

13:50-14:00 IAC-22/A3/IP/71889
LUNADRONE: NANO DRONE FOR LUNAR EXPLORATION
Stefano Pescaglia, Politecnico di Torino, Italy

14:00-14:10 IAC-22/A3/IP/73284
DETECTING AND INVESTIGATING SPACE WEATHER EVENTS AROUND MARS WITH EDAC COUNTERS
Shayla Viet, Norwegian University of Science and Technology, Norway

14:10-14:20 IAC-22/A3/IP/67313
FORCE FIELD LUNAR DUST BARRIER FOR SUSTAINABLE ENVIRONMENT ON MOON
Abhay Kaushik Nudurupati, University of Petroleum and Energy Studies, India

14:20-14:30 IAC-22/A3/IP/67398
AIRFOIL OPTIMIZATION WITH ANALYTICAL SIMULATIONS FOR APPLICATION OF GROUND EFFECT ON MARS
Harshita Saxena, University of Petroleum and Energy Studies, India

14:30-14:40 IAC-22/A3/IP/73371
BUZZCRAFT: EVOLUTION OF STURDY Cislunar ARCHITECTURE IN SUPPORT OF 2024 ARTEMIS LUNAR LANDING AND BEYOND
Bradley Manucha, University of Southern California, United States

14:40-14:50 IAC-22/A3/IP/68431
X-RAY FLUORESCENCE FOR MOON EXPLORATION AND EXPLOITATION
Alain Carapelle Université de Liège, Belgium

14:50-15:00 IAC-22/A3/IP/72832
AN ON-BOARD AI-AIDED GNC FOR SAFE LUNAR LANDING VIA PARTICLE SWARM AND GPU-OPTIMIZED CONVOLUTIONAL NEURAL NETWORKS
Andrea Carbone, Scuola di Ingegneria Aerospaziale La Sapienza, Italy

SCREEN #8

13:30-13:40 IAC-22/A3/IP/73308
RAPID PROTOTYPING ATMOSPHERIC KITE PROPULSION ROVER
Erin Kennedy, Robot Missions Inc, Canada

13:40-13:50 IAC-22/A3/IP/68650
A NOVEL APPROACH BASED ON SHADOW OF SOLAR ARRAY FOR AUTONOMOUS NAVIGATION OF SPACECRAFT FOR ASTEROID EXPLORATION
Jinrong Guo, Qingdao University of Science and Technology, China

13:50-14:00 IAC-22/A3/IP/69272
3D SHAPE ANALYSIS OF LUNAR REGOLITH SIMULANTS
Kemal Celik, New York University Abu Dhabi, United Arab Emirates

14:00-14:10 IAC-22/A3/IP/70082
DESIGN OF A DUST COUNTER FOR THE EARTH-MOON CHALLENGE PAYANKEU SAILCRAFT
Simon Maillot, Institute of Polytechnic Science and Aeronautics (IPSA), France

14:10-14:20 IAC-22/A3/IP/73088
ASSESSMENT OF THE PAYLOADS THAT CAN BE DELIVERED TO THE MOON FROM UK SPACEPORTS
Dale Wyllie, UK Space Agency, United Kingdom

14:20-14:30 IAC-22/A3/IP/72700
EXPERIMENTAL INVESTIGATION OF LUNAR REGOLITH SIMULANTS MIXING OTHER MATERIALS IN SELECTIVE LASER PROCESSING
Kyunghwan KIM, International Space University (ISU), France

14:30-14:40 IAC-22/A3/IP/72438
LUNAR REGOLITH PARTICLE CLASSIFICATION USING A DEEP LEARNING APPROACH
Hira Nadeem, Institute for Earth and Space Exploration, Western University, Canada

14:40-14:50 IAC-22/A3/IP/72437
SCIENTIFIC ANALYSIS AND ACCESSIBILITY OF POTENTIAL LANDING SITES FOR ESA'S PROSPECT INSTRUMENT
Sarah Boazman, ESTEC, European Space Agency, The Netherlands

14:50-15:00 IAC-22/A3/IP/73512
HELIOS-LUNE TRANQUILLITAS: ARTEMIS III EXPLORATION MISSION WITH RETRIEVAL OF SOLAR ACTIVITY RECORDS
Ciara Brown, University of Southern California, United Kingdom

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SCREEN #9

- 13:30-13:40 IAC-22/A3/IP/70379**
THE ENCELADUS' DIVERBOT: - ITS DESIGN, PURPOSE AND ADVANCEMENTS
Mahir Rawal, [unlisted], India
- 13:40-13:50 IAC-22/A3/IP/72361**
DESIGN AND TESTING OF A PROTOTYPE ELECTRODYNAMIC REGOLITH CONVEYOR FOR LUNAR ISRU
Aaron Olson, NASA John F. Kennedy Space Center, United States
- 13:50-14:00 IAC-22/A3/IP/70581**
ANALYSIS OF LUNAR ROVER RADIATORS' HEAT BALANCE USING THERMAL CIRCUIT THEORY AND IMPACT OF LUNAR REGOLITH ON ITS PERFORMANCE
Andrew Karim, Polytechnique Montreal, Canada
- 14:00-14:10 IAC-22/A3/IP/71795**
HIGH PERFORMANCE LUNAR LANDING SIMULATIONS
Jérémy Lebreton, Airbus Defence & Space, France
- 14:10-14:20 IAC-22/A3/IP/72104**
DESIGN OF A SPHERICAL UGV FOR SPACE EXPLORATION
Matteo Melchiorre, Politecnico di Torino, Italy
- 14:20-14:30 IAC-22/A3/IP/73949**
LOONY: LASER RANGING FROM THE MOON FOR ULTRA-HIGH ACCURACY TRACKING OF SATELLITES AND DEBRIS IN LUNAR ORBIT
David Gooding, [unlisted], United Kingdom
- 14:30-14:40 IAC-22/A3/IP/72108**
AN INDOOR LUNAR ANALOGUE FACILITY FOR TESTING LUNAR HETEROGENEOUS SWARM ROBOTS
Yufei Guo, Northwestern Polytechnical University; National Key Laboratory of Aerospace Flight Dynamics, China
- 14:40-14:50 IAC-22/A3/IP/69586**
EXPERIMENTAL ANALYSIS OF THE PERFORMANCE OF A SLIM MESHED WHEEL DESIGN FOR A MICRO LUNAR ROVER APPLICATION
Alexandre Florio, Concordia University, Canada
- 14:50-15:00 IAC-22/A3/IP/68794**
CERES LANDER EXPLORATION AND SAMPLE RETURN MISSION
David Hubert, Università di Pisa, Italy

SCREEN #10

- 13:30-13:40 IAC-22/A3/IP/70012**
DRILL AND DIVE EXPEDITION FOR ENCELADUS EXPLORATION
Kanupriya Shrivastava, University of Petroleum and Energy Studies, India
- 13:40-13:50 IAC-22/A3/IP/68956**
TRADE-OFF AND OPTIMIZATION FOR A THERMAL LUNAR WATER EXTRACTION SYSTEM
Luca Kiewiet, German Aerospace Center (DLR), Bremen, Germany
- 13:50-14:00 IAC-22/A3/IP/69999**
ENVELOPE, PROPULSION AND NAVIGATION FOR A MARTIAN EXPLORATION AIRSHIP
Michael Biselx, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland
- 14:00-14:10 IAC-22/A3/IP/72100**
OMNICAM: BIFOCAL PANORAMIC CAMERA FOR HUMAN AND ROBOTIC EXPLORATION
Leonardo Turchi
- 14:10-14:20 IAC-22/A3/IP/70512**
DESIGN OF A HARDWARE PROTECTION FOR RASPBERRY PI TO WITHSTAND SEU FROM SOLAR WINDS ON THE MOON SURFACE DURING LONG-TERM MISSIONS
Pedro Javier Fernández

- 14:20-14:30 IAC-22/A3/IP/68561**
SYSTEM OF QUADRUPLE ROVER FOR LUNAR HABITAT 3D PRINTING CONSTRUCTION
Geonho Lee
- 14:30-14:40 IAC-22/A5/IP/68725**
NUMERICAL SIMULATION OF CARDIOVASCULAR DECONDITIONING IN DEEP SPACE HUMAN MISSIONS.
Antoni Perez-Poch, Institut d'Estudis Espacials de Catalunya (IEEC), Spain
- 14:40-14:50 IAC-22/A5/IP/72710**
CELESTIAL SPACE DEBRIS
Katja Grünfeld, Slovenia
- 14:50-15:00 IAC-22/A5/IP/71124**
DEVELOPMENT FRAMEWORK FOR MARTIAN INFRASTRUCTURE WITHIN PLANETARY RESOURCES
Abdul Ahad, India

SCREEN #11

- 13:30-13:40 IAC-22/A5/IP/68257**
DEVELOPMENT OF AN OPEN SOURCE MODELLING PACKAGE FOR THERMAL BALANCE OF CREWED MARS HABITATS
Sam Ross, University of Cambridge, United Kingdom
- 13:40-13:50 IAC-22/A5/IP/72002**
SPACE SETTLEMENT DESIGN IN THE MOON'S QUASI-FROZEN ORBIT
Shambhavi A S
- 13:50-14:00 IAC-22/A6/IP/69988**
DETERMINATION OF DESIGN PARAMETERS OF THE SYSTEM FOR COMBINED DE-ORBITING OF THE UPPER STAGES OF CYCLONE-3 LAUNCH VEHICLE FROM LOW-EARTH ORBITS
Aleksandr Golubek, Oles Honchar Dnipropetrovsk National University, Ukraine
- 14:00-14:10 IAC-22/A6/IP/72453**
FROM FRAGMENT TO 3D MODEL - IMAGING DEBRISAT FRAGMENTS
Ninoshka Sutcliffe, University of Florida, United States
- 14:10-14:20 IAC-22/A6/IP/69799**
CLEANING LARGE AND MEDIUM SIZED SPACE DEBRIS WITH ROBOTS USING SWARM INTELLIGENCE
Naveen Rajamanickam, Spaceonova, India
- 14:20-14:30 IAC-22/A6/IP/71255**
DEVELOPING A SUSTAINABLE SPACE ROADMAP FOR SCOTLAND
Calum Turner, [unlisted], United Kingdom
- 14:30-14:40 IAC-22/A6/IP/69404**
ARIANEGROUP GEOTRACKER NETWORK ENHANCEMENT OPERATIONAL EXAMPLES
Marcel Becker, ArianeGroup, Germany
- 14:40-14:50 IAC-22/A6/IP/72306**
DEVELOPING A DATA FUSION CONCEPT FOR RADAR AND OPTICAL GROUND BASED SST STATION.
Bruno Coelho, Instituto de Telecomunicações (Portugal), Portugal
- 14:50-15:00 IAC-22/A6/IP/72021**
WHEN THEORY MEETS PRACTICE: RESOLVING LEGAL OBSTACLES FOR THE REMOVAL OF SPACE DEBRIS WITH LEX SPECIALIS RULE
Iva Ramuš Cvetkovič, Slovenia

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SCREEN #12

- 13:30-13:40 IAC-22/A6/IP/68597**
THERMAL OPTIMIZATION OF TRAJECTORIES OF SPACE DEBRIS REMOVAL INTO THE EARTH'S ATMOSPHERE
Andrii Dreus O. Honchar, Dnipropetrovsk National University, Ukraine
- 13:40-13:50 IAC-22/A6/IP/71663**
IMAGE RECOGNITION AND MOTION ESTIMATION METHOD WITH INTERCLASS VARIANCE OPTIMIZATION FOR SPACE TARGETS
Jinfeng Li, School of Aerospace Engineering, Beijing Institute of Technology, China
- 13:50-14:00 IAC-22/A6/IP/70911**
HOW WILL COPLA WORK WITHIN EU SST?
Katia Caceres, CDTI (Centre for the development of Industrial Technology), Spain
- 14:00-14:10 IAC-22/A6/IP/70129**
COMPOSITE ACTIVE DISTURBANCE REJECTION CONTROL AND RESIDUAL VIBRATION SUPPRESSION FOR FREE-FLOATING SPACE ROBOTS WITH ELASTIC JOINTS AND FLEXIBLE LINKS COMPOUND ACTIVE DISTURBANCE REJECTION CONTROL
Haiping Ai, Fuzhou University, China
- 14:10-14:20 IAC-22/A6/IP/71272**
OVERVIEW OF THE SPACE SITUATIONAL AWARENESS (SSA) AND ACTIVE DEBRIS REMOVAL (ADR) MARKET PROSPECTS AND KEY DRIVERS
Charlotte Croison, Euroconsult, France
- 14:20-14:30 IAC-22/A6/IP/68066**
ANALYSIS OF LUNAR IMPACTS FOR ORBITAL DEBRIS MITIGATION
Daria Andrievskaia, ISAE-Supaero University of Toulouse, France
- 14:30-14:40 IAC-22/A6/IP/70995**
LASER BASED ACTIVE DEBRIS REMOVAL TECHNOLOGY FOR ENVISAT
Aditya Baraskar, Sky Perfect JSAT Corporation, Japan
- 14:40-14:50 IAC-22/A6/IP/67976**
A MODEL OF SPACE DEBRIS METAL INJECTION INTO THE MESOSPHERE-LOWER THERMOSPHERE
Asha Jain, Massachusetts Institute of Technology (MIT), United States
- 14:50-15:00 IAC-22/A6/IP/70965**
REAL-TIME CONJUNCTION ASSESSMENT AND MANEUVER PLANNING IN SPACEMAP
Shawn Seunghwan Choi, [unlisted], Korea, Republic of

SCREEN #13

- 13:30-13:40 IAC-22/A6/IP/71532**
HYPERSPSPECTRAL CLASSIFICATION OF SPACE OBJECTS
Massimiliano Vasile, University of Strathclyde, United Kingdom
- 13:40-13:50 IAC-22/A6/IP/68958**
USING UNUSED LAUNCHER CAPACITY TO DE-ORBIT LEO SPACE DEBRIS
Baptiste Ronfard, Ecole Polytechnique, France
- 13:50-14:00 IAC-22/A6/IP/73839**
LARGE DATA COLLECTION THROUGH INNOVATIVE OPTICAL SYSTEMS FOR ANGLES-ONLY ORBIT DETERMINATION
Gaetano Zarcone, University of Rome "La Sapienza", Italy
- 14:00-14:10 IAC-22/A6/IP/70583**
EFFICIENT SENSOR TASKING FOR SPACE SITUATIONAL/DOMAIN AWARENESS
Neil Dhingra, Orbit Logic, United States
- 14:10-14:20 IAC-22/A6/IP/69243**
CHALLENGES AROUND SSA DATA FORMATS: WHAT PREVENTS EFFICIENT SHARING OF SSA DATA?
Giulio van Ginkel, CGI GROUP INC., Germany

- 14:20-14:30 IAC-22/A6/IP/67831**
ANALYZING LATEST SDA DATA TO HYPOTHETICALLY ALLOCATE NUMBER OF ON-GROUND AND IN-SPACE OPTICAL SENSORS PER COUNTRY/SECTOR THROUGH IMPLEMENTATION OF SMALL AND LONG ARC ORBIT DETERMINATION TECHNIQUE FOR DEVELOPMENT OF ACCURATE SPACE TRAFFIC
Mahhad Nayyer, Graz University of Technology (TU Graz), Pakistan
- 14:30-14:40 IAC-22/A6/IP/67765**
STREAMLINING GEO SSA DATA ACQUISITION, PROCESSING, AND CONTRIBUTION FROM AN AMATEUR ASTRONOMERS' PERSPECTIVE USING $1M$ APERTURE TELESCOPES
Mahhad Nayyer, Graz University of Technology (TU Graz), Pakistan
- 14:40-14:50 IAC-22/A6/IP/67874**
A KEY ROLE FOR BRAZIL IN INTERNATIONAL ORBITAL DEBRIS DETECTION AND TRACKING STRATEGIES.
Luis Felipe Alves de Oliveira, Universidade de Brasília, Brazil
- 14:50-15:00 IAC-22/A6/IP/67201**
THE ECONOMIC CONTEXT OF THE RECYCLER SPACECRAFT, A TOOL TO OVERCOME THE SPACE DEBRIS FREE-RIDER PROBLEM
Pierre Letellier, Institut d'Etudes Politiques de Paris, France

SCREEN #14

- 13:30-13:40 IAC-22/A6/IP/68574**
SYSTEM DESIGN AND ANALYSIS OF CUBESAT FOR ACTIVE DEBRIS REMOVAL IN LEO USING ARTIFICIAL SWARM INTELLIGENCE
Nijanathan Vasudevan, Space Generation Advisory Council (SGAC), United States
- 13:40-13:50 IAC-22/A6/IP/72652**
INITIAL CONDITIONS OF A NOVEL CUBESAT DURING ATMOSPHERIC RE-ENTRY
Maria Nepheli Kardassi, University of Strathclyde, United Kingdom
- 13:50-14:00 IAC-22/A6/IP/73092**
PERFORMANCE AND SENSITIVITY ANALYSIS OF MACHINE LEARNING-BASED APPROACHES FOR RESIDENT SPACE OBJECT CHARACTERIZATION
Nicola Cimmino, University of Naples Federico II, Italy
- 14:00-14:10 IAC-22/A6/IP/70314**
SATELLITE AND OTHER STAR-LIKE OBJECT DETECTION, RECOGNITION AND (RE-)IDENTIFICATION VIA MACHINE LEARNING FROM EARTH-BOUND OPTICAL OBSERVATIONS FOR FAST ORBIT DETERMINATION OF EVEN SATELLITE TRAINS
Andreas Hornig, Jena-Optronik GmbH, Germany
- 14:10-14:20 IAC-22/A6/IP/68551**
SYNOPTES - PRECISE GNSS TIMESTAMPING DEVICE FOR SPACE SURVEILLANCE AND TRACKING OBSERVATIONS
Alexandru Rares Apostol, Romanian InSpace Engineering SRL, Romania
- 14:20-14:30 IAC-22/A6/IP/73359**
CONSIDERATIONS ON THE SPACE DEBRIS RISK MITIGATION IN THE PERSPECTIVE OF A HUMAN EXPANSION INTO SPACE.
Veronica Moronese, Space Generation Advisory Council (SGAC), Italy
- 14:30-14:40 IAC-22/A6/IP/69582**
AN ACTOR NETWORK THEORY APPROACH TO POLITICAL CHALLENGES IN ACTIVE DEBRIS REMOVAL
Arjun Chhabra, University of Toronto, Canada
- 14:40-14:50 IAC-22/A6/IP/71536**
IMAGE ENHANCEMENT FOR SPACE SURVEILLANCE AND TRACKING
Michele Jamrozik, University of Luxembourg, Luxembourg
- 14:50-15:00 IAC-22/A6/IP/67923**
REGULATING FOR DEBRIS MITIGATION: PROPOSAL FOR AN ORBITAL ACTIVITIES CODE
Clarissa Luk, The University of Sydney, Australia

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SCREEN #15

13:30-13:40 IAC-22/A6/IP/68521
MASSIVE GPU PARALLELISATION FOR Cislunar DEBRIS MITIGATION ANALYSES
Paolo Guardabasso, ISAE-Supaero University of Toulouse, France

13:40-13:50 IAC-22/A6/IP/73640
ENVIRONMENTAL LESSONS LEARNED FROM THE MARITIME DOMAIN: THE DANGERS OF FLAGS OF CONVENIENCE
Alyssa Goessler, United States

13:50-14:00 IAC-22/A6/IP/67572
INCENTIVIZING INVESTMENT AND RESEARCH IN SPACE DEBRIS MITIGATION AND REMOVAL THROUGH DOMESTIC LICENSING
Lauren Fleming, United States

14:00-14:10 IAC-22/A6/IP/71271
A NOVEL METHOD FOR THE COMPUTATION OF SATELLITE COLLISION PROBABILITY BASED ON EXTREME VALUE THEORY
Manuel Sanjurjo-Rivo, Universidad Carlos III de Madrid, Spain

14:10-14:20 IAC-22/A6/IP/71287
SPACE OBSERVATION BY AUSTRALIA TELESCOPE COMPACT ARRAY: PERFORMANCE CHARACTERISATION USING GPS SATELLITE OBSERVATION
Hamed Nosrati, CSIRO Astronomy & Space Science, Australia

14:20-14:30 IAC-22/A6/IP/69306
MITIGATION OF NUCLEAR SPACE DEBRIS USING ADVANCED VITRIFICATION AND POT CALCINATION PROCESS: MISSION DESIGN AND FEASIBILITY STUDY
Priyank Dubey, Indian Institute of Technology, India

14:30-14:40 IAC-22/A6/IP/72734
MACHINE LEARNING FOR VISION-BASED POSE ESTIMATION FOR PROXIMITY OPERATIONS.
Anne Bettens, The University of Sydney, Australia

14:40-14:50 IAC-22/A6/IP/70850
A MULTI-MODE NAVIGATION METHOD FOR SPACE ROBOTS TO CAPTURE A TUMBLING TARGET
Dejia Che, Northwestern Polytechnical University, China

14:50-15:00 IAC-22/A6/IP/73182
LIGHTWEIGHT NEURAL NETWORK BASED SMALL SPACE DEBRIS SALIENCY DETECTION IN VIDEO
Jiang Tao, Nanjing University of Aeronautics and Astronautics, China

SCREEN #16

13:30-13:40 IAC-22/A6/IP/72291
ATLAS: DEPLOYMENT, CONTROL PLATFORM AND FIRST RSO MEASUREMENTS.
João Pandeirada, Instituto de Telecomunicações (Portugal), Portugal

13:40-13:50 IAC-22/A6/IP/73762
PHASE SPACE DESCRIPTION OF THE DEBRIS' CLOUD DYNAMICS THROUGH A CONTINUUM APPROACH
Lorenzo Giudici, Politecnico di Milano, Italy

13:50-14:00 IAC-22/A6/IP/73958
COMMERCIAL, POLITICAL AND TECHNICAL CHALLENGES OF SPACE DEBRIS DATA-SHARING: A CONCEPTUAL FRAMEWORK
Benedetta Margrethe Cattani, Delft University of Technology (TU Delft), The Netherlands

14:00-14:10 IAC-22/A6/IP/74064
VIS-TIR CAMERAS DATA FUSION TO ENHANCE RELATIVE NAVIGATION DURING IN ORBIT SERVICING OPERATIONS
Alessandro Colombo, Politecnico di Milano, Italy

14:10-14:20 IAC-22/A6/IP/69218
COMPACT GROUND STATION FOR SATELLITE LASER RANGING AND IDENTIFICATION
Felicitas Niebler, German Aerospace Center (DLR), Germany

14:20-14:30 IAC-22/A6/IP/72214
LIGHT CURVE ANALYSIS IN SUPPORT OF CLEARSPACE CLEAR ACTIVE DEBRIS REMOVAL MISSION
Rebecca McFadden, Deimos Space UK Ltd, United Kingdom

14:30-14:40 IAC-22/A6/IP/68799
A-CONTRARIO DETECTION AND TRACKING FROM OPTICAL TELESCOPE DATA
Benjamin Feuge-Miller, The University of Texas at Austin, United States

14:40-14:50 IAC-22/A6/IP/73624
A RE-ENTRY ANALYSIS SOFTWARE MODULE FOR SPACE SURVEILLANCE AND TRACKING OPERATIONS
Riccardo Cipollone, Politecnico di Milano, Italy

14:50-15:00 IAC-22/A6/IP/70301
A NOVEL DEGENERATION AND DEORBETING TECHNIQUE FOR SPACE DEBRIS REMOVAL
M S Dhanyavan, Ramaiah Institute of Technology, India

SCREEN #17

13:30-13:40 IAC-22/A6/IP/69003
MULTI-TELESCOPE OBSERVATION STATION TEST CAMPAIGN RESULTS
Alexis Petit

13:40-13:50 IAC-22/A7/IP/71019
ASTROPARTICLE EXPERIMENTS TO IMPROVE THE RADIATION HEALTH RISK ASSESSMENT FOR HUMANS IN SPACE MISSIONS
Alessandro Bartoloni, National Institute of Nuclear Physics - INFN, Italy

13:50-14:00 IAC-22/A7/IP/68449
CONCEPT STUDY FOR OBSERVING GALACTIC NEUTRINOS IN NEPTUNE'S ATMOSPHERE
Trent, English Wichita State University, United States

14:00-14:10 IAC-22/A7/IP/69023
UNDERSTANDING A NEW PATH OF COMMERCIALIZATION FOR SPACE SCIENCE DATA PRODUCTION THROUGH THE PRISM OF EARTH OBSERVATION TRAJECTORY: IMPLICATIONS ON INSTITUTIONAL STRATEGIES
Damien Baclet, ESA - European Space Agency, France

14:10-14:20 IAC-22/B1/IP/73636
METHODOLOGY BASED ON MACHINE LEARNING AND DEEP LEARNING TO PREDICT DENGUE TRANSMISSIONS.
Sergio Sosa Callupe, Universidad Nacional de Ingeniería (Lima, Perú), Peru

14:20-14:30 IAC-22/B1/IP/68877
LIGHT-1 CUBESAT DETECTOR (RAAD) FOR THE STUDY OF TERRESTRIAL GAMMA-RAY FLASHES: SPACE QUALIFICATION, FIRST DATA SET, AND CORRELATIONS WITH LIGHTNING
Lolowa Alkindi, N/A, United Arab Emirates

14:30-14:40 IAC-22/B1/IP/69266
METHOD AND COMPUTATIONAL ALGORITHMS FOR ATMOSPHERIC CORRECTION OF REGIONAL SATELLITE IMAGES. RESTORATION OF THE SPECTRAL BRIGHTNESS OF THE EARTH'S SURFACE
Fazil Ismailov, Azerbaijan

14:40-14:50 IAC-22/B1/IP/69142
ROBUST EFFICIENT HARDWARE ACCELERATOR FOR NEURAL NETWORK ON EMBEDDED SYSTEM
Chanon Khongprasongsiri, National Astronomical Research Institute of Thailand (NARIT), Thailand

14:50-15:00 IAC-22/B1/IP/72860
ANALYSIS AND DESIGN OF FUTURE MULTIPLE SATELLITES FORMATION FLYING L-BAND MISSIONS IN LOW EARTH ORBIT
Francesca Scala, Politecnico di Milano, Italy

Wednesday 21 September 2022

SCREEN #18

13:30-13:40 IAC-22/B1/IP/68955
REFERENCE MIRROR MISALIGNMENT OF COLD ATOM INTERFEROMETERS ON SATELLITE-BASED GRAVIMETRY MISSIONS
Jaspar Meister, DLR (German Aerospace Center), Germany

13:40-13:50 IAC-22/B1/IP/68394
BRIDGING THE GAP: RECENT ADVANCES IN SMALLSAT CAL/VAL TECHNOLOGY (THROUGHOUT THE MISSION LIFE CYCLE)
Ana-Mia Louw, Simeria Sense, South Africa

13:50-14:00 IAC-22/B1/IP/73884
IMPROVING THE ACCURACY OF FLOOD RISK MAPS BY FUSING SAR, OPTICAL IMAGERY, DIGITAL ELEVATION MODEL AND OPEN GEOSPATIAL DATA: A CASE STUDY OF DOUALA ESTUARY IN CAMEROON
Chukwuma Okolie, University of Lagos (UNILAG), Nigeria

14:00-14:10 IAC-22/B1/IP/73780
FAST COMPUTATION OF AREA TARGET VISIBILITY TO REMOTE SENSING SATELLITES
Radhika Kandepi, Indian Space Research Organization (ISRO), India

14:10-14:20 IAC-22/B1/IP/69464
EXPERIMENT SETUP FOR AN AIRBORNE GNSS-REFLECTOMETRY EXPERIMENT
Adonees Semaan, Bundeswehr University Munich, Germany

14:20-14:30 IAC-22/B1/IP/68427
INLET SECTIONAL ANALYSIS AND OPTIMIZATION OF RAMJET ENGINE
Abhay Kaushik Nudurupati University of Petroleum and Energy Studies, India

14:30-14:40 IAC-22/B1/IP/71433
DESIGN AND TESTING OF DEPLOYABLE TELESCOPE WITH SEGMENTED APERTURE DEDICATED FOR CUBESAT STANDARD
Grzegorz Charytoniuk, SatRev, Poland

14:40-14:50 IAC-22/B1/IP/70467
EARTH OBSERVATION SATELLITES COMBINED WITH IN SITU DATA FOR MODELLING THE ENVIRONMENTAL AND ANTHROPOGENIC WATER STRESSORS IN CHENNAI, INDIA
Nijanthan Vasudevan, Space Generation Advisory Council (SGAC), United States

14:50-15:00 IAC-22/B1/IP/72608
HYPERSPECTRAL REMOTE SENSING SATELLITES IMPLEMENTATION AS PAYLOAD FOCUS ON THE SUSTAINABLE DEVELOPMENT GOALS
Aritzel Martell, Universidad Nacional Autónoma de México (UNAM), Mexico

SCREEN #19

13:30-13:40 IAC-22/B1/IP/72758
NATURAL HAZARDS AND DISASTERS – OVERVIEW OF INTERNATIONAL STRATEGIES FOR RISK MANAGEMENT AND SUSTAINABLE DEVELOPMENT
Alina Vizireanu, Space Generation Advisory Council (SGAC), United Kingdom

13:40-13:50 IAC-22/B1/IP/73644
DEVELOPMENT OF AN ALGORITHM BASED ON DEEP LEARNING FOR THE CLASSIFICATION OF OCEANIC GEOPHYSICAL PHENOMENA.
Lucas Nicolas Taipe Ramos, Universidad Nacional de Ingeniería, Peru

13:50-14:00 IAC-22/B1/IP/67677
AUTONOMOUS THREE-AXIS RELATIVISTIC GRAVITATIONAL GRADIENTGRAVIMETER FOR THE GRAVISAT SPACECRAFT.
Sergiy Matviyenko, JSC RPC KURS, Ukraine

14:00-14:10 IAC-22/B1/IP/69156
RECONSTRUCTION OF INCOHERENT SCATTER RADAR VERTICAL ELECTRON DENSITY PROFILES USING REGRESSION TREES
Manar Anwer Abusirdaneh, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

14:10-14:20 IAC-22/B1/IP/68929
H-INFINITY CONTROLLER DESIGN AND HIL VALIDATION APPROACH FOR HIGH AGILITY SATELLITES WITH FLEXIBLE APPENDAGES
Kevin Bianchi, Thales Alenia Space Italia (TAS-I), Italy

14:20-14:30 IAC-22/B1/IP/72649
PROPOSAL OF A SMALL SATELLITE CONSTELLATION FOR REMOTE SENSING OF RED TIDE AND ITS POTENTIAL IMPACT ON THE LOCAL ECONOMY OF COSTA RICA.
Ariana Arguello, Samara National Research University (Samara University), Russian Federation

14:30-14:40 IAC-22/B1/IP/70183
IDENTIFICATION AND DOCUMENTATION OF ENCROACHMENTS IN COASTAL REGULATION ZONES USING REMOTE SENSING TECHNIQUES.
Sivasankar Sibi, United Arab Emirates

14:40-14:50 IAC-22/B1/IP/69041
SATELLITE-BASED ASSESSMENT OF SINKHOLE HAZARD OCCURRENCE
Ronald Rizzo, University of Kentucky, United States

14:50-15:00 IAC-22/B1/IP/71960
LASER CRYOCOOLER DEVELOPMENT FOR SPACE APPLICATIONS
Pierre-Olivier MINE, Air Liquide, France

SCREEN #20

13:30-13:40 IAC-22/B1/IP/73064
THE "DAFFODIL" MISSION: GNSS-REFLECTOMETRY WITH A 1.5U CUBESAT
Elliott Wobler, University of Luxembourg, Luxembourg

13:40-13:50 IAC-22/B1/IP/70439
TOTORO PROJECT: STUDENT MISSION SHOWING FEASIBILITY OF STUDYING EARTH'S MAGNETOSPHERE ON BOARD A STRATOSPHERIC BALLOON
Ryszard Zawila, Warsaw University of Technology (WUT), Poland

13:50-14:00 IAC-22/B1/IP/74009
AN EVALUATION OF EARTH OBSERVATION DATA AS A POTENTIAL TOOL TO FORECAST AND MANAGE RESOURCES DURING THE COVID-19 PANDEMIC
Rochelle Velho, Space Generation Advisory Council (SGAC), United Kingdom

14:00-14:10 IAC-22/B1/IP/73936
VISUAL SERVOING OF AN EARTH OBSERVATION SATELLITE OF THE LION CONSTELLATION
Maxime Robic, INRIA, France

14:10-14:20 IAC-22/B1/IP/74119
REMOTE SENSING AND EARTH OBSERVATION TO TRACK CHILD TRAFFICKING AND GIRL-CHILD SLAVERY
Sagarika Rao Valluri, RNSIT Bangalore, India

14:20-14:30 IAC-22/B1/IP/73700
REMOTE SENSING FORMATION DESIGN EXPLOITING COVERAGE OVERLAP AREA PARAMETERS
Karthick Dharmarajan, University of Rome "La Sapienza", Italy

14:30-14:40 IAC-22/B1/IP/70574
REFLECTION OF EO DATA IN BLUE ECONOMY: SUSTAINABLE GROWTH
Ritesh Jain, Politecnico di Milano, Italy

14:40-14:50 IAC-22/B1/IP/74103
DELIMITATION OF LIGHT POLLUTION THROUGH SATELLITE IMAGES FOR THE PROTECTION OF ENDEMIC SPECIES AND ENERGY SAVINGS.
Abner Plata, Instituto Tecnológico de Durango (ITD), Mexico

14:50-15:00 IAC-22/B1/IP/69792
THE HYPERANGULAR RAINBOW POLARIMETER (HARP) CUBESAT DEMONSTRATION OVERVIEW: DATA ACCURACY, AVAILABILITY, AND LESSONS LEARNED FOR SMALL PAYLOAD REMOTE SENSING CAMERAS AND PACE/HARP2
Noah Sienkiewicz, Joint Center for Earth Systems Technology, (JCET/UMBC), United States

Wednesday 21 September 2022

SCREEN #21

13:30-13:40 IAC-22/B1/IP/69398
COMPARISON OF DATA PROCESSING METHODS FOR GNSS REFLECTOMETRY
Mohd Bilal, Bundeswehr University Munich, Germany

13:40-13:50 IAC-22/B1/IP/72197
ROBUSTIFYING THE DEPLOYMENT OF THE IN-ORBIT AI FOR EARTH OBSERVATION
Maciej Ziąja

13:50-14:00 IAC-22/B1/IP/71842
MAGNETOTORQUERS "MTB" DESIGN AND REALIZATION FOR NANOSATELLITE APPLICATIONS
Mohammed Berroua, Benzina

14:00-14:10 IAC-22/B2/IP/71639
OPTIMIZATION OF HIGH-THROUGHPUT SATELLITE SYSTEM FOR DATA RELAY SERVICE TOWARDS LEO SATELLITES
Huilian Liu, China Academy of Space Technology (CAST), China

14:10-14:20 IAC-22/B2/IP/70056
REINFORCEMENT LEARNING AIDED PATH PLANNING ALGORITHM FOR MULTI-UAV BASED IN-SITU SATELLITE TERMINAL ANTENNA EVALUATION SYSTEM
Saki Omi, Cranfield University, Cranfield UK, United Kingdom

14:20-14:30 IAC-22/B2/IP/73581
CISLUNAR POSITION, NAVIGATION, AND TIMING (PNT) – INTERNATIONAL RELATIONS AND POLICY IMPLICATIONS
Alec Domotor, Georgia Institute of Technology, United States

14:30-14:40 IAC-22/B2/IP/67266
COMPARISON OF 2X2 PATCH ANTENNA DUE TO TEMPERATURE VARIATION IN EXPERIMENTAL SOUNDING ROCKETS
Prerana M, R V College of Engineering, Bengaluru, India

14:40-14:50 IAC-22/B2/IP/73947
SMALL SATELLITE C-BAND MICROSTRIP ANTENNA ARRAY FOR INTER-SATELLITE COMMUNICATIONS
Abdalla Elshawi, Egyptian Space Agency (EgSA), Egypt

14:50-15:00 IAC-22/B2/IP/72971
IMPROVEMENTS IN THE THERMAL BEHAVIOUR OF A CUBESAT GNSS-R SYSTEM
Andreas Johann Hörmer, Graz University of Technology (TU Graz), Austria

SCREEN #22

13:30-13:40 IAC-22/B2/IP/71025
PERFORMANCE EVALUATION OF IMPROVED SELF-POSITIONING METHOD BASED ON CRATER SIZE FOR LUNAR LANDING VEHICLES
Tsukasa Inoue, Tokyo Metropolitan University, Japan

13:40-13:50 IAC-22/B2/IP/73498
ON THE EXPLOITATION OF LIGHT DEGREES OF FREEDOM FOR THE STARSHOT SAIL TRANSMITTERS
Paolo Villoresi, Università degli Studi di Padova, Italy

13:50-14:00 IAC-22/B2/IP/69614
CALCULATING STATION BIAS FOR UNCALIBRATED GNSS STATIONS USING CLOSE-RANGE CALIBRATED GNSS STATION DATA
Muhammad Mubasshir Shaikh, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

14:00-14:10 IAC-22/B2/IP/68381
DIURNAL AND SEASONAL VARIATIONS OF GNSS BASED IONOSPHERIC SLAB THICKNESS OVER ARABIAN PENINSULA
Muhammad Mubasshir Shaikh, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

14:10-14:20 IAC-22/B3/IP/70854
BEST DAY EVER! IMAGINARIES OF COMMERCIAL SPACE TRAVEL
Charlotte Kroløkke, Denmark

14:20-14:30 IAC-22/B3/IP/70774
UPDATING SUBSYSTEM-LEVEL FAULT-SYMPOM RELATIONSHIPS FOR TEMPERATURE AND HUMIDITY CONTROL SYSTEMS WITH REDUNDANT FUNCTIONS
Min Young Hwang, Carnegie Mellon University, United States

14:30-14:40 IAC-22/B3/IP/69201
TESTING OF AN AUGMENTED REALITY TOOL FOR GEOLOGICAL FIELDWORK DURING TWO ANALOGUE MISSIONS
Flavie Aditya Annick Suzanne Davida Tohotaua Rometsch, Delft University of Technology (TU Delft), The Netherlands

14:40-14:50 IAC-22/B3/IP/74109
NEUTRAL-BUOYANCY TESTS OF THE ADVANCED CREW MEDICAL RESTRAINT FOR COMMERCIAL HUMAN SPACEFLIGHT
Matt Harasymczuk, Analog Astronaut Training Center, Poland

14:50-15:00 IAC-22/B3/IP/72831
WHAT CAME FIRST, SPACE SAFETY OR MEDICAL STANDARDS?
Iliaria Cinelli AIKO S.r.l., Italy

SCREEN #23

13:30-13:40 IAC-22/B3/IP/67845
PRIVACY IN SPACE
Murray Mackay, Analog Astronaut Training Center, Poland

13:40-13:50 IAC-22/B3/IP/70315
LESSONS LEARNED ON THE IMPLEMENTATION OF PROBABILISTIC GRAPHICAL MODEL-BASED DIGITAL TWINS: A SPACE HABITAT STUDY
Nicolas Gratius, Carnegie Mellon University, United States

13:50-14:00 IAC-22/B3/IP/69072
HUMAN AUTONOMY TEAMING FOR TASK EXECUTION SUPPORT IN NEXT GENERATION DEEP SPACE HABITATS
Ulubilge Ulusoy, University of Southern California, United States

14:00-14:10 IAC-22/B3/IP/72414
DETECTION AND MONITORING OF AFFECTIVE STATES DURING A 4-MONTH CONFINEMENT IN A SPACE-LIKE ENVIRONMENT
Jean Pauly, Université de Lorraine, France

14:10-14:20 IAC-22/B3/IP/73944
DESIGN OF THE CREW CABIN OF A SUBORBITAL PLANE FOR 6 PASSENGERS BASED ON THE DESIGN FOR THE STUDENT AEROSPACE CHALLENGE COMPETITION
Hubert Gross

14:20-14:30 IAC-22/B3/IP/74133
CPR AND RESCUER'S POSITION IN MICROGRAVITY
Arkadiusz Trzos, Analog Astronaut Training Center, Poland

14:30-14:40 IAC-22/B4/IP/71644
HARDWARE AND SOFTWARE REDUNDANCY CONCEPTS ON-BOARD OF SONATE-2
Andreas Maurer, Julius Maximilians Universität Würzburg, Germany

14:40-14:50 IAC-22/B4/IP/72221
MINIATURE HALL EFFECT THRUSTER BASED CUBESAT FOR LUNAR AND MARS ORBITER EXPLORATION SPACECRAFT WITH ONBOARD CLOSED CATHODE HYDROGEN-OXYGEN FUEL CELL SYSTEM.
Mohd. Izmir Yamin, Independence-X, Malaysia

14:50-15:00 IAC-22/B4/IP/73630
ANALYSIS OF SUN-ACQUISITION MAGNETIC ATTITUDE CONTROL FOR NANOSATELLITE USING A HARDWARE-IN-THE-LOOP SATELLITE SIMULATOR
Danil Ivanov, Keldysh Institute of Applied Mathematics, RAS, Russian Federation

Wednesday 21 September 2022

SCREEN #24

13:30-13:40 IAC-22/B4/IP/73774
ANALYSIS OF ATTITUDE CONTROL SYSTEM FLIGHT RESULTS OF THE EARTH-REMOTE SENSING NANOSATELLITE ORBITCRAFT-ZORKIY
Danil Ivanov, Keldysh Institute of Applied Mathematics, RAS, Russian Federation

13:40-13:50 IAC-22/B4/IP/71351
EFFECTIVE CUBESAT DESIGNS FOR PASSIVE ATTITUDE STABILIZATION USING AERODYNAMIC DRAG
Muhammad Taha Ansari, Khalifa University of Science and Technology (KUST), United Arab Emirates

13:50-14:00 IAC-22/B4/IP/71002
VIBE - NOVEL SELF-DIAGNOSTIC SYSTEM BASED ON AI AND DEDICATED FOR SMALLSATS
Mikolaj Podgorski, Scanway sp. z o.o., Poland

14:00-14:10 IAC-22/B4/IP/73127
PRELIMINARY STUDY ABOUT THE IMPLEMENTATION OF A STRUCTURAL BATTERY ON A 1U CUBESAT
Nicola Pavia, Politecnico di Milano, Italy

14:10-14:20 IAC-22/B4/IP/73073
DISTRIBUTED ON-BOARD COMPUTING ON SCIENTIFIC CUBESAT MISSIONS
Sebastian Rückerl, Technical University of Munich, Germany

14:20-14:30 IAC-22/B4/IP/73099
MOON TO MOON SERVICES – LUNAR PATHFINDER AND FUTURE LUNAR COMMS AND NAV CONSTELLATION TO CONNECT LUNAR ASSETS TO EACH OTHER AND BACK TO EARTH, STARTING 2025
Nelly Offord (Phillips), Surrey Satellite Technology Ltd (SSTL), United Kingdom

14:30-14:40 IAC-22/B4/IP/71056
THE ORACLE OCEAN HEALTH MONITORING MISSION
Andrew Haslehurst, Surrey Satellite Technology Ltd (SSTL), United Kingdom

14:40-14:50 IAC-22/B4/IP/73913
MINIMIZING DOWNLINK TIME OF HYPERSPECTRAL IMAGES ON A CUBESAT BY PERFORMING CLASSIFICATION BASED ON CONVOLUTIONAL NEURAL NETWORKS
Simen Nettelund, NTNU, Norway

14:50-15:00 IAC-22/B4/IP/68691
EXPERIMENTAL TESTING OF RANGE-BASED RELATIVE POSITIONING STRATEGIES FOR A SWARM OF CENTIMETRE-SCALE FEMTOSPACECRAFT
Thomas Timmons, University of Glasgow, United Kingdom

SCREEN #25

13:30-13:40 IAC-22/B4/IP/73564
PRELIMINARY DESIGN OF THE RADIATION PROTECTION FOR THE SMALL SATELLITE ROMEO IN THE LOWER MEDIUM EARTH ORBIT
Thorben Löffler, IRS, University of Stuttgart, Germany

13:40-13:50 IAC-22/B4/IP/71109
STOP ANALYSIS OF SMALL ASTRONOMICAL SATELLITE PAYLOADS
Alejandro Gomez-San-Juan, Universidad de Vigo, Spain

13:50-14:00 IAC-22/B4/IP/69802
SIMULATION OF A SPACE VEHICLE ON AN APPROACH MISSION TO A TARGET IN LOW AND MEDIUM ORBIT USING HYPERGOLIC PROPELLENT SYSTEM AND LIGHT AND MEDIUM RANGE DETECTION METHOD
Alejandro Hernandez, Gonzalez Technische Universität München, Mexico

14:00-14:10 IAC-22/B4/IP/69480
LOVE: A MODULAR ARCHITECTURE OF ALTITUDE-CONTROL BALLOON FOR VENUS EXPLORATION MISSIONS
Thibaut Pouget, Federation Open Space Makers, France

14:10-14:20 IAC-22/B4/IP/71430
EXPERIMENTAL RESULTS FROM THE SATELLITE FOR ORBITAL AERODYNAMICS RESEARCH (SOAR) MISSION
Nicholas H. Crisp, The University of Manchester, United Kingdom

14:20-14:30 IAC-22/B4/IP/69307
SPACECRAFT AS A SERVICE, AN OPEN-SOURCE APPROACH
Mathieu Bernou, OHB, Greece

14:30-14:40 IAC-22/B4/IP/70045
NEXT ON THE PAD: THE E-BAND TECHNOLOGY DEMONSTRATION CUBESAT EIVE
Markus T. Koller, IRS, University of Stuttgart, Germany

14:40-14:50 IAC-22/B4/IP/73063
LINE-OF-SIGHT NAVIGATION OBSERVABILITY ANALYSIS FOR NEAR-EARTH ASTEROIDS EXPLORATION WITH CUBESAT
Stefano Casini, TU Delft, The Netherlands

14:50-15:00 IAC-22/B4/IP/67182
THE SOFTWARE ARCHITECTURE OF PROXIMITY SPACE COMMUNICATION FOR SMALL MARS MISSION
Jia Tian, China Academy of Space Technology (Xi'an), China

SCREEN #26

13:30-13:40 IAC-22/B4/IP/73109
A THRUSTED SMALL SATELLITE USING HALL-EFFECT FOR SMART DEPLOYMENT OF CUBESAT CONSTELLATIONS
Riccardo Di Roberto, G.A.U.S.S. Srl, Italy

13:40-13:50 IAC-22/B4/IP/68899
EXPERIENCE FEEDBACK ON EFFECTS OF IN-ORBIT FPA TEMPERATURE ON RADIOMETRIC PERFORMANCE OF ALSAT-1B OPTICAL IMAGER
Chahira Serief, Agence Spatiale Algérienne (ASAL), Algeria

13:50-14:00 IAC-22/B4/IP/73227
AURORA: A SMALL SATELLITE CONSTELLATION FOR AURORAL OVAL MONITORING
Stefan Kraft, ESA - European Space Agency, Germany

14:00-14:10 IAC-22/B4/IP/72984
A SMALL DEPLOYABLE CASSEGRAIN REFLECTOR ANTENNA FOR SMALLSATS APPLICATIONS
Lucille Baudet, Oxford Space Systems, United Kingdom

14:10-14:20 IAC-22/B4/IP/71116
ELECTRICAL AND THERMAL BATTERY MANAGEMENT TO SUPPORT DEEP-SPACE EXPLORATION: LICIA-CUBE EXAMPLE
Alessandro Di Paola, Argotec, Italy

14:20-14:30 IAC-22/B4/IP/71406
MAGNETIC CLEANLINESS VERIFICATION OF MINIATURE SATELLITES FOR HIGH PRECISION POINTING
Stephan Busch, Fraunhofer EMI, Germany

14:30-14:40 IAC-22/B4/IP/74348
NANOSATELLITE PROPOSAL FOR MONITORING THE SOUTH ATLANTIC MAGNETIC ANOMALY (SAMA) AND PLASMASPHERIC HISS OVER THE INTERTROPICAL ZONE OF SOUTH AMERICA IN INTERPLANETARY SHOCKS
David De la Torre, Pontifical Catholic University of Peru, Peru

14:40-14:50 IAC-22/B4/IP/68130
ENVIRONMENTAL SATELLITE TO MONITOR REAL-TIME ENVIRONMENTAL PARAMETER CHANGES IN RESPONSE TO INCREASED CLIMATE ACTION
Ankit Khanal, Tribhuvan University, Nepal

14:50-15:00 IAC-22/B4/IP/72239
THE SPACE MISSIONS LABORATORY AT THE TECHNICAL UNIVERSITY OF MUNICH: RAPID SATELLITE MISSIONS FOR SPACE RESEARCH
Martin J. Losekamm, Technical University of Munich, Germany

Wednesday 21 September 2022

SCREEN #27

13:30-13:40 IAC-22/B4/IP/74226
TOLOSAT : STUDENT CUBESAT FOR GRAVIMETRY APPLICATION
Axel Rousse, ISAE-Supaero University of Toulouse, France

13:40-13:50 IAC-22/B4/IP/68479
ENABLING LIDAR INSTRUMENTS FOR SMALL SATELLITE EARTH OBSERVATION MISSIONS
Hannah Tomio, Massachusetts Institute of Technology (MIT), United States

13:50-14:00 IAC-22/B4/IP/70466
A TOOLSET FOR DEVELOPMENT, CONFIGURATION, AND OPERATION OF SOFTWARE-DEFINED SATELLITE PLATFORMS
Lubomir Toshev, EnduroSat AD, Bulgaria

14:00-14:10 IAC-22/B4/IP/70034
OBSERVING M DWARFS UV AND OPTICAL FLARES FROM A CUBESAT AND THEIR IMPLICATIONS FOR EXOPLANETS HABITABILITY
Julien Poyatos, University of Barcelona, France

14:10-14:20 IAC-22/B4/IP/74145
PROJECT APTAS - DEVELOPMENT OF A 1U CUBESAT PAYLOAD FOR INDEPENDENT CALIBRATION AND TESTING OF EISCAT3D.
Carlos Sarille Cadenas, Luleå University of Technology, Sweden

14:20-14:30 IAC-22/B4/IP/71142
CLEVER SAT: USING AI IN A CUBESAT (6U) FOR EARTH OBSERVATION
Tania McNamara, Universite Grenoble Alpes, France

14:30-14:40 IAC-22/B4/IP/73014
DESIGN OF A SAR CUBESAT FORMATION FLIGHT CONSTELLATION FOR MARITIME SURVEILLANCE
Lorcan Kelleher

14:40-14:50 IAC-22/B4/IP/69507
HUMAN AND TECHNOLOGICAL CAPACITY BUILDING THROUGH THE SHARJAH-SAT-1 CUBESAT PROJECT
Maryam Alansaari Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

14:50-15:00 IAC-22/B5/IP/71555
ADVANCED SPACE SERVICE ACCESS APPLICATION TOOL "ASTRAX UNIVERSAL USER INTERFACE (ASTRAX U2U)"
Taichi Yamazaki, ASTRAX, Inc., Japan

SCREEN #28

13:30-13:40 IAC-22/B5/IP/67548
PREDICTION OF AIR POLLUTION AND ENVIRONMENTAL FACTORS USING MACHINE LEARNING, DATA FROM SPACE AGENCY SATELLITES AND FROM GROUND DEVICES.
Axel Núñez, Arzola Facultad de Ingeniería-UNAM, Mexico

13:40-13:50 IAC-22/B5/IP/68285
AUTOMATIC DETECTION MODEL OF FLOATING MACROALGAE BLOOMS BASED ON DEEP LEARNING USING GOCI IMAGES
Yeonju Choi, Korea Aerospace Research Institute (KARI), Korea, Republic of

13:50-14:00 IAC-22/B6/IP/70575
HIERARCHICAL REASONING ALGORITHM WITH COUPLING TEMPORAL CONSTRAINTS FOR FLEXIBLE LANDER
Bang Wang, Beijing Institute of Technology, China

14:00-14:10 IAC-22/B6/IP/71278
STUDENT CONDUCTED SATELLITE EXPERIMENT INVESTIGATING THE EARTH'S MAGNETIC FIELD AND AFFECT ON OPERATIONS
Alexander Burnicki, Technische Universität Berlin, Germany

14:10-14:20 IAC-22/B6/IP/72873
MASTER ACTIVITY PLANNING FOR LANDSAT 8 AND 9
Neil Dhingra, Orbit Logic, United States

14:20-14:30 IAC-22/B6/IP/68112
SPACE TARGET POSE ESTIMATION FRAMEWORK WITH DEEP REINFORCEMENT LEARNING TECHNIQUE
Jing Yuan, National Key Laboratory of Aerospace Flight Dynamic, Northwestern Polytechnical University, China

14:30-14:40 IAC-22/B6/IP/72462
VEHICLE DESIGN AND MISSION ARCHITECTURE FOR AN EXPLORATION EXCURSION VEHICLE FOR DEIMOS AND PHOBOS
Cameron Rough, Nexus Aurora, United States

14:40-14:50 IAC-22/B6/IP/72463
MISSION ARCHITECTURE FOR ROBOTIC, LOW-COST, HIGH-FIDELITY MAPPING OF MISSION AREAS
Cameron Rough, Nexus Aurora, United States

14:50-15:00 IAC-22/B6/IP/68837
COMPREHENSIVE HIGH-LEVEL AVIONICS SYSTEMS FOR EXPLORATION
Nathaniel Hargrave, Nexus Aurora, Canada

SCREEN #29

13:30-13:40 IAC-22/B6/IP/72544
DATASAT - ADA GROUND STATION NETWORK AUTOMATIC DIRECTIONAL ANTENNA FOR SPACE COMMUNICATION WITH LOW POLAR ORBITING SATELLITES
Sergio Soares, Brazil

13:40-13:50 IAC-22/B6/IP/69161
SPEECH TO TEXT FOR AUTOMATIC TRANSCRIPTION AND INDEXING OF VOICE LOOPS AT ESOC
Cesar Augusto Guzman Alvarez

13:50-14:00 IAC-22/B6/IP/69844
CONCEPT OF A REFUELLING STATION FOR WATER-BASED PROPELLANTS IN GEOSTATIONARY ORBIT
Juliette Antoun

14:00-14:10 IAC-22/C1/IP/74048
ADAPTATIVE MULTI INPUT MULTI OUTPUT CONTROLLER FOR A TITAN ROVER CONCEPT
Jerry Varghese, Purdue University, United States

14:10-14:20 IAC-22/C1/IP/70650
OPTIMAL LAUNCH WINDOWS FOR ARTEMIS III AND BEYOND LEVERAGING CONTOUR MAPS
Aaron Houin, NASA, United States

14:20-14:30 IAC-22/C1/IP/73863
IENAI GO: A FREE TOOL FOR CONCURRENT MISSION DESIGN AND OPTIMIZATION WITH ON-BOARD ELECTRIC PROPULSION
Francisco de Borja De Saavedra, ienai SPACE, Spain

14:30-14:40 IAC-22/C1/IP/69046
MAPPING LONG-TERM NATURAL ORBITS ABOUT TITANIA, A SATELLITE OF URANUS
Silvia Maria Giuliani Winter, UNESP - Univ Estadual Paulista, Brazil

14:40-14:50 IAC-22/C1/IP/69012
FAMILIES OF DISPLACED NON-KEPLERIAN POLAR ORBITS FOR SPACE-BASED SOLAR ENERGY APPLICATIONS
Onur Çelik, University of Glasgow, United Kingdom

14:50-15:00 IAC-22/C1/IP/71445
SINGULARITY-FREE HYBRID CONTROL FOR AUTONOMOUS BERTHING OF TWO SPACECRAFTS
Dipak Kumar Giri, Indian Institute of Technology Kanpur, India

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SCREEN #30

13:30-13:40 IAC-22/C1/IP/69136
NOVEL GEAR BASED ACTUATION MECHANISM FOR SPACECRAFT'S ATTITUDE CONTROL
Dipak Kumar Giri, Indian Institute of Technology Kanpur, India

13:40-13:50 IAC-22/C1/IP/73507
OPTIMIZATION OF CHASER TRAJECTORY FOR ACTIVE DEBRIS REMOVAL MISSIONS
Daniilo Zona, Università del Salento, Italy

13:50-14:00 IAC-22/C1/IP/72313
A TRANSPORT THEOREM FOR THE INERTIA TENSOR FOR SIMPLIFIED SPACECRAFT DYNAMICS DEVELOPMENT
Jordan Maxwell, [unlisted], United States

14:00-14:10 IAC-22/C1/IP/73745
MODELLING AND SIMULATION OF AN ON-ORBIT EXPERIMENT FOR TESTING A NOVEL ENGINE TECHNOLOGY
Martina Rusconi, Politecnico di Milano, Italy

14:10-14:20 IAC-22/C1/IP/68421
A SURVEY OF LONGITUDINAL-SHIFT MANEUVERS PERFORMED BY GEOSYNCHRONOUS (GEO) SATELLITES FROM 2010 TO 2021
Thomas G. Roberts, Massachusetts Institute of Technology (MIT), United States

14:20-14:30 IAC-22/C1/IP/71704
REAL-TIME OPTIMAL CONTROL OF A 6-DOF STATE-CONSTRAINED CLOSE-PROXIMITY RENDEZVOUS MISSION
Akan Selim, Istanbul Technical University, Turkey

14:30-14:40 IAC-22/C1/IP/67975
A VARIANT OF THE KÁRMÁN LINE THEORY FACILITATING THE IDENTIFICATION OF A PRECISE ALTITUDE BOUNDARY
Nicolas Bérend, ONERA - The French Aerospace Lab, France

14:40-14:50 IAC-22/C1/IP/69948
DISTRIBUTED GUIDANCE FOR FLEXIBLE SPACECRAFT LANDING ON ASTEROID
Chengyu Zhang, Beijing Institute of Technology (BIT), China

14:50-15:00 IAC-22/C1/IP/68896
DESIGN AND IMPLEMENTATION OF A MULTI-MISSION TORQUE MODEL SIMULATOR FOR EARTH SATELLITES
Fatima Alnaqbi, Khalifa University of Science and Technology (KUST), United Arab Emirates

SCREEN #31

13:30-13:40 IAC-22/C1/IP/68161
DYNAMICS IN THE VICINITY OF THE STABLE HALO ORBITS
David Lujan, University of Colorado Boulder, United States

13:40-13:50 IAC-22/C1/IP/70806
STABILIZATION OF SPACE-ADVERTISEMENT SATELLITE FORMATION
Kenta Nakajima, Kyushu University, Japan

13:50-14:00 IAC-22/C1/IP/73927
MACHINE LEARNING BASED ORBIT PREDICTION
Filipe Senra, University of Beira Interior, Portugal

14:00-14:10 IAC-22/C1/IP/70865
DATA-DRIVEN GUIDANCE FOR ASTEROID LANDING BASED ON REAL-TIME DYNAMIC MODE DECOMPOSITION
Taiga Kajikawa, Kyushu University, Japan

14:10-14:20 IAC-22/C1/IP/73449
ON OPTIMAL THREE-IMPULSE EARTH-MOON TRANSFERS IN A FOUR-BODY MODEL
Shanshan Pan, Nanjing University, China

14:20-14:30 IAC-22/C1/IP/69430
A FRAMEWORK FOR DERIVING AND VALIDATING THE MULTIBODY EQUATIONS OF MOTION OF MICRO-LAUNCHERS
Victor Covasan, International Space University (ISU), Portugal

14:30-14:40 IAC-22/C1/IP/69309
BALD EAGLE SEARCH OPTIMIZATION BASED BIOINSPIRED SPACECRAFT RENDEZVOUS- DOCKING AND SPACE DEBRIS MITIGATION
Priyank Dubey, Indian Institute of Technology, India

14:40-14:50 IAC-22/C1/IP/70312
N-BODY PROBLEM IN NON-INERTIAL REFERENCE FRAME. APPLICATION TO FULL TWO-BODY STABILITY PROBLEM
Daniel Condurache, Technical University of Iasi, Romania

14:50-15:00 IAC-22/C1/IP/71687
A SURVEY OF THE MAGNETIC DIPOLE MOMENT DETERMINATION METHODS APPLIED ON CUBESATS AND NANOSATELLITES
Abdelmajid Lassakeur, Agence Spatiale Algérienne (ASAL), Algeria

SCREEN #32

13:30-13:40 IAC-22/C1/IP/67205
DESIGN FOR EARTH-MARS CYCLER TRAJECTORIES BASED ON AERO ASSISTED ORBITAL TRANSFER
Shijie Sun, Science and Technology on Space Physics Laboratory, China

13:40-13:50 IAC-22/C1/IP/67886
AUTOMATIC MULTI-GRAVITY ASSIST TRAJECTORY DESIGN WITH MODIFIED TISSERAND GRAPHS EXPLORATION
Hadrien AFSA, Cranfield University, France

13:50-14:00 IAC-22/C1/IP/69596
OPTIMAL TRADE-OFF BETWEEN SOLAR ENERGY AND CONTROL INPUT WHILE RENDEZVOUS AND DOCKING OF A CUBESAT WITH A ROTATING TARGET SPACECRAFT
Abhijeet Abhijeet, Indian Institute of Technology, India

14:00-14:10 IAC-22/C1/IP/70655
LOW-COST MANUFACTURING AND TESTING OF ATTITUDE CONTROL SYSTEMS FOR CUBESATS
Kevin Burville, Simon Fraser University, Canada

14:10-14:20 IAC-22/C1/IP/72193
PROCESSING OF ALTIMETRIC DATA FOR PRECISE ORBIT DETERMINATION
Edoardo Del Vecchio, Sapienza University of Rome, Italy

14:20-14:30 IAC-22/C1/IP/73986
OPTIMAL CONTROL OF J2 FORMATIONS SUBJECT TO DRAG USING MPC
Karthick Dharmarajan, University of Rome "La Sapienza", Italy

14:30-14:40 IAC-22/C1/IP/70497
HYBRID MULTI-ALGORITHMIC ATTITUDE DETERMINATION AND CONTROL ARCHITECTURE
Cansu Yildirim, Middle East Technical University, Turkey

14:40-14:50 IAC-22/C1/IP/68631
APPLICATION OF SINGULAR PERTURBATION THEORY TO SPACE FLIGHT DYNAMICS PROBLEMS
Giulio Avanzini, Università del Salento, Italy

14:50-15:00 IAC-22/C1/IP/71336
INITIAL GUESSES FOR Cislunar LOW-THRUST TRANSFERS
Markus Grass, Institute of Space Systems, University of Stuttgart, Germany

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SCREEN #33

- 13:30-13:40 IAC-22/C1/IP/73907**
ACCESSIBLE AND RETRIEVABLE ASTEROIDS CONSIDERING LUNAR AND SOLAR GRAVITY ASSISTS
Hongru Chen, Kyushu University, Japan
- 13:40-13:50 IAC-22/C2/IP/68351**
RESEARCH ON THE ANALYSIS OF DRILLING BEHAVIOR TO MINIMIZE DELAMINATION IN CARBON FIBER REINFORCED PLASTICS
Sirapop Mongkolves, National Astronomical Research Institute of Thailand (NARIT), Thailand
- 13:50-14:00 IAC-22/C2/IP/69977**
FINITE TIME FAULT-TOLERANT CONTROL AND MULTIPLE VIBRATION SUPPRESSION OF SPACE ROBOT WITH ELASTIC BASE, ELASTIC JOINTS AND FLEXIBLE LINKS
Haiping Ai Fuzhou, University, China
- 14:00-14:10 IAC-22/C2/IP/71796**
A SIMPLIFIED THERMAL ANALYSIS FOR THAI SPACE CONSORTIUM-1 SATELLITE (TSC-1)
Chinathip Narongphun, National Astronomical Research Institute of Thailand (NARIT), Thailand
- 14:10-14:20 IAC-22/C2/IP/72968**
PREDICTION OF BRAZE JOINT STRENGTH OF DISSIMILAR MATERIALS BY NUMERICAL AND EXPERIMENTAL METHODS.
Anoop Kumar A, Indian Space Research Organization (ISRO), India
- 14:20-14:30 IAC-22/C2/IP/74066**
ON THE VIBRATION TESTING OF SPACE STRUCTURES
Nikolay Asmolovskiy, Space Structures GmbH, Germany
- 14:30-14:40 IAC-22/C2/IP/71447**
CRYOGENIC BEHAVIOUR OF AIRWARE 2050 ALUMINIUM ALLOY: APPLICATION FOR SPACE PRODUCTS DOWN TO LH2 ENVIRONMENT
David Cardinaux, Aubert & Duval, France
- 14:40-14:50 IAC-22/C2/IP/71841**
HIGH-PERFORMANCE THERMOPLASTIC COMPOSITE STRUCTURE FOR SUBORBITAL VEHICLES
Daniele Tortorici, Sapienza University of Rome, Italy
- 14:50-15:00 IAC-22/C2/IP/69861**
CHASSIS OPTIMIZATION OF A 1U CUBESAT MADE IN A DEVELOPING COUNTRY
Fabricio Ortiz, National Autonomous University of Honduras, Honduras

SCREEN #34

- 13:30-13:40 IAC-22/C2/IP/69883**
RESEARCH ON THE HEATING EFFECTS OF THE MAIN ENGINE JET OF THE SUBORBITAL VEHICLE
Xiaoyan Li, CASC, China
- 13:40-13:50 IAC-22/C2/IP/72365**
INNOVATION IN WATER ROCKETS DEVELOPMENT BASED ON BIOMIMICRY DESIGN TOOLS IN COLLABORATION WITH THE AEROSPACE ENGINEERING GROUP OF UNIVERSIDAD DE COSTA RICA (UCR)
Leonora de Lemos, Universidad de Costa Rica, Costa Rica
- 13:50-14:00 IAC-22/C2/IP/72333**
DESIGN OF A DEVICE TO SLOW THE MOTION AND VERTICAL DESCENT OF A WATER ROCKET INSPIRED BY TROPICAL SEEDS FROM COSTA RICA
Leonora de Lemos, Universidad de Costa Rica, Costa Rica
- 14:00-14:10 IAC-22/C2/IP/70300**
THERMAL CONTROL DESIGN OF CABIN TYPE FOR STAR SENSOR ON GEO SATELLITE
Han Chongwei, China Academy of Space Technology (CAST), China

- 14:10-14:20 IAC-22/C2/IP/72448**
STRUCTURE REDESIGN FOR THE NANOSATELLITE K'OTO
Maria Guadalupe Ortega Ontiveros, Facultad de Ingeniería-UNAM, Mexico
- 14:20-14:30 IAC-22/C2/IP/70332**
STRUCTURAL ASSESSMENT OF SOLID ROCKET MOTOR HARDWARE FROM THE MEASURED RESIDUAL STRAIN AND 3-D PROFILE IN THE LONG SEAM WELD LOCATION
Paul Murugan J, Indian Space Research Organization (ISRO), India
- 14:30-14:40 IAC-22/C2/IP/69146**
LAUNCH ENVIRONMENT STRUCTURAL SURVIVABILITY VERIFICATION FOR THEOS-2 SMALLSAT STRUCTURAL QUALIFICATION MODEL (SQM) BY STRUCTURAL DYNAMIC ANALYSIS AND VIBRATION TESTING.
Panachai Santanunakarn Geo-Informatics and Space Technology Development Agency (GISTDA), Thailand
- 14:40-14:50 IAC-22/C2/IP/69989**
HIGH-PERFORMANCE POLYIMIDE MEMBRANES FOR USE IN SOLAR SAIL PROPULSION
M. Gabriella Santonicola, Sapienza University of Rome, Italy
- 14:50-15:00 IAC-22/C2/IP/67949**
COMPILATION METHOD OF EQUAL DAMAGE ACCELERATED FATIGUE LOAD SPECTRUM FOR REUSABLE LAUNCH VEHICLE
Sichao Deng, China Academy of Launch Vehicle Technology (CALT), China

SCREEN #35

- 13:30-13:40 IAC-22/C2/IP/71984**
LAYOUT CANDIDATE SCHEMES FOR SMALL SATELLITE BASED ON MULTI-OBJECTIVE OPTIMIZATION ALGORITHM
Anuphong Sangthon, National Astronomical Research Institute of Thailand (NARIT), Thailand
- 13:40-13:50 IAC-22/C2/IP/71746**
PRELIMINARY STUDY OF AN ORIGAMI-INSPIRED DEPLOYABLE STRUCTURE FOR A SMALL-SCALE DEMONSTRATOR
Ines Uriol Balbin, Delft University of Technology (TU Delft), The Netherlands
- 13:50-14:00 IAC-22/C2/IP/70805**
DESIGN PROCESS AND NEW MATERIALS IN SMALL SATELLITE STRUCTURES
Edwin Cruz Martínez, [unlisted], Mexico
- 14:00-14:10 IAC-22/C2/IP/71814**
EXPERIMENTAL AND NUMERICAL INVESTIGATION OF SPREAD TOW FABRIC COMPOSITES FOR BOOM APPLICATION
Flavia Palmeri, Sapienza University of Rome, Italy
- 14:10-14:20 IAC-22/C2/IP/69503**
SHARJAH-SAT-1 STRUCTURAL DESIGN AND ANALYSIS
Tarifa AlKaabi
- 14:20-14:30 IAC-22/C2/IP/74254**
DETERMINATION OF THRUSTER CONFIGURATION AND EXPERIMENTAL VERIFICATION FOR BUOYANT ROVER CONCEPT
Mariana Londoño Orozco, [unlisted], Costa Rica
- 14:30-14:40 IAC-22/C3/IP/73331**
INNOVATIVE SOLUTIONS FOR THE POWER SUBSYSTEM OF LUNAR VEHICLES
Jeremy Aubert, ISAE - Institut Supérieur de l'Aéronautique et de l'Espace, France
- 14:40-14:50 IAC-22/C3/IP/69316**
A UK ROADMAP FOR THE DEVELOPMENT OF NUCLEAR POWER IN SPACE
David A. Homfray, Satellite Applications Catapult, United Kingdom
- 14:50-15:00 IAC-22/C3/IP/69939**
MULTIPHASE GEO-ENERGY PRODUCTION ON MARS USING GEOLOGIC CO2 STORAGE IN THE SEDIMENTARY BASINS
Sukhjot Singh, [unlisted], India

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SCREEN #36

- 13:30-13:40 IAC-22/C3/IP/73824**
SUPERCRITICAL CO2 BASED POWER GENERATION FOR RED PLANET
Aayushi Bohrey, University of Petroleum and Energy Studies, India
- 13:40-13:50 IAC-22/C3/IP/70604**
NUCLEAR BATTERIES AS POTENTIAL POWER SOURCE FOR FUTURE SPACECRAFT
Tomasz Mis, Warsaw University of Technology (WUT), Poland
- 13:50-14:00 IAC-22/C3/IP/72847**
THE UTILIZATION OF DYE-SENSITIZED SOLAR CELLS AS SATELLITE SUBSYSTEM AND FOR FUTURE LUNAR AND MARS BASE
Thomas Chretien, International Space University (ISU), France
- 14:00-14:10 IAC-22/C4/IP/68602**
STRATEGY FOR SIMULTANEOUS HYDROGEN TRAPPING AND METALLIC GRAIN SIZE CONTROL IN CERMET FUELS FOR NUCLEAR THERMAL PROPULSION
Jonathan Johnson, The University of Alabama, United States
- 14:10-14:20 IAC-22/C4/IP/73599**
A COMPARISON STUDY ON THE FEASIBILITY OF TWO LOW SLOSHING CONFIGURATIONS FOR SMALL SATELLITE MAGNETIC FLUID ACTUATION
Tanya Krishna Kumar, Indian Institute of Technology, India
- 14:20-14:30 IAC-22/C4/IP/71686**
USING DIFFERENTIAL PRESSURE SENSOR TO MEASURE NITROUS OXIDE LEVEL IN A TANK
Mateusz Czapski, Gdansk University of Technology, Poland
- 14:30-14:40 IAC-22/C4/IP/71681**
LESSONS LEARNED DURING SRAD HYBRID ROCKET MOTOR DEVELOPMENT
Mateusz Czapski, Gdansk University of Technology, Poland
- 14:40-14:50 IAC-22/C4/IP/67420**
9TONF STAGED COMBUSTION CYCLE LIQUID ROCKET ENGINE STARTUP ANALYSIS
BOYEON KHIM, [unlisted], Korea, Republic of
- 14:50-15:00 IAC-22/C4/IP/67274**
THE NANO-PROBE BY THE PHOTON TRANSPORTATION IN THE DEEP SPACE
Jamel Metmati, THALES Services, France

SCREEN #37

- 13:30-13:40 IAC-22/C4/IP/72215**
COMMON PITFALLS OF TESTING HYBRID ROCKET ENGINES AT STUDENT LED FACILITIES
Cyril Mani, McGill University, Canada
- 13:40-13:50 IAC-22/C4/IP/73423**
DYNAMIC MODELING AND SIMULATION OF A HYDROGEN PEROXIDE MONOPROPELLANT THRUSTER
Sukmin Choi, Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of
- 13:50-14:00 IAC-22/C4/IP/70874**
EXPERIMENTAL INVESTIGATION ON THROTTLING TRANSIENT RESPONSE OF BI-PROPELLANT THRUSTER USING CAVITATING VENTURI VALVE.
Vincent Ugolini, Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of
- 14:00-14:10 IAC-22/C4/IP/72921**
DEVELOPMENT OF ULTRA HIGH DN CERAMIC BALL BEARING FOR CRYOGENIC ROCKET ENGINE TURBOPUMP
BEN JACOB, Indian Space Research Organization (ISRO), Liquid Propulsion Systems Centre (LPSC), India
- 14:10-14:20 IAC-22/C4/IP/68583**
CONCEPTUAL DESIGN OF A N2O/PARAFFIN HYBRID SOUNDING ROCKET
Riccardo Gelain, Université Libre de Bruxelles, Belgium

- 14:20-14:30 IAC-22/C4/IP/67404**
OPTIMIZED ORBIT TRANSFER OF A GRAVIDYNE WITH LOW-THRUST PROPULSION
David Gil, United Arab Emirates University (UAEU), United Arab Emirates
- 14:30-14:40 IAC-22/C4/IP/72801**
NUMERICAL SIMULATION OF FLOW ATOMIZATION CAUSED BY TWO IMPINGING LIQUID JETS
Maryam Ozair, Pakistan Space and Upper Atmosphere Research Commission (SUPARCO), Pakistan
- 14:40-14:50 IAC-22/C4/IP/70336**
PARAMETRIC DESIGN AND TESTING OF EXPLOSION-PREVENTIVE SOLID PROPELLANT ROCKET ENGINES IN THE EVENT OF UNEXPECTED BEHAVIOR DURING COMBUSTION
Nicolás de Jong, LEEM-UPM, Spain
- 14:50-15:00 IAC-22/C4/IP/70817**
COMPARATIVE ANALYSIS OF NUMERICAL MODELS OF FILM AND REGENERATIVE COOLING IN THRUST CHAMBER AT HIGH PRESSURE
Haribalaji R, SASTRA University, India

SCREEN #38

- 13:30-13:40 IAC-22/C4/IP/68363**
HYPERGOLIC IGNITION CHARACTERIZATION OF LESS-TOXIC BI-PROPELLANTS USING HYDROCARBON FUEL BLEND AND HYDROGEN PEROXIDE
Vignesh G, ISRO Propulsion Complex, Mahendragiri, India, India
- 13:40-13:50 IAC-22/C4/IP/72772**
FEASIBILITY ANALYSIS FOR ELECTRIC PROPULSION SYSTEMS FOR SHORT TERM INTERPLANETARY MISSIONS
Pritha Pal, University of Michigan, United States
- 13:50-14:00 IAC-22/C4/IP/68964**
PHYSICAL PROPERTIES AND IGNITION CHARACTERISTICS OF HYPERGOLIC PROPELLANT WITH OXIDIZING ADDITIVES
Kyounghwan Lee, Hanbat National University, Korea, Republic of
- 14:00-14:10 IAC-22/C4/IP/68885**
IGNITION DELAY AND THERMOACOUSTIC COUPLING IN HYBRID ROCKET COMBUSTION
Wonjeong Hyun, Konkuk University, Korea, Republic of
- 14:10-14:20 IAC-22/C4/IP/70329**
VACUUM ARC THRUSTER ARCHITECTURE FOR GREEN ORBIT MAINTENANCE WITH SMALL SATELLITE MISSIONS
José-María Jiménez-Coronado, Costa Rica Institute of Technology (ITCR), Costa Rica
- 14:20-14:30 IAC-22/C4/IP/70496**
NUMERICAL ESTIMATION OF HEAT LOSS AND THRUST PERFORMANCE CHARACTERISTICS IN MICRO PROPULSION
Jeongmoo Huh, United Arab Emirates University (UAEU), United Arab Emirates
- 14:30-14:40 IAC-22/C4/IP/70493**
INTEGRATED INTERNAL AND EXTERNAL BALLISTICS FOR SOUNDING ROCKET DESIGN
Jeongmoo Huh, United Arab Emirates University (UAEU), United Arab Emirates
- 14:40-14:50 IAC-22/C4/IP/72898**
THE EFFECT OF AERODYNAMIC HEATING TO CRYOGENIC PROPELLANT DISCHARGE
Seungwan Baek, Korea Aerospace Research Institute (KARI), Korea, Republic of
- 14:50-15:00 IAC-22/C4/IP/69927**
NUMERICAL AND EXPERIMENTAL INVESTIGATION OF LAMBDA TYPE SEALS IN HIGH-PRESSURE CRYOGENIC BOLTED JOINTS
Vivek S, Indian Space Research Organization (ISRO), Liquid Propulsion Systems Centre (LPSC), India

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SCREEN #39

13:30-13:40 IAC-22/A1/IP/67593
XENOBOTS APPLICATIONS FOR SPACEFLIGHT
Dylan Kiesling, BLUECUBE Aerospace, United States

13:40-13:50 IAC-22/C4/IP/68283
PEPE: A LOW COST, RELIABLE, REUSABLE, USER- AND ENVIRONMENT- FRIEND PROPULSION SYSTEM
Luciano Battocchio, [unlisted], Czech Republic

13:50-14:00 IAC-22/C4/IP/71588
VACUUM TESTING OF 3D PRINTED 1N HYDROGEN PEROXIDE THRUSTER AND A NOVEL PLATINUM CATALYST
Varun Reddy Nandyala, FOTEC Forschungs- und Technologietransfer GmbH, Austria

14:00-14:10 IAC-22/C4/IP/73281
CONDITIONS FOR THE LONG-TERM EXISTENCE OF SPACECRAFT WITH AIR-BREATHING ELECTRIC PROPULSION IN ULTRA-LOW ORBITS ABOUT PLANETS
Alexander Golikov, Central AeroHydrodynamic Institute (TsAGI), Russian Federation

14:10-14:20 IAC-22/C4/IP/73421
THREE-DIMENSIONAL MHD ANALYSIS OF MAGNETIC PLASMA DRAG WITH COILS PLACED ON THREE AXES
Shoko Arita, Shizuoka University, Japan

14:20-14:30 IAC-22/C4/IP/68307
NUCLEAR THERMAL PROPULSION FOR IN-SPACE APPLICATIONS FOCUSING BERYLLIUM AS THE WORKING FLUID AND GRAPHITE AND FLIBE AS MODERATOR AND COOLANT AND THORIUM BLANKET
Aarya Kulkarni, International Space University (ISU), India

14:30-14:40 IAC-22/C4/IP/71152
NUMERICAL STUDY ON N-DECANE HEAT TRANSFER UNDER SUPERCRITICAL PRESSURE IN REGENERATIVE COOLING CHANNEL
Yuhang Li, Xi'an Aerospace Propulsion Institute, China

14:40-14:50 IAC-22/C4/IP/72784
RAPID DESIGN OF A SMALL SCALE KEROLOX FLIGHT VEHICLE PROPULSION SYSTEM
Nathan Hirsch, Viterbi School of Engineering, USC, United States

14:50-15:00 IAC-22/C4/IP/71232
EFFECT OF H2O2 CONCENTRATION AND CATALYTIC RATIO ON THE AUTOIGNITION CHARACTERISTICS OF RP-3 KEROSENE UNDER CATALYTIC IGNITION ENGINE-LIKE CONDITIONS
Shutao Han, Beihang University (BUAA), China

SCREEN #40

13:30-13:40 IAC-22/C4/IP/71078
HIGH FLUX HYBRID MOTOR DEVELOPMENT WITH DISTRIBUTED TUBE INJECTOR
Mehmet Kahraman, Deltav Space Technologies, Inc., Turkey

13:40-13:50 IAC-22/C4/IP/68710
TWO-PHASE, MULTICOMPONENT HYDROGEN PEROXIDE BLOWDOWN INJECTOR MODELLING AND TESTS COMPARISONS
Arthur Bahdur, Alcântara Launch Center, Brazil

13:50-14:00 IAC-22/C4/IP/71103
RESEARCH ON ACOUSTIC CLOSED-END DEVICE FOR HYDRAULIC EXCITATION TEST OF LRE
meng dong, Xi'an Aerospace Propulsion Institute, China

14:00-14:10 IAC-22/C4/IP/72246
COMPUTATIONAL MODEL FOR PERFORMANCE PREDICTION OF A NITROUS OXIDE / EICOSANE HYBRID ROCKET ENGINE
Joel Jean-Philippe, McGill University, Canada

14:10-14:20 IAC-22/C4/IP/72865
PRELIMINARY SCREENING OF CATALYTIC BEDS FOR HYDROGEN PEROXIDE THRUSTERS WITH THRUST LEVEL LOWER THAN 0.5 N
Rawoof Shaik

14:20-14:30 IAC-22/C4/IP/71580
A REVIEW: ON THE VARIOUS FEOP THRUSTERS PRESENT IN THE INDUSTRY AND THEIR PERFORMANCE COMPARISON
Anirudh Balaji N S

14:30-14:40 IAC-22/D1/IP/69405
DEVELOPMENT AND USE OF BPSCI, AN OPEN-SOURCE AND ADAPTABLE DYNAMICS VISUALIZATION SOFTWARE
Jerry Varghese, Purdue University, United States

14:40-14:50 IAC-22/D1/IP/72679
ASTRAEUS: A NEW PERSPECTIVE ON TITAN'S LAKES
James E. McKeivitt, Conex Research, Austria

14:50-15:00 IAC-22/D1/IP/71943
CONFIGURABLE ARCHITECTURE FOR FULLY AUTONOMOUS ROVER OPERATIONS
Riccardo Maderna, AIKO S.r.l., Italy

SCREEN #41

13:30-13:40 IAC-22/D1/IP/73245
A LOW-COST ATTITUDE CONTROL SYSTEM USING HARD DISK DRIVE BASED REACTION WHEELS FOR CUBESATS
Yaqoob Alqassab, National Space Science Agency (NSSA), Bahrain

13:40-13:50 IAC-22/D1/IP/70438
VIRTUAL HARDWARE-IN-THE-LOOP TESTING OF THE ADCS OF DHABISAT
Yaqoob Alqassab, National Space Science Agency (NSSA), Bahrain

13:50-14:00 IAC-22/D1/IP/70354
MODEL PREDICTIVE IMPEDANCE CONTROL FOR ORBITAL REPLACEMENT UNIT INSTALLATION BY A CUBESAT SERVICER
Mitchell Kurnell, McGill University, Canada

14:00-14:10 IAC-22/D1/IP/72691
METHODS FOR INCREASING THE DEPENDABILITY OF HIGH PERFORMANCE, MANY-CORE, SYSTEM-ON-CHIPS
Rafal Graczyk, University of Luxembourg, Luxembourg

14:10-14:20 IAC-22/D1/IP/69445
A STREAMLINED DESIGN, DEVELOPMENT AND VALIDATION PROCESS FOR MICRO-LAUNCHERS
Victor Covasan, International Space University (ISU), Portugal

14:20-14:30 IAC-22/D1/IP/68371
NOVEL V&V APPROACH AT PIL LEVEL IN OPEN LOOP CONFIGURATION FOR NONLINEAR ONLINE OPTIMIZATION PARAFOL GUIDANCE OF REUSABLE SPACE VEHICLES
Andrei Lucian Alexe, [unlisted], Romania

14:30-14:40 IAC-22/D1/IP/70420
A NOVEL ON-BOARD AI-BASED ADAPTIVE IMAGE PROCESSING AND COMPRESSION FOR EARTH OBSERVATION CUBESATS
Aysha Alharam, National Space Science Agency (NSSA), Bahrain

14:40-14:50 IAC-22/D2/IP/68113
REVIEW OF THE ENVIRONMENTAL IMPACT OF SPACE TRANSPORTATION SYSTEMS IN A FULL LIFE CYCLE ASSESSMENT
Jan-Steffen Fischer, Institute of Space Systems, University of Stuttgart, Germany

14:50-15:00 IAC-22/D2/IP/70537
DEVELOPMENT OF AN ON-DEMAND, SMALL PAYLOAD RETURN CAPABILITY FROM LEO
John Bradford, SpaceWorks Enterprises, Inc. (SEI), United States

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SCREEN #42

13:30-13:40 IAC-22/D2/IP/74385
CORE LAUNCH RANGE RENEWAL AT THE GUIANA EUROPE SPACE PORT
Fabienne Serene, Centre National d'Etudes Spatiales (CNES), France

13:40-13:50 IAC-22/D2/IP/69646
PERSPECTIVES FOR THE USE OF NEW SOLUTIONS IN THE CREATION OF SUBORBITAL LAUNCH VEHICLES
Vladyslav Proroka, Oles Honchar Dnipropetrovsk National University, Ukraine

13:50-14:00 IAC-22/D2/IP/73330
THE CHALLENGES OF DESIGNING A STUDENT SOUNDING ROCKET FOR A 100 KM APOGEE
Szymon Malecki, Warsaw University of Technology (WUT), Poland

14:00-14:10 IAC-22/D2/IP/67173
CHALLENGES AND RECOMMENDATIONS FOR INTERCONTINENTAL SUBORBITAL COMMERCIAL LINER TRANSPORTATION
Jan Walter Schroeder, International Space University (ISU), Germany

14:10-14:20 IAC-22/D3/IP/67937
IN-SPACE MANUFACTURING - 2022 INDUSTRY SURVEY AND COMMERCIAL LANDSCAPE
Erik Kulu, Estonia

14:20-14:30 IAC-22/D4/IP/67233
THE ANTI-GRAVITY PROPULSION : THE FUTURE OF SMALL SPACECRAFT
Jamel Metmati, THALES Services, France

14:30-14:40 IAC-22/D4/IP/67218
THE AFRICA NEW SPACE REQUIREMENTS
Jamel Metmati, THALES Services, France

14:40-14:50 IAC-22/D4/IP/71177
MOBILE BASES FOR THE MOON AND MARS
Oleg Aleksandrov, Private individual www.oleg.space, United States

14:50-15:00 IAC-22/D4/IP/71151
HUMAN COLONIZATION OF THE SURFACE OF VENUS AND ITS BOWELS RIGHT NOW.
Oleg Aleksandrov, Private individual www.oleg.space, United States

SCREEN #43

13:30-13:40 IAC-22/D4/IP/69635
MULTI-DRONE SPACESHIP CONCEPT PROPOSAL FOR ASTEROID MINING
Salvador Daniel Escobedo, Casillas University of Guadalajara, Mexico

13:40-13:50 IAC-22/D4/IP/70284
LET'S GO TO THE STARS: A SURVEY OF INTERSTELLAR TRAVEL IN POPULAR CULTURE TO INFORM PUBLIC ENGAGEMENT FOR FUTURE INTERSTELLAR MISSIONS
Jason Batt, 100 Year Starship, United States

13:50-14:00 IAC-22/D4/IP/72254
A LEGAL VISION FOR THE FUTURE: PEACEABLE SETTLEMENT OF SPACE DISPUTES UNDER HUMANKIND'S COMPULSORY JURISDICTION
Andrew Simon-Butler, University of British Columbia, Canada

14:00-14:10 IAC-22/D4/IP/67834
EXOPLANETS AND A BACKUP PLAN FOR LIFE ON EARTH
Pauli Laine, [unlisted], Finland

14:10-14:20 IAC-22/D5/IP/70108
METHODS FOR SIMULATING CROWD MOVEMENTS IN LOW GRAVITY ENVIRONMENTS FOR SAFE EMERGENCY EGRESS DESIGN
Szymon Matkowski, Nexus Aurora, Poland

14:20-14:30 IAC-22/D6/IP/74384
IMPROVING FLIGHT SAFETY METHODS AND CONCEPTS TO FIT FUTURE CHALLENGES AT THE GUIANA SPACE CENTER
Melissa Zemoura, Centre National d'Etudes Spatiales (CNES)

14:30-14:40 IAC-22/E1/IP/70607
CASE STUDY OF IMPLEMENTING THE NEW SPACE PERSONNEL TRAINING CURRICULUM
Shinmyeong Kim, Satellite Technology Research Center (SaTReC), KAIST, Korea, Republic of

14:40-14:50 IAC-22/E1/IP/71450
MENTORSHIP IN THE SPACE INDUSTRY: A CASE STUDY ON THE IMPACT OF MENTORSHIP FOR GENDER MINORITIES
Sejal Budhaliya, Space Generation Advisory Council (SGAC), India

14:50-15:00 IAC-22/E1/IP/73374
SOCIETY OF WOMEN IN SPACE EXPLORATION AT CONCORDIA: STRATEGIES EMPLOYED TO INCREASE INVOLVEMENT AND INTEREST IN MULTIDISCIPLINARY FIELDS OF SPACE EXPLORATION FOR UNIVERSITY-LEVEL WOMEN
Irina Stroica, Concordia University, Canada

SCREEN #44

13:30-13:40 IAC-22/E1/IP/68325
SPACE FIELD ATTRACTIVENESS FOR AFRICAN TALENTS
Maha Soulam, [unlisted], Morocco

13:40-13:50 IAC-22/E1/IP/68537
PERSON PERCEPTION ON GENDER-RELATED INEQUALITIES IN THE ITALIAN AND JAPANESE AEROSPACE SECTORS
Alice Pellegrino, QinetiQ Space nv, Belgium

13:50-14:00 IAC-22/E1/IP/74299
A CASE FOR THE SECONDARY CLASSROOM: GEOSPATIAL AND EARTH OBSERVATION TECHNOLOGY FOR INCREASING AWARENESS OF GEOGRAPHY AND GEOLOGY DISCIPLINES
Alina Vizireanu, Space Generation Advisory Council (SGAC), United Kingdom

14:00-14:10 IAC-22/E1/IP/72701
CRITICAL SPACE EDUCATIONAL ACTIVITIES IN THE POST-COVID-19 RECOVERY CURRICULUM
Alina Vizireanu, Space Generation Advisory Council (SGAC), United Kingdom

14:10-14:20 IAC-22/E1/IP/73770
GIS4SCHOOLS – PAVING THE WAY FOR THE SCHOOL OF TOMORROW: LEVERAGING ON SPACE TECHNOLOGY TO STIMULATE STEAM LEARNING AND TEACHING
Alessandra Vernile, EURISY, France

14:20-14:30 IAC-22/E1/IP/73379
TRAINING UNDERGRADUATE ENGINEERING STUDENTS FOR SPACE INDUSTRY START-UPS THROUGH STUDENT-RUN DESIGN TEAMS
Nykoda Cooper, Faculty of Engineering, Carleton University, Canada

14:30-14:40 IAC-22/E1/IP/73867
NURTURING SPACE WORKFORCE THROUGH INTERNATIONAL COLLABORATION: NEXT GENERATION'S PERSPECTIVE
Tensae Alemayehu Ali, Space Generation Advisory Council (SGAC), Ethiopia

14:40-14:50 IAC-22/E1/IP/72346
SPACE EDUCATION INITIATIVES FOR CAPACITY BUILDING IN PANAMA
Angel Arcia, [unlisted], Panama

14:50-15:00 IAC-22/E1/IP/72277
EEE+14 SPACE EDUCATION PROGRAM A SUCCESS STORY OF EDUCATIONAL INNOVATION IN COLOMBIA 10 YEARS LATER
Nataly Mendez, [unlisted], United States

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SCREEN #45

- 13:30-13:40 IAC-22/E1/IP/71186**
THE SPACE FOR ALL NATIONS INITIATIVE: TOWARDS MORE EQUITABLE AND DIVERSE ACCESS TO SPACE
Ana Pires, INESC-TEC, Portugal
- 13:40-13:50 IAC-22/E1/IP/73854**
CAREER AWARENESS AND EDUCATION IN THE SPACE SECTOR: SPAZIO ALBEDO PROJECT
Alessia Gloder, Dresden University of Technology (DUT) / Technische Universität Dresden, Germany
- 13:50-14:00 IAC-22/E1/IP/73957**
A NEW APPROACH TO BASIC EDUCATION USING SPACE TECHNOLOGIES FOR BRAZILIAN ADOLESCENT STUDENTS.
Leonardo Souza
- 14:00-14:10 IAC-22/E10/68784**
SOLAR SAILS ASTEROID GRAND TOUR COOPERATION
Jean-Yves Prado, PLATINEO, France
- 14:10-14:20 IAC-22/E3/IP/70947**
ANALYSIS OF PATENT FILING DATA IN THE SPACE SECTOR: KEY FINDINGS AND LESSONS LEARNED
Tomas Hrozensky, European Space Policy Institute (ESPI), Austria
- 14:20-14:30 IAC-22/E3/IP/73781**
SPACE, DEFENCE AND SECURITY: COOPERATION BETWEEN ESA AND EU TO ENHANCE EUROPE'S GEOPOLITICAL ROLE
Maria Vittoria Prest, Italian Space Agency (ASI), Austria
- 14:30-14:40 IAC-22/E3/IP/72442**
EXPLORING MEGAPROJECT GOVERNANCE WITH REGARD TO COLLABORATION THROUGH THE CASE OF THE INTERNATIONAL SPACE STATION
Gabor Tatar, Sweden
- 14:40-14:50 IAC-22/E3/IP/69071**
IS THERE ROOM TO REGULATE THE SPACE SECTOR IN BRAZIL?
Lucia Helena Freitas, Brazilian Space Agency (AEB), Brazil
- 14:50-15:00 IAC-22/E3/IP/69578**
A CASE FOR MARKET-BASED EMISSION CONTROL IN THE SPACE INDUSTRY
Erin Richardson, University of Toronto, Canada

SCREEN #46

- 13:30-13:40 IAC-22/E3/IP/72352**
TURNING AN ADMONITION INTO ASPIRATION: HOW A SLAVERY-FREE MARS CAN SECURE THE SPACE SECTOR'S ROLE AS A MAJOR DRIVER OF SUSTAINABLE DEVELOPMENT
Juliana Rinaldi-Semione, United Kingdom
- 13:40-13:50 IAC-22/E3/IP/73148**
CURRENT AND FUTURE APPLICATIONS OF EARTH OBSERVATION DATA IN ADMINISTRATIVE, CIVIL AND CRIMINAL PROCEEDINGS
Ivan Fino, Italian National Research Council (CNR), Italy
- 13:50-14:00 IAC-22/E3/IP/70313**
ECONOMIC EFFICIENCY OF A MINI UPPER STAGES: OPPORTUNITIES, APPROACHES, SOLUTIONS
Georgy Shcheglov, Bauman Moscow State Technical University, Russian Federation
- 14:00-14:10 IAC-22/E3/IP/70158**
ECONOMICAL FEASIBILITY OF REUSABLE LAUNCH VEHICLES FOR THE LIMITED-MARKET-SIZE ENTITIES
Soon-Young Park, Korea Aerospace Research Institute (KARI), Korea, Republic of

- 14:10-14:20 IAC-22/E3/IP/68083**
TECHNOLOGICAL INNOVATION, ECONOMIC GROWTH AND SPACE2030 AGENDA: A BRIEF REPORT BASED ON A PERSPECTIVE OF AN EMERGING COUNTRY
Aluisio Camargo, Brazilian Space Agency (AEB), Brazil
- 14:20-14:30 IAC-22/E3/IP/67581**
STRATEGIC INTELLIGENCE IN CONDUCTING THE BRAZILIAN SPACE PROGRAM
Aluisio Camargo, Brazilian Space Agency (AEB), Brazil
- 14:30-14:40 IAC-22/E3/IP/74296**
SPACE DIPLOMACY: BLUE ECONOMY FOR A GREEN FUTURE
I. Pessôa-Lopes, International Space Consultant, Portugal
- 14:40-14:50 IAC-22/E3/IP/72499**
QUO VADIS SUBORBITAL ROCKETRY. THE DILEMMAS AND REGULATORY ALTERNATIVES FOR THE EMERGING NATIONAL SUBORBITAL LAWS
Katarzyna Malinowska, Kozminski University, Poland
- 14:50-15:00 IAC-22/E3/IP/67610**
ESTIMATING COPERNICUS HIGH PRIORITY CANDIDATE MISSIONS JOBS FOR EUROPE
Elisabetta Lamboglia, European Space Agency (ESA-ESTEC), The Netherlands

SCREEN #47

- 13:30-13:40 IAC-22/E3/IP/68243**
GLOBAL SPACE STRATEGY – UNITING TOWARDS A COMMON OBJECTIVE
Nipuni Silva
- 13:40-13:50 IAC-22/E4/IP/67882**
THE ITALIAN AERONAUTICAL SECTOR AND THE A.I.R., THE ITALIAN ROCKET ASSOCIATION
Mario Marchetti, Associazione Italiana di Aeronautica e Astronautica (AIDAA), Italy
- 13:50-14:00 IAC-22/E4/IP/69588**
THE LIVING CONTRIBUTION OF ISLAMIC SCIENCE TO SPACE EXPLORATION
Ilias Fernini, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates
- 14:00-14:10 IAC-22/E4/IP/73041**
SPACE DIPLOMACY BETWEEN RIVALS: LESSONS FOR THE US-CHINA SPACE RELATIONSHIP
Robert Lincoln Hines, Air University, United States
- 14:10-14:20 IAC-22/E5/IP/71562**
CELESTIALLY ALIGNING BERNAL SPHERE
Samuel Ximenes, WEX Foundation, United States
- 14:20-14:30 IAC-22/E5/IP/71269**
A CROSSED LOOK ON SPACE ARCHITECTURE
Olivier Boisard, Consulting engineer OB-Conseil, and professor at Ecole Centrale de Lille, France
- 14:30-14:40 IAC-22/E5/IP/71672**
BHEDADIPIKA - EXPLORING THE ART-SCIENCE DUALITY THROUGH THE MEDIUM OF SPACE
Priyanka Das Rajkakati, ISAE - Institut Supérieur de l'Aéronautique et de l'Espace, France
- 14:40-14:50 IAC-22/B4/IP/69123**
HADES: A SMALLSAT MISSION TO CHARACTERIZE RADIO FOREGROUNDS IN THE LUNAR ENVIRONMENT
Grace Genszler, United States
- 14:50-15:00 IAC-22/E5/IP/68389**
ROLE OF MIDDLE MANAGEMENT IN THE IMPLEMENTATION OF EQUALITY, DIVERSITY AND INCLUSION AS A BUSINESS CATALYST FOR THE FUTURE AEROSPACE INDUSTRIAL WORKFORCE
Alice Pellegrino, QinetiQ Space nv, Belgium

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SCREEN #48

- 13:30-13:40 IAC-22/E5/IP/74257**
SOCIETAL RESPONSE TO NEGATIVE ENVIRONMENTAL EXTERNALITIES: THE CASE OF SPACE ACTIVITIES
Elwyn Sirieys, Massachusetts Institute of Technology (MIT), United States
- 13:40-13:50 IAC-22/E5/IP/70394**
KOSMOS 2.0, AN UPGRADED AND CUTTING-EDGE VERSION OF THE ARTISTIC & SCIENTIFIC MONUMENTAL INSTALLATION KOSMOS
Xavier Daniel, France
- 13:50-14:00 IAC-22/E5/IP/70309**
PRINCIPLES OF PUBLIC SPACE CONSTRUCTION IN THE STRUCTURE OF THE NEXT GENERATIONS OF MANNED SPACE STATIONS
Georgy Shcheglov, Bauman Moscow State Technical University, Russian Federation
- 14:00-14:10 IAC-22/E5/IP/74029**
ABOUT ARCHITECTURE IN EXTREME CONDITIONS. HOW CAN SPACE AND EXTREME ENVIRONMENT HELP ARCHITECTS DESIGN BETTER?
Wiktoria Dziadula, Silesian University of Technology, Poland
- 14:10-14:20 IAC-22/E5/IP/74107**
ANALOG HABITATS AS RESEARCH PLATFORM - LUNARES RESEARCH STATION MISSION CONTROL CONCLUSIONS AND GUIDELINES FOR STANDARDIZED MISSIONS ORGANIZATION. INVESTIGATING INCREASE IN RESEARCH DATA AMOUNT AND QUALITY, AND IRRELEVANT VARIABLES MITIGATION
Agata Mintus, Space is More, Poland
- 14:20-14:30 IAC-22/E5/IP/68266**
MARS UNDERGROUND: A LANDSCAPE STRATEGY FOR LONG TERM HUMAN COLONIES ON THE RED PLANET.
Francesco Axel Pio Romio, Italy
- 14:30-14:40 IAC-22/E5/IP/73609**
APPLICATION OF THE BIODOME GRIDSHIELD SYSTEM FOR LUNAR HABITAT AND ANALOG BASE CONSTRUCTION
Roland Nemeth, [unlisted], Hungary
- 14:40-14:50 IAC-22/E5/IP/73808**
PAYLOAD HOSTING INITIATIVE FOSTERING SPACE RESEARCH AND DEVELOPMENT TO BENEFIT SOCIETY
Maitha Alshizawi, United Arab Emirates
- 14:50-15:00 IAC-22/E5/IP/70536**
STANDARDIZED CARBON FOOTPRINT FOR A CUBESAT MISSION, A SUSTAINABILITY STUDY CASE ON EMERGING COUNTRIES WORKING ON SPACE TECHNOLOGY.
Eliana Cadena, Astralintu Space Technologies, Ecuador

SCREEN #49

- 13:30-13:40 IAC-22/E5/IP/74306**
WORKOUTS IN SPACE ANALOG STATION HABITAT MARTE
Julio Rezende, Federal University of Rio Grande do Norte (UFRN), Brazil
- 13:40-13:50 IAC-22/E5/IP/67279**
PRESERVING UNSPOILED SPACE FOR FUTURE GENERATIONS
Alyson Decker, Jus Ad Astra, United States
- 13:50-14:00 IAC-22/E5/IP/69017**
WILL WE EVER ACHIEVE TRUE GENDER EQUALITY IN AERONAUTICS?
Helene FOURCADE, University of Toulouse II Jean Jaurès, France
- 14:00-14:10 IAC-22/E5/IP/72738**
HISTORICAL REVIEW OF DESIGN INVOLVEMENT IN SPACE ACTIVITY
Yurie Suzuki, Royal College of Art, Japan
- 14:10-14:20 IAC-22/E5/IP/68071**
"A WOMAN & #8216; IN THE SNOW AMONG THE CLOCKS AND INSTRUMENTS": HOW ADRIENNE RICH REIMAGINED THE LIVES OF WOMEN ASTRONOMERS
Ashley Lear, Embry-Riddle Aeronautical University, United States

- 14:20-14:30 IAC-22/E5/IP/73853**
ASTROFEMINISM AND SUSTAINABILITY: THE RELATIONSHIP BETWEEN SPACE AND THE FUTURE OF OUR PLANET
Layla Martin, United States
- 14:30-14:40 IAC-22/E5/IP/72664**
FIRST OFF-PLANET ART GALLERY SETS OFF FOR THE INTERNATIONAL SPACE STATION.
Niravkumar Patel, ILEWEG EuroMoonMars, Germany
- 14:40-14:50 IAC-22/E7/IP/71465**
ON-ORBIT SERVICING: FROM INTERNATIONAL SPACE LAW TO NATIONAL LAWS: CURRENT STATE OF PLAY
Lukas Christopher Jung, European Space Agency (ESA), France
- 14:50-15:00 IAC-22/E7/IP/74184**
PARAMETERS, CONCEPTS AND THE TERMINOLOGY OF OUTER SPACE LAW: A REVIEW OF THE ESSENTIAL FACILITIES SERVED BY OUTER SPACE ACTIVITIES AND THE RULES OF INTERPRETATION FOR TREATY LAW AND SOFT LAW GUIDELINES.
Lesley Jane Smith, Leuphana University of Lüneburg/Weber-Steinhaus & Smith, Germany

SCREEN #50

- 13:30-13:40 IAC-22/E7/IP/70673**
LEGAL ISSUES OF SPACECRAFT MANEUVERING WITH ARTIFICIAL INTELLIGENCE- COMPARATIVE STUDY WITH THE JAPANESE REGULATIONS FOR AUTONOMOUS DRIVING VEHICLES ON THE GROUND
Hisako Moriguchi, Japan Aerospace Exploration Agency (JAXA), Japan
- 13:40-13:50 IAC-22/E7/IP/73221**
OVERCOMING THE GEOCENTRIC PERSPECTIVE TO ENSURE THE FUNCTIONING OF THE FUTURE SPACE SETTLEMENTS.
Veronica Moronese, Space Generation Advisory Council (SGAC), Italy
- 13:50-14:00 IAC-22/E7/IP/74097**
REGISTRATION ASPECTS OF MEGA-CONSTELLATIONS' SATELLITES UNDER INTERNATIONAL LAW
Irina Chernykh, Peoples' Friendship University of Russia (RUDN University), Russian Federation
- 14:00-14:10 IAC-22/E7/IP/73571**
ON THE 55TH ANNIVERSARY OF THE RESCUE AGREEMENT: THE DRAFTING HISTORY AND CONTRIBUTION TO STRENGTHENING INTERNATIONAL COOPERATION
Elina Morozova, Intersputnik International Organization of Space Communications, Russian Federation
- 14:10-14:20 IAC-22/E9/IP/68963**
THE INEQUITABLE IMPACT OF SPACE DEBRIS ON DEVELOPING STATES: THE IMPORTANCE OF INTERDISCIPLINARY APPROACHES
Anuradha Damale, [unlisted], United Kingdom
- 14:20-14:30 IAC-22/E9/IP/72010**
VIOLENCE, TERRORISM AND CYBER-THREATS: PHILOSOPHICAL, CRIMINOLOGICAL AND LEGAL PERSPECTIVES
Iva Ramuš Cvetkovič, Slovenia
- 14:30-14:40 IAC-22/E9/IP/73736**
SPACE SECTOR TRANSFORMATION : A METHOD TO TRIGGER CORPORATE SOCIAL RESPONSIBILITY
Pierre Boutté, Centre National d'Etudes Spatiales (CNES), France
- 14:40-14:50 IAC-22/E9/IP/71650**
BLOCKCHAIN FOR SUSTAINABLE SPACE ACTIVITIES
Marcia Luiza Mignone, Brazil
- 14:50-15:00 IAC-22/E9/IP/68991**
TEACHING THE NEXT GENERATION OF SCIENTISTS STRATEGIC AND SUSTAINABLE ADAPTATION PRACTICES IN AGRONOMY FOR GROUP CONFLICT PREVENTION IN THE PEACEFUL USES OF OUTER SPACE
Zinzi Konig, United States

6 Technical Sessions by Symposium

Please check the IAF App to get the latest updates on the Technical Sessions.

Nr.	Session name	Date	Time	Room
A1 IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM				
A1.1	Behaviour, Performance and Psychosocial Issues in Space	Sun, 18 Sep,	15:15	W05
A1.2	Human Physiology in Space	Mon, 19 Sep,	10:15	W05
A1.3	Medical Care for Humans in Space	Mon, 19 Sep,	15:00	W05
A1.4	Medicine in Space and Extreme Environments	Tue, 20 Sep,	15:00	W05
A1.5	Radiation Fields, Effects and Risks in Human Space Missions	Wed, 21 Sep,	10:15	W05
A1.6	Astrobiology and Exploration	Wed, 21 Sep,	15:00	W05
A1.7	Life Support, habitats and EVA Systems	Thu, 22 Sep,	10:15	W05
A1.8	Biology in Space	Thu, 22 Sep,	13:45	W05
A2 IAF MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM				
A2.1	Gravity and Fundamental Physics	Sun, 18 Sep,	15:15	W04
A2.2	Fluid and Materials Sciences	Tue, 20 Sep,	10:15	W04
A2.3	Microgravity Experiments from Sub-Orbital to Orbital Platforms	Tue, 20 Sep,	15:00	W04
A2.4	Science Results from Ground Based Research	Wed, 21 Sep,	10:15	W04
A2.5	Facilities and Operations of Microgravity Experiments	Wed, 21 Sep,	15:00	W04
A2.6	Microgravity Sciences on board ISS and beyond	Thu, 22 Sep,	10:15	W04
A2.7	Life and Physical Sciences under reduced Gravity	Thu, 22 Sep,	13:45	W04
A3 IAF SPACE EXPLORATION SYMPOSIUM				
A3.1	Space Exploration Overview	Sun, 18 Sep,	15:15	N04
A3.2A	Moon Exploration – Part 1	Mon, 19 Sep,	10:15	N04
A3.2B	Moon Exploration – Part 2	Mon, 19 Sep,	15:00	N04
A3.2C	Moon Exploration – Part 3	Thu, 22 Sep,	10:15	N04
A3.3A	Mars Exploration – missions current and future	Tue, 20 Sep,	10:15	N04
A3.3B	Mars Exploration – Science, Instruments and Technologies	Tue, 20 Sep,	15:00	N04
A3.4A	Small Bodies Missions and Technologies (Part 1)	Wed, 21 Sep,	10:15	N04
A3.4B	Small Bodies Missions and Technologies (Part 2)	Thu, 22 Sep,	13:45	N04
A3.5	Solar System Exploration including Ocean Worlds	Wed, 21 Sep,	15:00	N04
A4 51st IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) – The Next Steps				
A4.1	SETI 1: SETI Science and Technology	Mon, 19 Sep,	10:15	W04
A4.2	SETI 2: SETI and Society	Mon, 19 Sep,	15:00	W04
A5 25th IAA SYMPOSIUM ON HUMAN EXPLORATION OF THE SOLAR SYSTEM				
A5.1	Human Exploration of the Moon and Cislunar Space	Tue, 20 Sep,	10:15	W03
A5.2	Human Exploration of Mars	Tue, 20 Sep,	15:00	W03
A5.3-B3.6	Human and Robotic Partnerships in Exploration - Joint session of the IAF Human Spaceflight and IAF Exploration Symposia	Wed, 21 Sep,	10:15	S03
A5.4-D2.8	Space Transportation Solutions for Deep Space Missions	Thu, 22 Sep,	10:15	S06

Nr.	Session name	Date	Time	Room
A6 20th IAA SYMPOSIUM ON SPACE DEBRIS				
A6.1	Space Debris Detection, Tracking and Characterization - SST	Thu, 22 Sep,	13:45	S04
A6.2	Modeling and Risk Analysis	Tue, 20 Sep,	15:00	S04
A6.3	Impact-Induced Mission Effects and Risk Assessments	Tue, 20 Sep,	10:15	S04
A6.4	Mitigation - Tools, Techniques and Challenges - SEM	Mon, 19 Sep,	15:00	S04
A6.5	Post Mission Disposal and Space Debris Removal 1 - SEM	Wed, 21 Sep,	10:15	S04
A6.6	Post Mission Disposal and Space Debris Removal 2 - SEM	Wed, 21 Sep,	15:00	S04
A6.7	Operations in Space Debris Environment, Situational Awareness - SSA	Sun, 18 Sep,	15:15	S04
A6.8-E9.1	Political, Legal, Institutional and Economic Aspects of Space Debris Mitigation and Removal - STM Security	Thu, 22 Sep,	10:15	S04
A6.9	Orbit Determination and Propagation - SST	Mon, 19 Sep,	10:15	S04
A6.10-E10.2	Joint Technical Session: "Near-Earth Objects & Space Debris"	Thu, 22 Sep,	13:45	S03
A7 IAF SYMPOSIUM ON ONGOING AND NEAR FUTURE SPACE ASTRONOMY AND SOLAR-SYSTEM SCIENCE MISSIONS				
A7.1	Space Astronomy missions, strategies and plans	Wed, 21 Sep,	10:15	E04B
A7.2	Science Goals and Drivers for Future Exoplanet, Space Astronomy and Space Physics	Thu, 22 Sep,	10:15	E04B
A7.3	Technology Needs for Future Missions, Systems, and Instruments	Thu, 22 Sep,	13:45	731/732
B1 IAF EARTH OBSERVATION SYMPOSIUM				
B1.1	International Cooperation in Earth Observation Missions	Sun, 18 Sep,	15:15	W02
B1.2	Future Earth Observation Systems	Tue, 20 Sep,	10:15	W02
B1.3	Earth Observation Sensors and Technology	Tue, 20 Sep,	15:00	W02
B1.4	Earth Observation Data System Development and Management	Wed, 21 Sep,	10:15	W02
B1.5	Earth Observation Applications, Societal Challenges and Economic Benefits	Wed, 21 Sep,	15:00	W02
B1.6	Mitigating the Climate Crisis from Space	Thu, 22 Sep,	10:15	W02
B2 IAF SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM				
B2.1	Advances in Space-based Navigation Technologies	Mon, 19 Sep,	10:15	731/732
B2.2	Advances in Space-based Communication Systems and Services, Part 1	Mon, 19 Sep,	15:00	731/732
B2.3	Advances in Space-based Communication Systems and Services, Part 2	Tue, 20 Sep,	10:15	731/732
B2.4	Advances in Space-based Communication Systems and Services, Part 3	Tue, 20 Sep,	15:00	731/732
B2.5	Advances in Space-based Communication Technologies, Part 1	Wed, 21 Sep,	10:15	731/732
B2.6	Advances in Space-based Communication Technologies, Part 2	Wed, 21 Sep,	15:00	731/732
B2.7	Advances in Space-based Navigation Systems, Services, and Applications	Thu, 22 Sep,	10:15	731/732
B2.8-GTS.3	Space Communications and Navigation Global Technical Session	Sun, 18 Sep,	15:15	W07
B3 IAF HUMAN SPACEFLIGHT SYMPOSIUM				
B3.1	Governmental Human Spaceflight Programmes (Overview)	Sun, 18 Sep,	15:15	S03
B3.2	Commercial Human Spaceflight Programmes	Mon, 19 Sep,	10:15	S03
B3.3	Utilization & Exploitation of Human Spaceflight Systems	Mon, 19 Sep,	15:00	S03
B3.4-B6.4	Flight & Ground Operations aspects of Human Spaceflight - Joint Session of the IAF Human Spaceflight and IAF Space Operations Symposia	Tue, 20 Sep,	10:15	S03

Nr.	Session name	Date	Time	Room
B3.5	Astronaut Training, Accommodation, and Operations in Space	Tue, 20 Sep,	15:00	S03
B3.6-A5.3	Human and Robotic Partnerships in Exploration - Joint session of the IAF Human Spaceflight and IAF Exploration Symposia	Wed, 21 Sep,	10:15	S03
B3.7	Advanced Systems, Technologies, and Innovations for Human Spaceflight	Wed, 21 Sep,	15:00	S03
B3.8	Human Space & Exploration	Thu, 22 Sep,	10:15	S03
B3.9-GTS.2	Human Spaceflight Global Technical Session	Thu, 22 Sep,	13:45	W07
B4 29th IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS				
B4.1	23rd Workshop on Small Satellite Programmes at the Service of Developing Countries	Mon, 19 Sep,	10:15	S02
B4.2	Small Space Science Missions	Sun, 18 Sep,	15:15	S02
B4.3	Small Satellite Operations	Mon, 19 Sep,	15:00	S02
B4.4	Small Earth Observation Missions	Tue, 20 Sep,	10:15	S02
B4.5	Access to Space for Small Satellite Missions	Tue, 20 Sep,	15:00	S02
B4.5A-C4.8	Joint Session between IAA and IAF for Small Satellite Propulsion Systems	Wed, 21 Sep,	15:00	W08
B4.6A	Generic Technologies for Small/Micro Platforms	Thu, 22 Sep,	13:45	S02
B4.6B	Generic Technologies for Nano/Pico Platforms	Wed, 21 Sep,	10:15	S02
B4.7	Constellations and Distributed Systems	Wed, 21 Sep,	15:00	S02
B4.8	Small Spacecraft for Deep-Space Exploration	Thu, 22 Sep,	10:15	S02
B4.9-GTS.5	Small Satellite Missions Global Technical Session	Wed, 21 Sep,	15:00	W07
B5 IAF SYMPOSIUM ON INTEGRATED APPLICATIONS				
B5.1	Tools and Technology in Support of Integrated Applications	Sun, 18 Sep,	15:15	731/732
B5.2	Integrated Applications End-to-End Solutions	Tue, 20 Sep,	15:00	E03A
B5.3	Satellite Commercial Applications	Wed, 21 Sep,	10:15	E03A
B6 IAF SPACE OPERATIONS SYMPOSIUM				
B6.1	Ground Operations - Systems and Solutions	Wed, 21 Sep,	15:00	E03A
B6.2	Innovative Space Operations Concepts and Advanced Systems	Thu, 22 Sep,	10:15	E03A
B6.3	Mission Operations, Validation, Simulation and Training	Mon, 19 Sep,	15:00	E03A
B6.4-B3.4	Flight & Ground Operations of HSF Systems - A Joint Session of the IAF Human Spaceflight and IAF Space Operations Symposia	Tue, 20 Sep,	10:15	S03
B6.5	Large Constellations & Fleet Operations	Thu, 22 Sep,	13:45	E03A
C1 IAF ASTRODYNAMICS SYMPOSIUM				
C1.1	Attitude Dynamics (1)	Sun, 18 Sep,	15:15	S05
C1.2	Attitude Dynamics (2)	Mon, 19 Sep,	10:15	S05
C1.3	Guidance, Navigation and Control (1)	Mon, 19 Sep,	15:00	S05
C1.4	Guidance, Navigation and Control (2)	Tue, 20 Sep,	10:15	S05
C1.5	Guidance, Navigation & Control (3)	Tue, 20 Sep,	15:00	S05
C1.6	Mission Design, Operations & Optimization (1)	Wed, 21 Sep,	10:15	S05
C1.7	Mission Design, Operations & Optimization (2)	Wed, 21 Sep,	15:00	S05
C1.8	Orbital Dynamics (1)	Thu, 22 Sep,	10:15	S05
C1.9	Orbital Dynamics (2)	Thu, 22 Sep,	13:45	S05

Nr.	Session name	Date	Time	Room
C2 IAF MATERIALS AND STRUCTURES SYMPOSIUM				
C2.1	Space Structures I - Development and Verification (Space Vehicles and Components)	Sun, 18 Sep,	15:15	W06
C2.2	Space Structures II - Development and Verification (Deployable and Dimensionally Stable Structures)	Mon, 19 Sep,	10:15	W06
C2.3	Space Structures - Dynamics and Microdynamics	Mon, 19 Sep,	15:00	W06
C2.4	Advanced Materials and Structures for High Temperature Applications	Tue, 20 Sep,	10:15	W06
C2.5	Advancements in Materials Applications and Rapid Prototyping	Tue, 20 Sep,	15:00	W06
C2.6	Space Environmental Effects and Spacecraft Protection	Wed, 21 Sep,	10:15	W06
C2.7	Space Vehicles – Mechanical/Robotic/Thermal/Fluidic Systems	Wed, 21 Sep,	15:00	W06
C2.8	Specialized Technologies, Including Nanotechnology	Thu, 22 Sep,	10:15	W06
C2.9	Smart Materials and Adaptive Structures	Thu, 22 Sep,	13:45	W06
C3 IAF SPACE POWER SYMPOSIUM				
C3.1	Solar Power Satellite	Mon, 19 Sep,	10:15	W02
C3.2	Wireless Power Transmission Technologies and Application	Mon, 19 Sep,	15:00	W02
C3.3	Advanced Space Power Technologies	Wed, 21 Sep,	10:15	W07
C3.4	Space Power System for Ambitious Missions	Thu, 22 Sep,	13:45	W02
C3.5-C4.10	Joint Session on Advanced and Nuclear Power and Propulsion Systems	Thu, 22 Sep,	13:45	W08
C4 IAF SPACE PROPULSION SYMPOSIUM				
C4.1	Liquid Propulsion (1)	Sun, 18 Sep,	15:15	W08
C4.2	Liquid Propulsion (2)	Tue, 20 Sep,	10:15	W08
C4.3	Solid and Hybrid Propulsion (1)	Mon, 19 Sep,	10:15	W08
C4.4	Solid and Hybrid Propulsion (2)	Tue, 20 Sep,	10:15	W05
C4.5	Electric Propulsion (1)	Mon, 19 Sep,	15:00	W08
C4.6	Electric Propulsion (2)	Tue, 20 Sep,	15:00	W08
C4.7	Hypersonic Air-breathing and Combined Cycle Propulsion, and Hypersonic Vehicle	Wed, 21 Sep,	10:15	W08
C4.8-B4.5A	Joint Session between IAA and IAF for Small Satellite Propulsion Systems	Wed, 21 Sep,	15:00	W08
C4.9	New Missions Enabled by New Propulsion Technology and Systems	Thu, 22 Sep,	10:15	W08
C4.10-C3.5	Joint Session on Advanced and Nuclear Power and Propulsion Systems	Thu, 22 Sep,	13:45	W08
D1 IAF SPACE SYSTEMS SYMPOSIUM				
D1.1	Innovative and Visionary Space Systems	Sun, 18 Sep,	15:15	W03
D1.2	Space Systems Architectures	Mon, 19 Sep,	10:15	W03
D1.3	Technologies to Enable Space Systems	Mon, 19 Sep,	15:00	W03
D1.4A	Space Systems Engineering - Methods, Processes and Tools (1)	Wed, 21 Sep,	10:15	W03
D1.4B	Space Systems Engineering - Methods, Processes and Tools (2)	Wed, 21 Sep,	15:00	W03
D1.5	Lessons Learned in Space Systems: Achievements, Challenges, Best Practices, Standards.	Thu, 22 Sep,	10:15	W03
D1.6	Cooperative and Robotic Space Systems	Thu, 22 Sep,	13:45	W03

Nr.	Session name	Date	Time	Room
D2 IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM				
D2.1	Launch Vehicles in Service or in Development	Sun, 18 Sep,	15:15	S06
D2.2	Launch Services, Missions, Operations, and Facilities	Mon, 19 Sep,	15:00	S06
D2.3	Upper Stages, Space Transfer, Entry & Landing Systems	Mon, 19 Sep,	10:15	S06
D2.4	Future Space Transportation Systems	Tue, 20 Sep,	10:15	S06
D2.5	Technologies for Future Space Transportation Systems	Tue, 20 Sep,	15:00	S06
D2.6	Future Space Transportation Systems Verification and In-Flight Experimentation	Wed, 21 Sep,	10:15	S06
D2.7	Small Launchers: Concepts and Operations	Wed, 21 Sep,	15:00	S06
D2.8-A5.4	Space Transportation Solutions for Deep Space Missions	Thu, 22 Sep,	10:15	S06
D2.9-D6.2	Emerging Space Ventures, including Space Logistics and Space Safety for Sustainability	Thu, 22 Sep,	13:45	S06
D3 20th IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT				
D3.1	Strategies & Architectures as the Framework for Future Building Blocks in Space Exploration and Development	Tue, 20 Sep,	10:15	E06B
D3.2A	Systems and Infrastructures to Implement Sustainable Space Development and Settlement - Systems	Tue, 20 Sep,	15:00	E06B
D3.2B	Systems and Infrastructures to Implement Sustainable Space Development and Settlement - Technologies	Thu, 22 Sep,	10:15	E06B
D3.3	Space Technology and System Management Practices and Tools	Thu, 22 Sep,	13:45	E06B
D4 20th IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE				
D4.1	Innovative Concepts and Technologies	Sun, 18 Sep,	15:15	E06B
D4.2	Contribution of Moon Village to Solving Global Societal Issues	Mon, 19 Sep,	10:15	E06B
D4.3	Modern Day Space Elevators Entering Development	Mon, 19 Sep,	15:00	E06B
D4.4	Strategies for Rapid Implementation of Interstellar Missions: Precursors and Beyond	Wed, 21 Sep,	10:15	E06B
D4.5	Space Resources, the Enabler of the Earth-Moon Ecosphere	Wed, 21 Sep,	15:00	E06B
D5 55th IAA SYMPOSIUM ON SAFETY, QUALITY AND KNOWLEDGE MANAGEMENT IN SPACE ACTIVITIES				
D5.1	Quality and Safety, a challenge for all in Space	Mon, 19 Sep,	10:15	W01
D5.2	Knowledge management in the digital transformation	Tue, 20 Sep,	10:15	W01
D5.3	Prediction, Testing, Measurement and Effects of space environment on space missions	Wed, 21 Sep,	10:15	W01
D5.4	Cybersecurity in space systems, risks and countermeasures	Thu, 22 Sep,	10:15	W07
D6 IAF SYMPOSIUM ON COMMERCIAL SPACEFLIGHT SAFETY ISSUES				
D6.1	Commercial Spaceflight Safety and Emerging Issues	Mon, 19 Sep,	10:15	W07
D6.2-D2.9	Emerging Space Ventures, including Space Logistics and Space Safety for Sustainability	Thu, 22 Sep,	13:45	S06
D6.3	Enabling safe commercial spaceflight: vehicles and spaceports	Tue, 20 Sep,	10:15	W07

Nr.	Session name	Date	Time	Room
E1 IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM				
E1.1	Ignition - Primary Space Education	Sun, 18 Sep,	15:15	E08B
E1.2	Lift Off - Secondary Space Education	Mon, 19 Sep,	10:15	E08B
E1.3	On Track - Undergraduate Space Education	Mon, 19 Sep,	15:00	E08B
E1.4	In Orbit - Postgraduate Space Education	Tue, 20 Sep,	10:15	E08B
E1.5	Enabling the Future - Developing the Space Workforce	Tue, 20 Sep,	15:00	E08B
E1.6	Calling Planet Earth - Space Outreach to the General Public	Wed, 21 Sep,	10:15	E08B
E1.7	New Worlds - Non-Traditional Space Education and Outreach	Wed, 21 Sep,	15:00	E08B
E1.8	Hands-on Space Education and Outreach	Thu, 22 Sep,	10:15	International Student Zone
E1.9	Space Culture – Public Engagement in Space through Culture	Thu, 22 Sep,	13:45	E08B
E2 50th STUDENT CONFERENCE				
E2.1	Student Conference - Part 1	Sun, 18 Sep,	15:15	E03A
E2.2	Student Conference - Part 2	Mon, 19 Sep,	10:15	E03A
E2.3-GTS.4	Student Team Competition	Mon, 19 Sep,	15:00	W07
E2.4	Educational Pico and Nano Satellites	Tue, 20 Sep,	10:15	E03A
E3 35th IAA SYMPOSIUM ON SPACE POLICY, REGULATIONS AND ECONOMICS				
E3.1	International cooperation in using space for sustainable development: The "Space2030" agenda	Mon, 19 Sep,	10:15	E04B
E3.2	The future of space exploration and innovation	Mon, 19 Sep,	15:00	E04B
E3.3	Economic analysis of both actual and potential future benefits from space activities and applications to nations and peoples.	Tue, 20 Sep,	10:15	E04B
E3.4	Assuring a Safe, Secure and Sustainable Environment for Space Activities	Tue, 20 Sep,	15:00	E04B
E3.5-E7.6	36th IAA/IISL Scientific Legal Roundtable: "Autonomous Intelligent Systems in Space: Operational and Legal Challenges".	Wed, 21 Sep,	10:15	S01
E3.6	Financial Viability and Supplier monitoring in times of economic vulnerability	Wed, 21 Sep,	15:00	E04B
E4 56th IAA HISTORY OF ASTRONAUTICS SYMPOSIUM				
E4.1	Memoirs & Organisational Histories	Tue, 20 Sep,	15:00	733/734
E4.2	Scientific and Technical Histories	Wed, 21 Sep,	10:15	733/734
E4.3	History of French Contribution to Astronautics	Thu, 22 Sep,	10:15	733/734
E5 33rd IAA SYMPOSIUM ON SPACE AND SOCIETY				
E5.1	Space Architecture: Habitats, Habitability, and Bases	Sun, 18 Sep,	15:15	W01
E5.2	Is Space R&D Truly Fostering A Better World For Our Future?	Mon, 19 Sep,	15:00	W01
E5.3	Contemporary Arts Practice and Outer Space: A Multi-Disciplinary Approach	Tue, 20 Sep,	15:00	W01
E5.4	Space Assets and Disaster Management	Wed, 21 Sep,	15:00	W01
E5.5	Sharing space achievements and heritage: space museums and societies	Thu, 22 Sep,	10:15	W01
E5.6	Simulating Space Habitation: Habitats, Design and Simulation Missions	Thu, 22 Sep,	13:45	W01

Nr.	Session name	Date	Time	Room
E6 IAF BUSINESS INNOVATION SYMPOSIUM				
E6.1	Entrepreneurship and Innovation: The Practitioners' Perspectives	Wed, 21 Sep,	15:00	733/734
E6.2	Finance and Investment: The Practitioners' Perspectives	Tue, 20 Sep,	10:15	733/734
E6.3	Innovation: The Academics' Perspectives	Mon, 19 Sep,	15:00	733/734
E6.4	Strategic Risk Management for Successful Space & Defence Programmes	Mon, 19 Sep,	10:15	733/734
E6.5-GTS.1	Entrepreneurship Around the World	Tue, 20 Sep,	15:00	W07
E7 IISL COLLOQUIUM ON THE LAW OF OUTER SPACE				
E7.1	IISL Highlight lecture and Young Scholar session	Sun, 18 Sep,	15:15	S01
E7.2	Dispute Settlement	Mon, 19 Sep,	10:15	S01
E7.3	Balancing Needs: Protection of Space Science	Mon, 19 Sep,	15:00	S01
E7.4	Space Sustainability	Tue, 20 Sep,	10:15	S01
E7.5	Safety Zones on Celestial Bodies and in Outer Space	Thu, 22 Sep,	10:15	S01
E7.6-E3.5	36th IAA / IISL Joint Roundtable: Autonomous Intelligent Systems in space: Operational and Legal Challenges	Wed, 21 Sep,	10:15	S01
E7.7	Current Developments in Space Law with Special Emphasis on National Space Legislation	Thu, 22 Sep,	13:45	S01
E8 IAA MULTILINGUAL ASTRONAUTICAL TERMINOLOGY SYMPOSIUM				
E8.1	Multilingual Astronautical Terminology	Thu, 22 Sep,	13:45	E04B
E9 IAF SYMPOSIUM ON SECURITY, STABILITY AND SUSTAINABILITY OF SPACE ACTIVITIES				
E9.1-A6.8	Political, Legal, Institutional and Economic Aspects of Space Debris Mitigation and Removal - STM Security	Thu, 22 Sep,	10:15	S04
E9.2	Cyber-based security threats to space missions: establishing the legal, institutional and collaborative framework to counteract them	Sun, 18 Sep,	15:15	E04B
E10 IAF SYMPOSIUM ON PLANETARY DEFENSE AND NEAR-EARTH OBJECTS				
E10.1	Planetary Defense from Asteroids and Comets	Wed, 21 Sep,	15:00	S01
E10.2-A6.10	Joint Technical Session: "Near-Earth Objects & Space Debris"	Thu, 22 Sep,	13:45	S03
GTS GLOBAL TECHNICAL SYMPOSIUM				
GTS.1-E6.5	Entrepreneurship Around the World	Tue, 20 Sep,	15:00	W07
GTS.2-B3.9	Human Spaceflight Global Technical Session	Thu, 22 Sep,	13:45	W07
GTS.3-B2.8	Space Communications and Navigation Global Technical Session	Sun, 18 Sep,	15:15	W07
GTS.4-E2.3	Student Team Competition	Mon, 19 Sep,	15:00	W07
GTS.5-B4.9	Small Satellite Missions Global Technical Session	Wed, 21 Sep,	15:00	W07

7 Technical Papers by Symposium

Technical Papers as of September 2022.

Please check the IAF App to get the latest updates on the Technical Papers.

A1. IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM

Coordinator(s): Peter Graef, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany; Oleg Orlov, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation;

A1.1. Behaviour, Performance and Psychosocial Issues in Space

September 18 2022, 15:15 — W05

Co-Chair(s): Nick Kanas, University of California, San Francisco (UCSF), United States; Gro M. Sandal, University of Bergen, Norway;

Rapporteur(s): Vadim Gushin, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation;

IAC-22.A1.1.1
A TALE OF THREE TEAMS: EFFECT OF LONG-TERM ISOLATION IN SIRIUS-21 ON CREW INTERPERSONAL NETWORKS
Alina Lungeanu, Northwestern University, United States

IAC-22.A1.1.2
THINK LIKE A TEAM: SHARED MENTAL MODELS PREDICT CREATIVITY AND PROBLEM-SOLVING IN HERA AND SIRIUS '19
Leslie DeChurch, Northwestern University, United States

IAC-22.A1.1.3
ISOLATION STANDARD MEASURES: A SET OF VALIDATED AND FEASIBLE MEASUREMENTS ENSURING COMPARABILITY ACROSS ISOLATION AND CONFINEMENT STUDIES
Van Ombergen Angelique, ESA - European Space Agency, The Netherlands

IAC-22.A1.1.4
PERSONAL VALUES BEFORE AND AFTER LONG-DURATION SPACEFLIGHT
Peter Suedfeld, University of British Columbia, Canada

IAC-22.A1.1.5
ASTRONAUTS GIVING AND RECEIVING FAMILY SUPPORT IN LONG-DURATION SPACE MISSIONS
Phyllis Johnson, University of British Columbia, Canada

IAC-22.A1.1.6
OPERATIONAL KINDNESS AND OPERATIONAL WIT: PSYCHOSOCIALLY SUPPORTIVE ASPECTS OF OPERATIONAL SPACE-TO-GROUND COMMUNICATION
Dennis Jim Frederiksen, Aalborg University, Denmark

IAC-22.A1.1.7
PSYCHOLOGICAL SUPPORT UNDER ISOLATION AND CROWDING
Ivan Rozanov, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation

IAC-22.A1.1.8
STRUCTURE AND DYNAMICS OF RELATIONSHIPS BETWEEN CREW MEMBERS IN ANALOGUE STUDIES CONSIDERING THE CONTEXT OF ISOLATION LENGTH AND THE ENVIRONMENT
Pavla Tefelnerova, Czech Republic

IAC-22.A1.1.9
ASTRONAUTS COULD BE MORE CREATIVE ON THE MOON. RESULTS OF AN EMPIRICAL STUDY WITH ANALOGUE ASTRONAUTS ON THE ARTIFICIAL MOON BASE 'LUNARES' Henderika (Herie) de Vries, Luxembourg

A1.2. Human Physiology in Space

September 19 2022, 10:15 — W05

Co-Chair(s): Elena Fomina, State Scientific Center of Russian Federation, Institute of Biomedical Problems, Russian Academy of Sciences, Russian Federation; Jens Jordan, Institute of Aerospace Medicine (DLR), Germany;

Rapporteur(s): Alain Maillet, MEDES - IMPS, France; Hanns-Christian Gunga, Charité Universitätsmedizin Berlin, Germany;

IAC-22.A1.2.1
CHANGES IN AEROBIC FITNESS AND MUSCLE BLOOD FLOW RELATIONSHIPS TO EXERCISE COUNTERMEASURES ON ISS
Richard Hughson, University of Waterloo, Canada

IAC-22.A1.2.2
PREDICTING OF THE SUCCESS OF EXTRAVEHICULAR ACTIVITIES ON THE SURFACE OF THE MOON OR MARS
Elena Fomina, State Scientific Center of Russian Federation, Institute of Biomedical Problems, Russian Academy of Sciences, Russian Federation

IAC-22.A1.2.3
BRAIN WHITE MATTER MICROSTRUCTURAL CHANGES AFTER LONG-DURATION SPACEFLIGHT AS REVEALED BY ADVANCED DIFFUSION MRI TECHNIQUES – THE REWIRED BRAIN OF SPACE CREW.
Andrei Doroshin, Drexel University, United States

IAC-22.A1.2.4
TECHNOLOGY DEMONSTRATION OF ELECTROMYOSTIMULATION ASSISTED ISS INFLIGHT EXERCISES USING THE EASYMOTION SYSTEM
Marco Berg, OHB System, Germany

IAC-22.A1.2.5
THE VIVALDI STUDY: AN INTEGRATIVE STUDY OF PHYSIOLOGICAL CHANGES INDUCED BY A 5-DAY DRY IMMERSION ON 20 HEALTHY FEMALE VOLUNTEERS
BAREILLE Marie-Pierre, Institute for Space Medicine and Physiology/MEDES, France

IAC-22.A1.2.6
PECULIARITIES OF CELL-TO-CELL INTERACTION BETWEEN MSCS AND ADAPTIVE AND NATURAL IMMUNITY CELLS UNDER "DRY" IMMERSION
Aleksandra Gornostaeva, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation

IAC-22.A1.2.7 (non-confirmed)
ASSESSMENT OF ARTERIAL WALL STRUCTURE USING ULTRASOUND RADIO FREQUENCY PROCESSING. COMPARING DRY IMMERSION AND SPACEFLIGHT.
Philippe ARBILLE, France

IAC-22.A1.2.8
THE EFFECT OF DISUSE ON MITOCHONDRIAL RESPIRATION RATE IN HUMAN M. SOLEUS
Evgeniia Motanova, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation

IAC-22.A1.2.9
EFFECTS OF COUNTERMEASURE-EXERCISE ON CARDIORESPIRATORY FITNESS AND INHIBITORY CONTROL DURING 120 AND 240 DAYS OF SPACEFLIGHT SIMULATION – RESULTS FROM TWO SIRIUS CAMPAIGNS
Fabian Möller, German Sports University Cologne, Germany

IAC-22.A1.2.10
REPRODUCTION IN SPACE: IS HUMAN SPERM ALTERED BY MICROGRAVITY?
Antoni Perez-Poch, Institut d'Estudis Espacials de Catalunya (IEEC), Spain

IAC-22.A1.2.11
SURVEY ON STUDIES INVESTIGATING THE EFFECT OF SIMULATED MICROGRAVITY ON THE MUSCULOSKELETAL SYSTEM
Julia Habenicht, University Duisburg-Essen, Germany

IAC-22.A1.2.12
MANUAL DEXTERITY WHILE WEARING GLOVES DESIGNED TO IMPROVE HEAT TRANSFER
Elisabeth Dichaira, The University of Louisville, United States

IAC-22.A1.2.13
TRANSCRANIAL PHOTOBIO-MODULATION MODULATES METABOLISM IN THE HUMAN BRAIN AS MEASURED BY PHOSPHORUS MAGNETIC RESONANCE SPECTROSCOPY
Kevin Walsh, The City College of New York, United States

A1.3. Medical Care for Humans in Space

September 19 2022, 15:00 — W05

Co-Chair(s): Satoshi Iwase, Aichi Medical University, Japan; Oleg Orlov, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation;
Rapporteur(s): Hasan Birol Cotuk, Turkey;

IAC-22.A1.3.1
A COMPACT PULSED NEAR-INFRARED LIGHT PROBE FOR NON-INVASIVE IMAGING OF THE SPACES BETWEEN THE SKULL AND THE BRAIN TO IMPROVE THE DIAGNOSIS OF BRAIN INJURIES DURING SPACEFLIGHT
Roxanne Fournier, University of British Columbia, Canada

IAC-22.A1.3.2
ECHO-FINDER: AN AUTONOMOUS ULTRASOUND ACQUISITION PROTOCOL FOR HUMAN SPACEFLIGHT APPLICATION
Aristée Thevenon, MEDES - IMPS, France

IAC-22.A1.3.3
HOLOTRIAGE: A NOVEL MEDICAL FIRST RESPONSE TRAINING FOR ASTRONAUTS INTEGRATING ARTIFICIAL INTELLIGENCE, DIGITAL TWINS, AVATARS, HAPTICS, AND MIXED REALITY SPATIAL COMPUTING TECHNOLOGIES
Susan Ip-Jewell, United States

IAC-22.A1.3.4
BIOPRINT FIRSTAID: A HANDHELD BIOPRINTER FOR FIRST AID UTILIZATION ON SPACE EXPLORATION MISSIONS
Nathanael Warth, OHB System AG-Bremen, Germany

IAC-22.A1.3.5
ENABLING HUMAN SPACEFLIGHT EXPLORATION MISSIONS THROUGH PROGRESSIVELY EARTH INDEPENDENT MEDICAL OPERATIONS
Dana Levin, Center for Space Medicine, Baylor College of Medicine, United States

IAC-22.A1.3.6
EXTRATERRESTRIAL SILICATES ARE HEMOSTATIC AND MANAGE BLEEDING IN A SWINE MODEL OF LIVER LACERATION: HEMORRHAGE CONTROL MATERIALS FOR LONG-TERM SPACE MISSIONS
Nabil Ali-Mohamad, University of British Columbia, Canada

IAC-22.A1.3.7
STATE LIABILITY AND RESPONSIBILITY FOR MEDICAL TREATMENT AND/OR CARE FOR INJURY TO OR ILLNESS OF SPACE TOURISTS OR SUBORBITAL FLIGHT PASSENGERS
George Anthony Long, United States

IAC-22.A1.3.8
OPTIC NERVE SHEATH FENESTRATION AND ITS POTENTIAL PROPHYLACTIC APPLICATION FOR SPACEFLIGHT-ASSOCIATED NEURO-OCULAR SYNDROME
Mark Rosenberg, Medical University of South Carolina, United States

IAC-22.A1.3.9
TOWARDS SEMI-AUTOMATED PLEURAL CAVITY ACCESS FOR PNEUMOTHORAX IN AUSTRERE ENVIRONMENTS
Rachael L'Orsa, University of Calgary, Canada

IAC-22.A1.3.10
ENHANCING ULTRASOUND WITH ELECTRICAL IMPEDANCE TOMOGRAPHY FOR DEEP SPACE MEDICAL IMAGING
Kendall Farnham, Dartmouth College, United States

IAC-22.A1.3.11
ROLE OF INDIAN TRADITIONAL MEDICINE: SIDDHA IN SPACE MEDICINE
Kathiravan Thangavel, Royal Melbourne Institute of Technology (RMIT), Australia

IAC-22.A1.3.12
INNOVATION IN SPACE MEDICAL TECHNOLOGY
Ilaria Cinelli, AIKO S.r.l., Italy

IAC-22.A1.3.13
REVIEW OF MENSTRUAL BLOOD-DERIVED CELL THERAPY TO SUPPORT ASTRONAUTS IN LONG-TERM SPACE MISSIONS.
Marion Dugué, TU Delft, The Netherlands

IAC-22.A1.3.14
LAB IN SPACE: POINT OF CARE TESTING FOR ASTRONAUTS
Saswati Das, International Space University (ISU), India

IAC-22.A1.3.15
INCREASED EFFECTIVENESS IN CARDIOPULMONARY RESUSCITATION THROUGH THE DEVELOPMENT OF CPRAD, A NOVEL CPR ASSISTANCE DEVICE
Rym Chaid, Concordia University, Canada

IAC-22.A1.3.16
MEDICAL ETHICS OF LONG DURATION SPACE FLIGHT
SIDDHARTH RAJPUT, International Space University (ISU)/University of South Australia, Australia

IAC-22.A1.3.17
DEVELOPMENT OF A TERIPPER FOR INTRA-SPACECRAFT TRANSPORTATION
Taichi Yamazaki, ASTRAX, Inc., Japan

A1.4. Medicine in Space and Extreme Environments

September 20 2022, 15:00 — W05

Co-Chair(s): Oleg Orlov, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation; Hanns-Christian Gunga, Charité Universitätsmedizin Berlin, Germany;
Rapporteur(s): Jeffrey R. Davis, Exploring 4 Solutions, United States; Alexander Choukér, University of Munich, Germany;

IAC-22.A1.4.1
A TECHNOLOGY DEMONSTRATION FOR ASTRONAUT EYE MONITORING: PRELIMINARY RESULTS FROM GROUND ANALOGS AND THE INTERNATIONAL SPACE STATION (ISS)
Scott Ritter, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

IAC-22.A1.4.2
CEREBRAL ORGANOID AS A TOOL TO STUDY NEURODEGENERATIVE DISEASES IN MICROGRAVITY
Krishna Bulchandani, India

IAC-22.A1.4.3
THE MEDINAUT SYSTEM: A TELEROBOTIC, TELE-PRESENCE FLYING TELESURGICAL PHYSICIAN DRON-ROVER OFFERING REALTIME, REMOTE RELIEF AND MEDICAL COARE FOR AUSTRERE ISLOATED ENVIRONMENTS ON EARTH AND ASTRONAUTS ON A PLANETARY SURFACE
Emmy Helen Jewell, Mars Academy USA, United States

IAC-22.A1.4.4
ANALYSIS OF SHORT-TERM HEART RATE VARIABILITY DURING TRAINING ADAPTATION TO MARS-ANALOG ENVIRONMENT
Acatzin Benítez Salgado, Universidad Autónoma del Estado de México (UAEMéx), Mexico

IAC-22.A1.4.5 (non-confirmed)
OCCUPATIONAL EXPOSURES TO EXTREME ENVIRONMENTS: EFFECTS ON HEALTH AND TRANSLATIONAL ASPECTS IN SPACE
Sofia Pavanello, University of Padova, Italy

IAC-22.A1.4.6
OPTIMAL GRAVITY CONDITIONS FOR BONE TISSUE HEALING USING MAGNETIC NANOPARTICLES AND SCAFFOLDS
Kanan Yusif-zada, Azerbaijan

IAC-22.A1.4.7 (non-confirmed)
DEVELOPMENT OF STANDARD OMICS MEASURES FOR ASTRONAUTS AND ACCOMPANYING BIOBANK FOR PRIVATELY CREWED HUMAN SPACEFLIGHT
Jaden Hastings, New York-Presbyterian Hospital / Weill Cornell Medical Center, United States

IAC-22.A1.4.8
PHARMACEUTICAL EXCIPIENT INGREDIENT STABILITY IN MICROGRAVITY CONDITIONS, PACKING AND STORING RECOMMENDATIONS IN THE DEEP SPACE MISSIONS
GOWTHAMARAJAN KUPPUSAMY, India

IAC-22.A1.4.9
STRESS-RELATED EFFECTS, BIOLOGICAL AGING AND HUMAN PERFORMANCE DURING ANALOG ASTRONAUT MISSION.
Tommasso Antonio Giaccon, University of Padova, Italy

IAC-22.A1.4.10
ANALYSIS OF PLANT MORPHOLOGY AND PHYLOGENETICS OF INDIGENOUS PLANTS AS A SOURCE OF FOOD, OXYGEN AND MEDICINAL PURPOSES FOR SPACE APPLICATIONS
Riyabrata Mondal, TU Bergakademie Freiberg (TUBAF), Germany

IAC-22.A1.4.11
CREW MENTAL STATE MONITORING IN AN EXTREME ENVIRONMENT USING FUNCTIONAL NEAR-INFRARED SPECTROSCOPY
Jesica Kehala Studer, Institute for Space Medicine and Physiology/MEDES, Switzerland

IAC-22.A1.4.12
SPACE NEUROSCIENCE: CURRENT UNDERSTANDING AND FUTURE RESEARCH
Bader Ibrahim, Saudi Arabia

IAC-22.A1.4.13
ASTROMX: THE FIRST MEXICAN ROBOT FOR CONTINUOUS HEALTH MONITORING OF ASTRONAUTS AND INDIVIDUALS ON EARTH
Sagrario Linares Melo, Benemerita Universidad Autonoma de Puebla, Mexico

IAC-22.A1.4.14
BENEFITS OF SPACE MEDICINE RESEARCH FOR TERRESTRIALS ON EARTH
Bader Shirah, Saudi Arabia

IAC-22.A1.4.15
THE STUDY OF SPACE MEDICINE ON EARTH IN CONDITIONS CLOSE TO SPACE
Aychin Hasanova, Azerbaijan

A1.5. Radiation Fields, Effects and Risks in Human Space Missions

September 21 2022, 10:15 — W05

Co-Chair(s): Lawrence Pinsky, University of Houston, United States; Guenther Reitz, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;
Rapporteur(s): Premkumar Saganti, Prairie View A&M University, United States;

IAC-22.A1.5.2
RADIATION PROTECTION AND SHIELDING MATERIALS FOR CREWED MISSIONS ON THE SURFACE OF MARS
Dionysios Gakis, University of Patras, Greece

IAC-22.A1.5.3
COMPACT LIGHT-WEIGHT POLYMER COMPOSITE MATERIALS FOR RADIATION SHIELDING IN OUTER SPACE
Diana Pawlicki, University of Lodz, Poland

IAC-22.A1.5.4
MARTIAN INFRASTRUCTURE RADIATION PROTECTION USING SILICA AEROGEL
Abdul Ahad, India

IAC-22.A1.5.5
DOSE-EFFECTS MODELS FOR SPACE RADIOBIOLOGY: AN OVERVIEW ON DOSE-EFFECT RELATIONSHIP
Lidia Strigari, Alma Mater Studiorum - University of Bologna, Italy

IAC-22.A1.5.6
TRANSGENESIS AS A MECHANISM TO PROVOKE RADIORESISTANCE
Sagrario Linares Melo, Benemerita Universidad Autonoma de Puebla, Mexico

IAC-22.A1.5.7
PROTECTIVE BODYSUIT TO REPEL HARMFUL LARGE PARTICLE RADIATION FOR LONG-TERM USE
Nic Alvarado, United States

IAC-22.A1.5.8
DESIGNING A NEURAL HELMET, MAPPING NEURAL PATTERNS IN AN ASTRONAUT'S BRAIN TO DETECT COGNITIVE PROBLEMS.
Sukhjit Singh, India

IAC-22.A1.5.9
RADIATION SPECTROMETER HARDPIX FOR LUNAR GATEWAY
Robert Filgas, Czech Technical University In Prague (CTU), Czech Republic

IAC-22.A1.5.10
TARGET EFFECTS VS. NON-TARGET EFFECTS IN ESTIMATING THE CARCINOGENIC RISK DUE TO GALACTIC COSMIC RAYS IN EXPLORATORY SPACE MISSIONS.
Aboma Negasa Guracho, Istituto Nazionale di Fisica Nucleare (INFN), Italy

IAC-22.A1.5.11
EVALUATION OF DEEP SPACE EXPLORATION RISKS AND MITIGATIONS AGAINST RADIATION AND MICROGRAVITY
William Dobney, Loughborough University, United Kingdom

IAC-22.A1.5.12 (non-confirmed)
DYNAMIC PROGRAMMING FOR PROTEIN ALIGNMENT: ANALYZING SPACE'S SEQUENCED DATA
Maria Carolina Erazo Muñoz, Skolkovo Institute of Science and Technology, Russian Federation

A1.6. Astrobiology and Exploration

September 21 2022, 15:00 — W05

Co-Chair(s): Petra Rettberg, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany; Stephan Ulamec, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;
Rapporteur(s): Stefan Leuko, DLR (German Aerospace Center), Germany;

IAC-22.A1.6.1
 “EXPLORING A NEW WORLD: SEARCHING FOR NEW MOLECULAR INSIGHTS OF HALOARCHAEA WITHIN HALITE FLUID INCLUSIONS ON EARTH AND SPACE”
Lucas Bourmancé, CNRS, France

IAC-22.A1.6.2
 SALINISPHAERA SHABANENSIS - A NEW ASTROBIOLOGICAL MODEL ORGANISM
Petra Rettberg, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

IAC-22.A1.6.3
 CHAO/KOSMOTROPIC PROPERTIES OF BRINE SOLUTIONS IN THE PRESENCE OF ANCIENT PROTEINS AND THEIR ASSISTANCE IN THE BIOAVAILABILITY AND PRECIPITATION OF LIFE-NECESSARY ORGANIC MOLECULES
Shelby Osborne, University of Arkansas, United States

IAC-22.A1.6.4
 SPACE EXPLORATION OF ICY MOONS TO DETERMINE THEIR ASTROBIOLOGICAL POTENTIAL
Athena Coustenis, LESIA - Observatoire de Paris, France

IAC-22.A1.6.5
 FIRST DESCRIPTION AND CHARACTERIZATION OF NEWLY DISCOVERED ANDEAN MICROBIAL ECOSYSTEMS IN THE PUNA DE ATACAMA, A MARS ANALOGUE ENVIRONMENT
Anouk Ehreiser, ILEWG “EuroMoonMars”, Germany

IAC-22.A1.6.6
 ADOPTING AN OBJECTIVES-DRIVEN ASSURANCE CASE APPROACH FOR ACHIEVING SPACE FLIGHT MISSION PLANETARY PROTECTION OBJECTIVES
Elaine Seasley, NASA Headquarters, United States

IAC-22.A1.6.7 (non-confirmed)
 INFRARED OBSERVATIONS OF PHOSPHINE ON VENUS
Nicholas Mehrle, Massachusetts Institute of Technology (MIT), United States

IAC-22.A1.6.8
 CUBESAT LUNAR CYCLER PLATFORM TO MEASURE DARWINIAN EVOLUTION BEYOND LOW EARTH ORBIT
Yana Charoenboonvivat, School of Aerospace Engineering, Georgia Institute of Technology, United States

IAC-22.A1.6.9
 NASA'S PLANETARY PROTECTION PROGRAM TO ASSURE MISSION SAFETY AND SUCCESS
James Bernardini, NASA Headquarters, United States

IAC-22.A1.6.10
 A CRITICAL REVIEW OF PLANETARY PROTECTION STRATEGY
Caitlyn Singam, University of Maryland - College Park, United States

A1.7. Life Support, habitats and EVA Systems

September 22 2022, 10:15 — W05

Co-Chair(s): Ulrich Kuebler, Airbus DS GmbH, Germany; Khalid Badri, Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates;
Rapporteur(s): Hong Liu, Beihang University, China;

IAC-22.A1.7.1
 SPACE NUTRITION AND ANALOG ASTRONAUTS IN THE COVID-19 PANDEMIC
Catherine Raisa Kimberly P. Mandigma, Space Generation Advisory Council (SGAC), The Philippines

IAC-22.A1.7.2
 CHALLENGES AND SOLUTIONS FOR SPACE FOOD IN LONG-TERM EXPLORATION MISSIONS
Setareh Saremi, Politecnico di Torino, Italy

IAC-22.A1.7.3
 THE ROLE OF THE LUNAR SURFACE IN DEVELOPING OFF-EARTH FOOD PRODUCTION SYSTEMS
Benjamin Greaves, StarLab Oasis, United States

IAC-22.A1.7.4
 HUMAN SURVIVAL IN ADVERSE ENVIRONMENTS, USE OF MICROALGAL AND INSECT FLOURS IN FUNCTIONAL BAKERY FOR THE FIGHT AGAINST HUNGER AND LIFE SUPPORT IN SPACE TRAVEL.
German Sarmiento, European Space Foundation, Colombia

IAC-22.A1.7.6
 COMPUTATIONAL DESIGN FOR A DEPLOYABLE LUNAR HABITAT AND GREENHOUSE SYSTEM
Cosimo Razeto, Politecnico di Milano, Italy

IAC-22.A1.7.7
 EXPANDING THE IMPACT OF ARCHITECTURE: NEW INSIGHTS FROM ANALOGUE FACILITIES
Ilaria Cinelli, AIKO S.r.l., Italy

IAC-22.A1.7.8
 DESIGN OF HABITABLE MODULES FOR A MARS TRANSFER VEHICLE WITH A FOCUS ON REDUCTION OF MICROGRAVITY-RELATED PROBLEMS AND PROTECTION FROM THE SPACE ENVIRONMENT.
Riccardo Moro, Politecnico di Torino, Italy

IAC-22.A1.7.9
 A NEW MODULAR SPACE HABITAT - FORMED BY FUNCTION - FUNCTION BY DESIGN
Oliver Opatz, Center for Space Medicine Berlin (ZWMB), Germany

IAC-22.A1.7.10
 BIOREGENERATIVE POSTHUMAN BODYING SYSTEMS
Ramandeep Shergill, University College London (UCL), United Kingdom

IAC-22.A1.7.11
 COMMERCIAL EVA-2.0 SPACE SUIT DEVELOPMENT
Nikolay Moiseev, Final Frontier Design, United States

IAC-22.A1.7.12
 BIOCOMPOSITES FOR STRUCTURAL DESIGN IN SPACE - MYCELIUM MATERIALS AND MALLD CONCEPT
Mateusz Balka, University of Glasgow, Poland

IAC-22.A1.7.13
 SLIPPERY LUBRICANT-INFUSED SILICA NANOPARTICULATE FILM PROCESSING FOR ANTI-BIOFOULING APPLICATION
Yuen Yee Li Sip, University of Central Florida (UCF), United States

IAC-22.A1.7.14
 USE OF ANTIMICROBIAL COATINGS TO PREVENT MULTISPECIES, MULTIDOMAIN BIOFILM GROWTH OF ISS ISOLATES IN WASTEWATER SYSTEM
Madelyn Mettler, Montana State University, United States

IAC-22.A1.7.15
 A MACHINE LEARNING APPROACH FOR ASTRONAUT MONITORING AND TRACKING DURING SURFACE EXTRAVEHICULAR ACTIVITY
David Smith, ILEWG “EuroMoonMars”, United Kingdom

A1.8. Biology in Space

September 22 2022, 13:45 — W05

Co-Chair(s): Didier Chaput, Centre National d'Etudes Spatiales (CNES), France; Fengyuan Zhuang, Beihang University, China;
Rapporteur(s): Jancy McPhee, The Aerospace Corporation, United States;

IAC-22.A1.8.1
 BIOSENTINEL: NASA'S FIRST DEEP SPACE BIOLOGICAL MISSION
Andres Mora Vargas, NASA Ames Research Center, United States

IAC-22.A1.8.2
 THE UNFOLDED PROTEIN RESPONSE (UPR) REGULATES PHENOTYPE SWITCHING AND PROLIFERATION OF VASCULAR SMOOTH MUSCLE CELLS OF CEREBRAL ARTERY UNDER SIMULATED MICROGRAVITY
Ran Zhang, Chinese PLA General Hospital, China

IAC-22.A1.8.3
 WOUND HEALING IN A SPACE ANALOG ENVIRONMENT
Victoria Ariel Rendon, International Space University (ISU), France

IAC-22.A1.8.4
 THE EFFECTS OF TRICHODERMA HARZIANUM ON THE GRAVITY RESPONSE AND OXIDATIVE STRESS OF ARABIDOPSIS THALIANA FOR SPACE AGRICULTURE
Lucia White, US Air Force Institute of Technology, United States

IAC-22.A1.8.5
 ANAEROBIC PRODUCTION OF WHEAT IN MARS
Riyabrata Mondal, TU Bergakademie Freiberg (TUBAF), Germany

IAC-22.A1.8.6
 3D PRINTED MICROFLUIDIC MICROPOT PLATFORM FOR GRAIN GROWTH IN MICROGRAVITY CONDITIONS ASSESSMENT.
Bartosz Kawa, Wrocław University of Technology, Poland

IAC-22.A1.8.7
 A SMALL AUTONOMOUS SPACE BIOLOGICAL LABORATORY: CHALLENGES, OPPORTUNITIES, AND IMPLEMENTATION
Adrianna Graja, Wrocław University of Science and Technology, Poland

IAC-22.A1.8.8
 A SIMPLE LAB-ON-A-CHIP SYSTEM FOR MOLECULAR BIOLOGY RESEARCH IN SPACEFLIGHT AND SPACEFLIGHT ANALOGUE ENVIRONMENTS
Sean Farley, University of Victoria, Canada

IAC-22.A1.8.9
 A SUMMARY AND KEY OUTCOMES FROM THE BIO-FUTURES FOR TRANSPANETARY HABITATS FIRST ANNUAL SYMPOSIUM
Layla A. van Ellen, Newcastle University, United Kingdom

IAC-22.A1.8.10
 LIFE EVOLUTION STATISTICS ON EARTH AND EXOPLANETS
Claudio Maccone, International Academy of Astronautics (IAA) and Istituto Nazionale di Astrofisica (INAF), Italy

IAC-22.A1.8.11
 EFFECTS OF HYPOMAGNETIC FIELD AND PEMF ON PLANTS FOR LIFE SUPPORT ON PLANETARY BODIES
Terry Trevino, American Military University, United States

A2. IAF MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM

Vice-Coordinator(s): Valentina Shevtsova, Université Libre de Bruxelles, Belgium; Angelika Diefenbach, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;

A2.1. Gravity and Fundamental Physics

September 18 2022, 15:15 — W04

Co-Chair(s): Hanns Selig, Geradts GmbH, Germany; Antonio Viviani, Università degli Studi della Campania “Luigi Vanvitelli”, Italy;

Rapporteur(s): Qi Kang, National Microgravity Laboratory, Institute of Mechanics, Chinese Academy of Sciences., China;

IAC-22.A2.1.1 (non-confirmed)
 B. RYBAKIN, V. GORYACHEV MODELING THE FORMATION OF GRAVITATIONALLY BOUND OBJECTS AFTER COLLISION OF ROTATING MOLECULAR CLOUDS
Boris Rybakin, Moscow State Institute (University), Russian Federation

IAC-22.A2.1.2
 EARTH-SUN L1 POINT DEVIATION CAUSED BY JUPITER AND IMPLICATIONS TO LAGRANGE BLACK HOLES IN GALAXIES
Dylan J. Slocki, Lockheed Martin Space Systems, United States

IAC-22.A2.1.3
 HAS MICROSCOPE REVEALED A VIOLATION OF THE EQUIVALENCE PRINCIPLE ?
Manuel Rodrigues, Office National d'Etudes et de Recherches Aéropatiales (ONERA), France

IAC-22.A2.1.4
 BEHAVIOR ANALYSIS OF TARGET MARKER WITH SPIKES USING PARTICLE METHOD
Yasuda Shun, Aoyama Gakuin University, Japan

IAC-22.A2.1.5
 QUANTUM KEY DISTRIBUTION FROM SPACE
Claus Lämmerzahl, ZARM Fab GmbH, Germany

IAC-22.A2.1.6
 ADVANCES FOR UHV SYSTEMS FOR COLD ATOM EXPERIMENTS IN SPACE
Thi Thu Hien Dao, University of Bremen - ZARM, Germany

IAC-22.A2.1.7 (non-confirmed)
 GRAVITATIONAL LENSING OF NEUTRON STAR GRAVITATIONAL WAVES, A PAIR OF NEUTRON STAR, BLACK HOLES, AND NON-SPINNING BLACK HOLES
DEEPAN J, India

IAC-22.A2.1.8
 RELATIVE STUDY ON DISSIMILARITY OF GRAVITATIONAL WAVE BEHAVIOR AROUND BLACK HOLE'S EVENT HORIZON
Abhay Kaushik Nudurupati, University of Petroleum and Energy Studies, India

IAC-22.A2.1.9
 TENDENCY OF REGOLITH DISPERSAL BY FIRING MULTIPLE THRUSTERS OF SPACECRAFT ON CELESTIAL SURFACE
Maiko Yamakawa, The Graduate University for Advanced Studies (SOKENDAI), Japan

A2.2. Fluid and Materials Sciences

September 20 2022, 10:15 — W04

Co-Chair(s): Nickolay N. Smirnov, Lomonosov Moscow State University, Russian Federation; Satoshi Matsumoto, Japan Aerospace Exploration Agency (JAXA), Japan;
Rapporteur(s): Thomas Driebe, DLR (German Aerospace Center), Germany;

IAC-22.A2.2.1
 INVESTIGATION OF THE FLUIDS BEHAVIOR UNDER MICROGRAVITY CONDITIONS: CONDUCTING EXPERIMENTS, MATHEMATICAL MODELING AND NUMERICAL SIMULATIONS.
Evgeniya Skryleva, Lomonosov Moscow State University, Russian Federation

IAC-22.A2.2.2
 INVESTIGATION OF PRESSURE DRIVEN MICROFLUIDIC FLOW IN MICROGRAVITY
Shivayya Hiremath, R V College of Engineering, Bengaluru, India

IAC-22.A2.2.3
 EXPERIMENTAL INVESTIGATION OF INTERFACIAL INSTABILITY OF DROPLETS IN ACOUSTIC FIELD
Koji Hasegawa, Kagakuin University, Japan

IAC-22.A2.2.4
 GAS-LIQUID INTERFACE DISTRIBUTION OF CRYOGENIC PROPELLANT TANKS AT DIFFERENT MICROGRAVITIES
Jun Wu, China Academy of Launch Vehicle Technology (CALT), China

IAC-22.A2.2.5
 COMPARATIVE STUDY OF BUBBLES ON EARTH AND MICROGRAVITY CONDITIONS FOR TWO-PHASE GAS-LIQUID FLOWS
Sanat Hegde, R V College of Engineering, Bengaluru, India

IAC-22.A2.2.6
 LIQUID-SOLID INTERFACE AND PENETRATION OF ORGANIC RESIN BINDER AND IRON-COBALT ALLOY POWDER FOR THE USE OF BINDER JETTING ADDITIVE MANUFACTURING UNDER MICROGRAVITY
Kinston Wong, University of Alberta, Canada

IAC-22.A2.2.7
 SYSTEM OF CRACKS IN THE SKIN OF THE SPACECRAFT
Anastasia Shamina, Scientific Research Institute for System Analysis, Russian Academy of Sciences (RAS), Russian Federation

IAC-22.A2.2.8
 ADDITIVE MANUFACTURING IN SPACE: INTERFACIAL FORCE VS GRAVITATIONAL FORCE
Abrar Ahmed, University of Alberta, Canada

IAC-22.A2.2.9
 NUMERICAL SIMULATION OF A DETONATION ENGINE ON AN ACETYLENE-OXYGEN MIXTURE, COMPARISON WITH EXPERIMENT
Elena Mikhailchenko, Scientific Research Institute for System Analysis, Russian Academy of Sciences (RAS), Russian Federation

IAC-22.A2.2.10 (non-confirmed)
 A STUDY OF A PULSE DETONATION CHAMBER CYCLE FOR PROPULSION PURPOSES
Sungwoo Park, Korea Aerospace University, Korea, Republic of

IAC-22.A2.2.12
 AERODYNAMIC DESIGN AND ANALYSIS OF MULTI-ROTOR ROBOT UNDER MICROGRAVITY CONDITION INSIDE SPACE STATION
Guangwei Wen, Tsinghua University, China

IAC-22.A2.2.13
 STUDY OF THE STRUCTURE OF THE DETONATION CELL IN MICROGRAVITY
Elena Mikhailchenko, Scientific Research Institute for System Analysis, Russian Academy of Sciences (RAS), Russian Federation

A2.3. Microgravity Experiments from Sub-Orbital to Orbital Platforms

September 20 2022, 15:00 — W04

Co-Chair(s): Raffaele Savino, University of Naples "Federico II", Italy; Rainer Willnecker, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;

IAC-22.A2.3.1
 EXPERIMENTAL STUDY OF WAX FUEL FORMATION DURING SPACEFLIGHT
Javier Stober, Massachusetts Institute of Technology (MIT), United States

IAC-22.A2.3.2
 NUMERICAL AND EXPERIMENTAL RESULTS ON SELF-REWETTING FLUIDS FOR TWO-PHASE HEAT EXCHANGERS IN LOW-G EXPERIMENTS
Anselmo Cecere, Università degli Studi di Napoli "Federico II", Italy

IAC-22.A2.3.3
 THE REDUCED GRAVITY CRYOGENIC TRANSFER PROJECT
Jason Hartwig, NASA Glenn Research Center, United States

IAC-22.A2.3.4
 AGRIFUGE: AN EXPLORATION OF CONTROLLED IRRIGATION METHODS FOR A ROTATING PLANT HABITAT
Somayajulu Dhulipala, Massachusetts Institute of Technology (MIT), United States

IAC-22.A2.3.5
 ASSESSMENT OF THE IMMUNE CELL COUNTING OBTAINED FROM HUMAN PERIPHERAL BLOOD AFTER A PARABOLIC FLIGHT
Abril Gorgori-González, University of Barcelona, Spain

IAC-22.A2.3.7
 THE LOW-COST ATTITUDE DETERMINATION AND CONTROL SYSTEM ASTER: DESIGN, TESTING AND LESSONS LEARNED
Ric Dengel, Luleå University of Technology, Germany

IAC-22.A2.3.8
 DETERMINING RESPONSE DIFFERENCES TO MICROGRAVITY IN MALE AND FEMALE BIOENGINEERED CARTILAGE TISSUES
Kirtan Dhunnoo, University of Alberta, Canada

IAC-22.A2.3.9
 OPPORTUNITIES FOR MICROGRAVITY AND HYPERGRAVITY EXPERIMENTS UNDER THE UNITED NATIONS ACCESS TO SPACE FOR ALL INITIATIVE: ACHIEVEMENTS IN 2021-2022
Jorge Del Rio Vera, United Nations Office for Outer Space Affairs, Austria

IAC-22.A2.3.10
 COMPARATIVE ANALYSIS OF A MICROGRAVITY COMPUTED AXIAL LITHOGRAPHY (CAL) BASED SYSTEM TO A GRAVITY AFFECTED CAL SYSTEM
Taylor Waddell, University of California, Berkeley, United States

A2.4. Science Results from Ground Based Research

September 21 2022, 10:15 — W04

Co-Chair(s): Valentina Shevtsova, Université Libre de Bruxelles, Belgium; Antonio Viviani, Università degli Studi della Campania "Luigi Vanvitelli", Italy;

Rapporteur(s): Nickolay N. Smirnov, Lomonosov Moscow State University, Russian Federation;

IAC-22.A2.4.1 (non-confirmed)
 NATIONAL SPACE EXPLORATION STRATEGY AND THE FIRST SPACE EXPERIMENT OF THAILAND
Ammarin Pimnoo, Geo-Informatics and Space Technology Development Agency (GISTDA), Thailand

IAC-22.A2.4.2
 SUGGESTIONS ON TESTING OF TECHNOLOGY FOR DETECTING SPACE DEBRIS BY ADVANCED ORBITAL SPACE SYSTEMS ONBOARD THE ISS RS
Maksim Matyushin, Central Research Institute for Machine Building (JSC TSNIIMASH), Russian Federation

IAC-22.A2.4.3
 A PAYLOAD FOR STUDYING DROPLETS IN SPACEFLIGHT ANALOGUES
Patrizio Massoli, CNR-IM, Italy

IAC-22.A2.4.4 (non-confirmed)
 MARANGONI EFFECT: AN INVESTIGATION INTO SURFACE TENSION DRIVEN MASS TRANSFER IN MICROGRAVITY
Pavan Achar, R V College of Engineering, Bengaluru, India

IAC-22.A2.4.5
 INTRODUCTION TO MICROGRAVITY IN PHYSICAL AND LIFE SCIENCES: MEANS AND METHODS
Nour El Yakine Ben Hachani, NASA, Algeria

IAC-22.A2.4.6
 EQUATIONS GOVERNING RPM MACHINES AND THEIR APPLICATIONS IN MODELING BIOLOGICAL PROCESSES
José David Villanueva Garcia, European Space Agency (ESA/ESOC), Germany

IAC-22.A2.4.7
 STUDY ON THE GRAVITY DISPERSION ACTING ON A SPECIMEN DURING OPERATION OF THE RANDOM POSITIONING MACHINE
Taig Young Kim, Korea Polytechnic University, Korea, Republic of

IAC-22.A2.4.8 (non-confirmed)
 EVA-IVA CREW INDUCED LOADS TEST BED (E-LOADS)
Herbert Silva, National Aeronautics and Space Administration (NASA), Johnson Space Center, United States

IAC-22.A2.4.9 (non-confirmed)
 OMIC ANALYSIS OF SIMULATED-MICROGRAVITY INDUCED TITAN CELLS BY A YEAST ISOLATED FROM THE INTERNATIONAL SPACE STATION
Ceth Parker, NASA Jet Propulsion Laboratory, United States

IAC-22.A2.4.10 (non-confirmed)
 THE EFFECT OF MICROGRAVITY ON THE STRUCTURE AND FUNCTION OF RETINA: A REVIEW
Rawan Alshammari, Kuwait

IAC-22.A2.4.11 (non-confirmed)
 GLOBAL CB1 DEFICIENCY EXACERBATES UNLOADING INDUCED BONE LOSS IN A SITE-SPECIFIC AND SEX-DEPENDENT MANNER
Rachel DeNapoli, Virginia Commonwealth University, United States

IAC-22.A2.4.12
 EFFECTS OF REDUCED GRAVITY INVESTIGATIONS ON ROOT DEVELOPMENTS AND BIOCHEMICAL CHARACTERIZATION: A CASE STUDY OF CUCUMBER FARMING ON THE MOON
Funmilola Adebisi Oluwafemi, National Space Research and Development Agency (NASRDA), Abuja, Nigeria

A2.5. Facilities and Operations of Microgravity Experiments

September 21 2022, 15:00 — W04

Co-Chair(s): Rainer Willnecker, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany; Gabriel Pont, Centre National d'Etudes Spatiales (CNES), France;

Rapporteur(s): Satoshi Matsumoto, Japan Aerospace Exploration Agency (JAXA), Japan;

IAC-22.A2.5.1
 EVERYWEAR, A HUMAN RESEARCH AND HEALTH MOBILE ASSISTANT FOR EXPLORATION
Maurice MARNAT, Institute for Space Medicine and Physiology/MEDES, France

IAC-22.A2.5.2
 NOVESPACE'S AIRBUS A310 ZERO G: A STATE-OF-THE-ART RESEARCH FACILITY FOR EASY ACCESS TO SCIENCE IN MICROGRAVITY
Thibault PARIS, Novespace, France

IAC-22.A2.5.3
 NEURONGRAV: CHARACTERIZING NEURONAL RESPONSES IN ALTERED GRAVITY VIA GLIDER-BASED PARABOLIC FLIGHTS
José Figueiredo, Faculty of Medicine, University of Lisbon, Portugal

IAC-22.A2.5.4
 THE GRAVITOWER BREMEN PRO - EXPERIENCES WITH A NEXT-GENERATION DROP TOWER SYSTEM
Andreas Gierse, ZARM Fab GmbH, Germany

IAC-22.A2.5.5
 REALISE – AUTOMATED PAYLOAD OPERATIONS ONBOARD THE LUNAR GATEWAY
Tobias Niederwieser, University of Colorado Boulder, United States

IAC-22.A2.5.6
 SOLID-LIQUID PHASE CHANGE MICROPUMPS WITH GRAPHENE OXIDE MEMBRANE
Shivayya Hiremath, R V College of Engineering, Bengaluru, India

IAC-22.A2.5.7
 IMPLEMENTATION OF EXPERIMENTAL MICROGRAVITY UNIT 2.0 FOR LOW-COST AND ACCESSIBLE MICROGRAVITY EXPERIMENTATION
Christopher Geordas, The University of Western Australia, Australia

IAC-22.A2.5.8
 CHALLENGES AND OUTCOMES FOR A FULLY-AUTONOMOUS MICROGRAVITY PLATFORM TO PERFORM PARABOLIC FLIGHTS IN NORTHERN SWEDEN
Arnau Busom Vidal, Luleå University of Technology, Sweden

IAC-22.A2.5.9
 BRINGING EXTRATERRESTRIAL GRAVITIES ON EARTH: STUDENTS' RESEARCH ON DROP TOWER DESIGN
Davide Demartini, Luleå University of Technology, Sweden

IAC-22.A2.5.10
 A VERSATILE BIOCUBESAT PLATFORM FOR FUTURE SPACE SYSTEMS: DEVELOPMENT OF A SECOND-GENERATION BAMMSAT PAYLOAD ON A STRATOSPHERIC BALLOON TECHNOLOGY AND OPERATION DEMONSTRATION FLIGHT
Aqeel Shamsul, Cranfield University, United Kingdom

A2.6. Microgravity Sciences on board ISS and beyond

September 22 2022, 10:15 — W04

Co-Chair(s): Stefan Van Vaerenbergh, Université Libre de Bruxelles, Belgium; Angelika Diefenbach, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;

IAC-22.A2.6.2
 DYNAMICS OF SOLIDIFICATION MICROSTRUCTURE FORMATION IN DECLIC-DSI ONBOARD ISS
Fatima Mota, IM2NP - Aix-Marseille Université & CNRS UMR 7334, France

IAC-22.A2.6.3
 ELECTROMAGNETIC LEVITATION ONBOARD THE INTERNATIONAL SPACE STATION
Jan Gegner, German Aerospace Center (DLR), Germany

IAC-22.A2.6.4
 MATERIAL SCIENCE LAB OPERATIONS ONBOARD THE INTERNATIONAL SPACE STATION
Joachim Bonney, German Aerospace Center (DLR), Germany

IAC-22.A2.6.5
 MELFI REFRIGERATION TECHNOLOGY IN ISS AS IMPORTANT ASSET FOR SPACE BIOLOGY INSIDE THE LUNAR GATEWAY
Jean Cheganças, Airbus Defence and Space, France

IAC-22.A2.6.6
LUMINA, A FIBER-OPTIC DOSIMETER ABOARD THE ISS
Florence Clément, Centre National d'Etudes Spatiales (CNES), France

IAC-22.A2.6.7
THOMAS PESQUET'S ALPHA MISSION: A COMPREHENSIVE NATIONAL CONTRIBUTION TO A SUCCESSFUL ESA MISSION
Remi Canton, Centre National d'Etudes Spatiales (CNES), France

IAC-22.A2.6.8
MICROGRAVITY SLOSHING FOR MARS HABITAT USING IN-SITU METHOD
Palvi Garg, Dr B R Ambedkar National Institute of Technology Jalandhar, India

IAC-22.A2.6.9
THE 'RAKIA' MISSION - PRIVATE-PUBLIC PARTNERSHIPS IN PRIVATE HUMAN SPACEFLIGHT SCIENTIFIC AND TECHNOLOGICAL MISSION
Inbal Kreiss, Israel Aerospace Industries Ltd., Israel

IAC-22.A2.6.10
THE THOMAS PESQUET PROXIMA MISSION: AN OVERVIEW OF ACCOMPLISHMENTS AND SCIENCE RESULTS
Elizabeth Heider, European Space Agency (ESA-ESTEC), The Netherlands

A2.7. Life and Physical Sciences under reduced Gravity

September 22 2022, 13:45 — W04

Co-Chair(s): Angelika Diefenbach, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany; Cora Thiel, University of Zurich, Switzerland; Peter Graef, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany; Satoshi Matsumoto, Japan Aerospace Exploration Agency (JAXA), Japan;

IAC-22.A2.7.1
OPERATION OF BIOLOGICAL EXPERIMENTS IN THE BIOLAB FACILITY ON BOARD COLUMBUS
Katharina Hildebrandt, DLR (German Aerospace Center), Germany

IAC-22.A2.7.2
SPACE BIOFILMS – AN OVERVIEW OF THE MORPHOLOGY AND GENE EXPRESSION OF PSEUDOMONAS AERUGINOSA BIOFILMS GROWN ON BOARD THE INTERNATIONAL SPACE STATION
Diana Pamela Flores Ayuso, University of Colorado Boulder, United States

IAC-22.A2.7.3
EFFECT OF MICROGRAVITY ON THE GROWTH AND BIOFILM PRODUCTION OF DISEASE-CAUSING BACTERIA. IRMA PROJECT.
Roberto Adolfo Ubidia Incio, Federico Villarreal National University, Peru

IAC-22.A2.7.4
COMPARATIVE GENOMICS OF ANTIBIOTIC RESISTANT STAPHYLOCOCCUS SPECIES ASSOCIATED WITH THE INTERNATIONAL SPACE STATION
Fathi Karouia, National Aeronautics and Space Administration (NASA), Ames Research Center / UCSF, United States

IAC-22.A2.7.5
PHARMACEUTICAL EXCIPIENT INGREDIENT STABILITY IN MICROGRAVITY CONDITIONS, PACKING AND STORING RECOMMENDATIONS IN DEEP SPACE MISSIONS
Jayakumar Venkatesan, Valles Marineris International Private Limited, India

IAC-22.A2.7.6
A COMPREHENSIVE STUDY OF WATER RETENTION IN PLANT ROOT COMPONENTS IN MICROGRAVITY TO STRUCTURIZE MATHEMATICAL AND COMPUTATIONAL MATHEMATICAL AND COMPUTATIONAL MODELS FOR UNDERSTANDING PHYSICAL LAWS OF PLANT GROWTH
Sucheshnadevi Patil, Humans In Space Inc. (HIS), United States

IAC-22.A2.7.7
MICROGRAVITY AFFECTS GENE EXPRESSION ON HUMAN IPSC-DERIVED 3D BRAIN MODELS OF PARKINSON'S DISEASE AND MULTIPLE SCLEROSIS
Paula Grisanti, United States

IAC-22.A2.7.9
PROTOTYPING WEARABLE SENSOR GARMENT FOR UNDERSTANDING PROPRIOCEPTIVE CHANGES IN MICROGRAVITY
Shu-Yu Lin, Massachusetts Institute of Technology (MIT), United States

IAC-22.A2.7.9
PROTEIN UNFOLDING – REDEFINING THE FUTURE OF PROTEINS IN SPACE AND AS A CURE FOR VARIOUS CANCEROUS DISEASES
Vrushali Chittaranjan, Ramaiah Institute of Technology, India

IAC-22.A2.7.10
REDUCED PSEUDOMONAS AERUGINOSA CELL SIZE OBSERVED ON PLANKTONIC CULTURES GROWN IN THE INTERNATIONAL SPACE STATION
Katherine Herrera-Jordan, Universidad del Valle de Guatemala (UVG), Guatemala

A3. IAF SPACE EXPLORATION SYMPOSIUM

Coordinator(s): Vincenzo Giorgio, Thales Alenia Space Italia, Italy; Pierre W. Bousquet, Centre National d'Etudes Spatiales (CNES), France; Keyur Patel, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States;

A3.1. Space Exploration Overview

September 18 2022, 15:15 — N04

Co-Chair(s): Kathy Laurini, Dynetics, United States; Keyur Patel, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States;
Rapporteur(s): Norbert Frischauf, TU Graz, Austria;

IAC-22.A3.1.1
PLANETARY PROTECTION: UPDATES AND CHALLENGES FOR A SUSTAINABLE SPACE EXPLORATION
Athena Coustenis, LESIA - Observatoire de Paris, France

IAC-22.A3.1.2
LOWER RADIO FREQUENCY SIGNALS' EXISTENCE AND POTENTIAL USEFULNESS IN SPACE
Tomasz Mis, Warsaw University of Technology (WUT), Poland

IAC-22.A3.1.3
ARTEMIS III AND BEYOND: FROM THE MOON TO MARS
Greg Chavers, NASA Marshall Space Flight Center, United States

IAC-22.A3.1.4
THE LUNAR OPEN ARCHITECTURE: TOWARDS A SHARED ROADMAP OF LUNAR EXPLORATION
Nadia Khan, University College London (UCL), United Kingdom

IAC-22.A3.1.5
PROSPECTS FOR SPACE EXPLORATION: TOWARDS A NEW ERA OF COLLABORATION AND COMPETITION
Natalia Larrea Brito, Euroconsult, United States

IAC-22.A3.1.6
THE ISECG SCIENCE WORKING GROUP: INFLUENCING GLOBAL SCIENCE PRIORITIES FOR ROBOTIC AND HUMAN SPACE EXPLORATION
Brad Bailey, NASA, United States

IAC-22.A3.1.7 (non-confirmed)
ASYMMETRIC FRICTION LOCOMOTION FOR DEEP EXPLORATION OF EXTRATERRESTRIAL BODIES
Arcady Dyskin, University of Western Australia (UWA), Australia

IAC-22.A3.1.8
PRESENT AND FUTURE SPACE EXPLORATION IN THE UNITED ARAB EMIRATES
Ilias Fernini, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

IAC-22.A3.1.9
A SYSTEMS APPROACH: THE ROLE OF THE GLOBAL SPACE ECOSYSTEM AND SPACE RESOURCES IN ENSURING THE SUCCESS OF CREWED MISSIONS TO MARS
Thomas Cernev, Shoal Group, Australia

IAC-22.A3.1.10
CUBESATS BEYOND LEO – NEW ENVIRONMENT, OLD PARADIGM
Eric Bertels, ISIS - Innovative Solutions In Space B.V., The Netherlands

IAC-22.A3.1.11
MISSION AND SYSTEM ARCHITECTURE DESIGN OF A DEIMOS SAMPLE-RETURN MISSION
Atharva Pawar, Space Generation Advisory Council (SGAC), India

IAC-22.A3.1.12
INVESTIGATING FEASIBILITY OF CUBESAT VENUS MISSION FOR ATMOSPHERIC SURVEYING
Maria Regina Apoodaca Moreno, Massachusetts Institute of Technology (MIT), United States

IAC-22.A3.1.13
WHAT WILL WE DO ON THE MOON?
James Carpenter, ESA - European Space Agency, The Netherlands

IAC-22.A3.1.14
VISION AND CHALLENGES OF EMERGING SPACE AGENCIES WORKING GROUP IN ISECG (INTERNATIONAL SPACE EXPLORATION COORDINATION GROUP)
Gwanghyeok Ju, Korea Aerospace Research Institute (KARI), Korea, Republic of

A3.2A. Moon Exploration – Part 1

September 19 2022, 10:15 — N04

Co-Chair(s): Bernard Foing, ILEWG "EuroMoonMars", The Netherlands; David Korsmeyer, National Aeronautics and Space Administration (NASA), Ames Research Center, United States;
Rapporteur(s): Pierre-Alexis Joumel, Airbus Defence and Space, Germany; Nadeem Ghafoor, Avalon Space, Canada;

IAC-22.A3.2A.1
CUBESAT MOON LANDER OMOTENASHI: ITS DEVELOPMENT AND IN-ORBIT OPERATION
Tatsuaki Hashimoto, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.A3.2A.2
PROCESS VERIFICATION UNDER FLEXIBLE GRAVITY GRADIENTS\ FOR FUTURE MOON, MARS, AND SMALL BODY MISSIONS
Stefan Krämer, Swedish Space Corporation, Sweden

IAC-22.A3.2A.3
VIPER: MISSION DESIGN & DEVELOPMENT
Daniel Andrews, National Aeronautics and Space Administration (NASA), United States

IAC-22.A3.2A.4
ILOA HAWAII AND 5 MOON MISSIONS SEPTEMBER 2022 UPDATE
Steve Durst, International Lunar Observatory Association (ILOA), United States

IAC-22.A3.2A.5
A VERY BROAD BAND SEISMOMETER ON THE MOON IN 2024
Gabriel Pont, Centre National d'Etudes Spatiales (CNES), France

IAC-22.A3.2A.6
EXPERIMENTAL DEVELOPMENT OF A PASSIVE REGOLITH SAMPLER FOR LUNAR MISSIONS
Javier Stober, Massachusetts Institute of Technology (MIT), United States

IAC-22.A3.2A.7
JAXA'S ROADMAP AND CONCEPTS OF FUTURE LUNAR LANDING MISSIONS
Masaru Koga, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.A3.2A.8
STATUS ON JAPANESE LUNAR POLAR EXPLORATION (LUPEX) PROJECT
Hiroyasu Mizuno, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.A3.2A.9
NASA LUNAR SURFACE INNOVATION INITIATIVE: ENSURING A COHESIVE, EXECUTABLE STRATEGY FOR TECHNOLOGY DEVELOPMENT
Carol Galica, NASA Headquarters, United States

IAC-22.A3.2A.10
STATUS UPDATE OF TAIWAN'S LUNAR EXPLORATION MISSION
Shin-Fa Lin, National Space Organization, Taipei

IAC-22.A3.2A.11
LUNAR GEOLOGY ORBITER: THE IMPACT ONTO THE THERMAL EVOLUTION OF THE MOON
Petr Bohacek, TRL Space, Czech Republic

IAC-22.A3.2A.12
TECHNOLOGICAL EVOLUTION OF THE VERY BROAD BAND SEISMOMETER: INSIGHT, FAR SIDE SEISMIC SUITE AND FUTURE MISSIONS WITH OPTICAL VBB
SEBASTIEN DE RAUCOURT, IPGP, France

A3.2B. Moon Exploration – Part 2

September 19 2022, 15:00 — N04

Co-Chair(s): Bernard Foing, ILEWG "EuroMoonMars", The Netherlands; David Korsmeyer, National Aeronautics and Space Administration (NASA), Ames Research Center, United States;
Rapporteur(s): Pierre-Alexis Joumel, Airbus Defence and Space, Germany; Nadeem Ghafoor, Avalon Space, Canada;

IAC-22.A3.2B.1
CHALLENGE DRIVEN INNOVATION AT ESA: PROSPECTING TECHNOLOGIES.
Massimo Sabbatini, European Space Agency (ESA), The Netherlands

IAC-22.A3.2B.2
JHU/APL'S SYSTEM INTEGRATION SUPPORT OF NASA'S LUNAR SURFACE INNOVATION INITIATIVE
Ben Bussey, Johns Hopkins University Applied Physics Laboratory, United States

IAC-22.A3.2B.3
FINALLY! INSIGHTS INTO THE ARCHES LUNAR PLANETARY EXPLORATION ANALOGUE CAMPAIGN ON ETNA IN SUMMER 2022
Armin Wedler, German Aerospace Center (DLR), Germany

IAC-22.A3.2B.4
ANALOG-1: A TOUCH REMOTE
William Carey, European Space Agency (ESA-ESTEC), The Netherlands

IAC-22.A3.2B.5
ENABLING AUTONOMY FOR LUNAR ROVERS – SUPPORTING SCIENCE AND RESOURCE PROSPECTING MISSIONS
Kaizad Raimalwala, Mission Control Space Services Inc., Canada

IAC-22.A3.2B.6
EURO2MOON: LEVERAGE LUNAR RESOURCES EXPLORATION TO FOSTER INTERNATIONAL COLLABORATION AND BENEFIT SUSTAINABILITY IN SPACE AND EARTH
Pierre-Alexis Joumel, Airbus Defence and Space, Germany

IAC-22.A3.2B.7
ALCHEMIST-ED: EUROPEAN EARTH-BASED DEMONSTRATOR OF PRODUCTION OF WATER FROM LUNAR REGOLITH
Diego A. Urbina, Space Applications Services, Belgium

IAC-22.A3.2B.8
TOWARDS A HUMAN-CENTRED FRAMEWORK FOR CONCEPTUALIZATION OF LUNAR SURFACE SOLUTIONS
Flavie Aditya Annick Suzanne Davida Tohotaua Rometsch, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

IAC-22.A3.2B.9
AUTONOMOUS ROBOTICS FOR LUNAR LANDING PAD CONSTRUCTION
Samuel Ximenes, WEX Foundation, United States

IAC-22.A3.2B.10
LUNEX EUROMOONMARS EARTH SPACE INNOVATION HIGHLIGHTS
Bernard Foing, ILEWEG "EuroMoonMars", The Netherlands

IAC-22.A3.2B.11
MISSION CONCEPTS AND NEW TECHNOLOGIES FOR LUNAR SURFACE EXPLORATION USING THE NANOKHOD MICROROVER
Moritz Gewehr, IRS, University of Stuttgart, Germany

IAC-22.A3.2B.12
LUVMI-X MOBILITY PLATFORM: TEST RESULTS AND PROSPECTS
Jeremi Gancet, Space Applications Services, Belgium

IAC-22.A3.2B.13
MOON TO MOON SERVICES – LUNAR PATHFINDER AND FUTURE LUNAR COMMS AND NAV CONSTELLATION TO CONNECT LUNAR ASSETS TO EACH OTHER AND BACK TO EARTH, STARTING 2025
Nelly Offord (Phillips), Surrey Satellite Technology Ltd (SSTL), United Kingdom

IAC-22.A3.2B.14
LUNAR MISSIONS' SIMULATIONS IN ANALOGUE FACILITIES: THE OPERATIONAL CONCEPT AND THE FIRST COMMISSIONING OF THE ESA-DLR LUNA FACILITY
Andrea Emanuele Maria Casini, German Aerospace Center (DLR), Germany

IAC-22.A3.2B.15
LARGE SCALE MOBILITY ON THE MOON BY TRANSFERRING TERRESTRIAL AUTONOMY CAPABILITIES
Mihkel Pajusalu, University of Tartu, Estonia

IAC-22.A3.2B.16
MOON DIVER: DESCENDING INTO THE GEOLOGICAL HISTORY OF LUNAR VOLCANISM
Laura Kerber, Jet Propulsion Laboratory - California Institute of Technology, United States

A3.2C. Moon Exploration – Part 3

September 22 2022, 10:15 — N04

Co-Chair(s): Bernard Foing, ILEWEG "EuroMoonMars", The Netherlands; David Korsmeyer, National Aeronautics and Space Administration (NASA), Ames Research Center, United States;
Rapporteur(s): Sylvie Espinasse, European Space Agency (ESA), The Netherlands; Nadeem Ghafoor, Avalon Space, Canada;

IAC-22.A3.2C.1
AN ADAPTABLE INTEGRATED VISION SYSTEM FOR LUNAR EXPLORATION
Gordon Osinski, Institute for Earth and Space Exploration, Western University, Canada

IAC-22.A3.2C.2
SPACE EXPLORATION TECHNOLOGIES DEVELOPED BY AIR LIQUIDE FOR MOON APPLICATIONS
CEDRIC DUPONT, Air Liquide, France

IAC-22.A3.2C.3
3D PRINTING TECHNOLOGY DEMONSTRATION USING SYNTHETIC LUNAR REGOLITH SIMULANT WITH POLYMER ADDITIVES
NamSuk Cho, Unmanned Exploration Laboratory (UEL), Korea, Republic of

IAC-22.A3.2C.4
COMPARISON OF ROVER FLEET SYSTEMS DESIGN FOR LUNAR RESOURCE MINING AND CONSTRUCTION
KangSan Kim, Space Generation Advisory Council (SGAC), Korea, Republic of

IAC-22.A3.2C.5
COOPERATIVE RADIO-NAVIGATION FOR ROVERS, DRONES, AND INSTRUMENT PACKAGES IN THE POLAR EXPLORER MISSION – RESULTS FROM A SPACE-ANALOGUE MISSION
Emanuel Staudinger, German Aerospace Center (DLR), Germany

IAC-22.A3.2C.7
PAVING THE ROAD - CONTEXTUALIZING LASER SINTERING WITHIN A LUNAR TECHNOLOGY ROADMAP
Monika Brandic Lipinska, LIQUIFER Systems Group, Vienna, Austria

IAC-22.A3.2C.8
SMAD: A SUPERCONDUCTING MASS DRIVER CONCEPT DESIGN
Mattia Ortino, TU Wien, Austria

IAC-22.A3.2C.9
ASTRONAUT TRAINING AND STUDIES ON SPACE TECHNOLOGIES, PHYSIOLOGY, AND LIFE SUPPORT DURING EMMPOL 10 & 11 SPACE ANALOG SIMULATIONS
William Dobney, Loughborough University, United Kingdom

IAC-22.A3.2C.10
NEW ANALOG MISSIONS FOR NEW SETTLEMENT CHALLENGES ON THE MOON AND BEYOND.
Christian Clot, Human Adaptation Institute, France

IAC-22.A3.2C.11
CALIFORNIA RESEARCH ANALOG FOR DEEPSPACE AND LUNAR EXPLORATION (CRADLE) BRAHMANAUT STUDIES
Chrishma Singh-Derewa, United States

IAC-22.A3.2C.12
LEXICON, A LUNAR DUST MITIGATION SYSTEM FOR ISRU ACTIVITIES AS AN EXPERIMENT FOR THE ASCLEPIOS II ANALOG MISSION
Andrea Sportillo, Politecnico di Milano, Italy

IAC-22.A3.2C.13
MOON GRAVITY PARABOLIC FLIGHTS ONBOARD NOVESPACE'S AIRBUS A310 ZERO G: A COST-EFFECTIVE AND CRITICAL TEST BED FOR UPCOMING LUNAR MISSIONS
Thibault PARIS, Novespace, France

IAC-22.A3.2C.14
OBELIX: A RECONFIGURABLE AND INNOVATIVE MOBILITY SYSTEM FOR AN ASTRONAUT ON THE SURFACE OF THE MOON
Tania Gres, Space Generation Advisory Council (SGAC), Italy

IAC-22.A3.2C.15
SUSTAINABILITY, SUSTAINABLY: BUILDING BLOCKS TOWARDS LUNAR ENVIRONMENTAL IMPACT ASSESSMENTS
Shayna Hume, University of Colorado Boulder, United States

A3.3A. Mars Exploration – missions current and future

September 20 2022, 10:15 — N04

Co-Chair(s): Vincenzo Giorgio, Thales Alenia Space Italia, Italy; Pierre W. Bousquet, Centre National d'Etudes Spatiales (CNES), France;
Rapporteur(s): Cheryl Reed, Northrop Grumman Innovation Systems, United States; Amalia Ercoli Finzi, Politecnico di Milano, Italy;

IAC-22.A3.3A.1
KEYNOTE: MARS SAMPLE RETURN: AN INTERNATIONAL ROUND TRIP TO ANOTHER PLANET
Francois Spota, ESA - European Space Agency, The Netherlands

IAC-22.A3.3A.2
USING JAVS FOR FUTURE MISSION ON MARS
Laura Sopegno, Università degli Studi di Palermo, Italy

IAC-22.A3.3A.3
THE STUDY AND ANALYSIS OF MARTIAN ATMOSPHERE USING THE DATA FROM EMIRATES MARS ULTRAVIOLET SPECTROMETER (EMUS)
Anusha Santhosh, United Arab Emirates

IAC-22.A3.3A.4
INSIGHT TO FSS: SEISMOMETERS FROM MARS TO THE MOON
Charles Yana, Centre National d'Etudes Spatiales (CNES), France

IAC-22.A3.3A.5
IN-SITU PROPELLANT PRODUCTION ON MARTIAN SURFACE
Hari Bharath Chitta, Technical University of Berlin, Germany

IAC-22.A3.3A.6
COMMUNICATION SYSTEM FOR MARS EXPLORATION
Massimiliano Marcozzi, Thales Alenia Space Italia, Italy

IAC-22.A3.3A.7
AUTONOMOUS NAVIGATION IN A GPS DENIED ENVIRONMENT. PROJECT MID (MARS INSPECTION DRONE)
Daniel Betco, Politehnica University of Bucharest, Romania

IAC-22.A3.3A.8
MARS NORTH POLE WATER ICE ROBOTIC LANDER
Matthew Ziglar, Boeing Defense Space & Security, United States

IAC-22.A3.3A.9
DESIGN OF MARS VTOL AIRCRAFT - A NEW HOPE TOWARDS MARTIAN SEARCH.
Sharvil Joglekar, India

IAC-22.A3.3A.10
MARS SAMPLE RETURN – AN OVERVIEW OF THE CAPTURE, CONTAINMENT AND RETURN SYSTEM
Giuseppe Cataldo, National Aeronautics and Space Administration (NASA), Goddard Space Flight Center, United States

A3.3B. Mars Exploration – Science, Instruments and Technologies

September 20 2022, 15:00 — N04

Co-Chair(s): Vincenzo Giorgio, Thales Alenia Space Italia, Italy; Pierre W. Bousquet, Centre National d'Etudes Spatiales (CNES), France;
Rapporteur(s): Cheryl Reed, Northrop Grumman Innovation Systems, United States; Amalia Ercoli Finzi, Politecnico di Milano, Italy;

IAC-22.A3.3B.1
SAMPLE TRANSFER ARM BREADBOARD AND LANDER EVALUATION (STABLE)
Massimo Lucia, Leonardo Spa, Italy

IAC-22.A3.3B.2
STUDY & PREDICTION OF DUST STORMS IN LOWER MARTIAN ATMOSPHERE USING EMIRATES MARS INFRARED SPECTROMETER (EMIRS) DATA
Sarath Raj Nadarajan Syamala, Amity University, Dubai, United Arab Emirates

IAC-22.A3.3B.3
BURYING SEIS TETHER - A VERY UNIQUE OPERATION, FROM DESIGN TO REALIZATION ON MARS
Remi Lapeyre, Centre National d'Etudes Spatiales (CNES), France

IAC-22.A3.3B.4
TWINS. THE INSIGHT MARS MISSION WIND SENSOR
Sara Navarro, Centro de Astrobiología (INTA-CSIC), Spain

IAC-22.A3.3B.5
A ROBUST SINGLE PART HEATSHIELD SOLUTION FOR HIGH ENERGY ENTRY PROBES
Thierry Pichon, ArianeGroup, France

IAC-22.A3.3B.6
THE HIGH PRECISE BIDIRECTIONAL DOPPLER MEASUREMENT METHOD BASED ON CCSDS PROXIMITY-1 FOR MARS EXPLORATION
Jia Tian, China Academy of Space Technology (Xi'an), China

IAC-22.A3.3B.7
USING STEREO VISION CAMERA SYSTEMS TO ANALYZE PATH EXECUTION AND CORRECTION FOR ROVERS
JaeMin Kim, Unmanned Exploration Laboratory (UEL), Korea, Republic of

IAC-22.A3.3B.8
A SPECTRAL SYNERGY METHOD APPLIED TO PFS AND SPICAM NADIR OBSERVATIONS TO CONSTRAIN NEAR-SURFACE WATER CONTENT IN THE MARTIAN ATMOSPHERE
Elise Wright Knutsen, CNRS - LATMOS, France

IAC-22.A3.3B.9
FEASIBILITY ASSESSMENT OF OPTICAL COMMUNICATIONS BETWEEN GROUND AND SATELLITE ON MARS THROUGH THE SIMULATION OF ATMOSPHERIC EFFECTS ON SIGNAL QUALITY LEADING TO A PROPOSAL FOR A NEW COMMUNICATIONS NETWORK ARCHITECTURE DURING EXTREME WEATHER
Zachary Rowland, The Netherlands

IAC-22.A3.3B.10
MARS ENVIRONMENT INFLUENCE ON TELECOMMUNICATIONS SYSTEMS: THERMAL AND ELECTROMAGNETIC SOIL & ATMOSPHERE CHARACTERIZATION
Andrea Delfini, Sapienza University of Rome, Italy

A3.4A. Small Bodies Missions and Technologies (Part 1)

September 21 2022, 10:15 — N04

Co-Chair(s): Susan McKenna-Lawlor, Space Technology (Ireland) Ltd., Ireland; Stephan Ulamec, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;
Rapporteur(s): Norbert Frischauf, TU Graz, Austria; Marc D. Rayman, NASA Jet Propulsion Laboratory, United States;

IAC-22.A3.4A.1
PRELIMINARY DESIGN OF THE HAYABUSA2 EXTENDED MISSION TO THE FAST-ROTATING ASTEROID 1998 KY26
Shota Kikuchi, Chiba Institute of Technology, Japan

IAC-22.A3.4A.2
ESA'S COMET INTERCEPTOR MISSION DESIGN
Carlos Corral van Damme, ESA - European Space Agency, The Netherlands

IAC-22.A3.4A.3
THE PSYCHE MISSION
David Seal, NASA Jet Propulsion Laboratory, United States

IAC-22.A3.4A.4
CRITICAL DESIGN OF MARTIAN MOONS EXPLORATION (MMX)
Yasuhiro Kawakatsu, Japan Aerospace Exploration Agency (JAXA), ISAS, Japan

IAC-22.A3.4A.5
MIRS SPECTROMETER ON BOARD OF MMX MISSION
Maria Antonietta Barucci, LESIA - Observatoire de Paris, France

IAC-22.A3.4A.6
DEVELOPMENT OF OBSERVATION STRATEGIES FROM MISSION DESIGN TO OPERATIONS – ILLUSTRATION WITH MARS MOONS EXPLORER INFRARED SPECTROMETER (MIRS)
Eric Sawyer, Centre National d'Etudes Spatiales (CNES), France

IAC-22.A3.4A.7
SCIENCE OBJECTIVES OF THE MMX PHOBOS ROVER
Stephan Ulamec, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

IAC-22.A3.4A.8
RAX: THE RAMAN SPECTROMETER FOR THE MMX PHOBOS ROVER
Till Hagelschuer, German Aerospace Center (DLR), Berlin, Germany

IAC-22.A3.4A.9
LAUNCH OF A PHOBOS AND DEIMOS SAMPLE RETURN SPACECRAFT AS A CO-MANIFESTED PAYLOAD OF THE NASA SLS LAUNCHER
Matthew Ziglar, Boeing Defense Space & Security, United States

IAC-22.A3.4A.10
THE DOLPHIN MISSION AND UNIQUE OPPORTUNITIES IN 2030 TO PROBE DUST-HELIOSPHERE INTERACTIONS
Veerle Sterken, ETHZ, Switzerland

A3.4B. Small Bodies Missions and Technologies (Part 2)

September 22 2022, 13:45 — N04

Co-Chair(s): Stephan Ulamec, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany; Susan McKenna-Lawlor, Space Technology (Ireland) Ltd., Ireland;

Rapporteur(s): Marc D. Rayman, NASA Jet Propulsion Laboratory, United States; Norbert Frischauf, TU Graz, Austria;

IAC-22.A3.4B.1
THE ESA HERA MISSION TO THE NEAR-EARTH ASTEROID BINARY (65803) DIDYMOS: PLANETARY DEFENSE AND SCIENCE
Patrick Michel, University of Nice-Sophia Antipolis, CNRS, Observatoire de la Côte d'Azur, France

IAC-22.A3.4B.2
FORMATION ANALYSIS OF THE DIDYMOS-DIMORPHOS BINARY ASTEROID SYSTEM
Nicole Pallotta, Clarkson University, United States

IAC-22.A3.4B.4
JANUS: LAUNCHING A NASA SMALLSAT MISSION TO EXPLORE BINARY ASTEROIDS
Josh Hopkins, Lockheed Martin Corporation, United States

IAC-22.A3.4B.5
ONE-SHOT IN-SITU DEPTH IMAGING WITH A SINGLE PLENOPTIC CAMERA FOR SMALL BODY LANDING MISSIONS
Martin Lingenauber, DLR, German Aerospace Center, Germany

IAC-22.A3.4B.6
FEASIBILITY STUDY ON THE POSSIBILITY TO EXPLORE ASTEROIDS DURING A ROBOTIC EUROPA MISSION
Giovanni Grimaldi, Politecnico di Torino, Italy

IAC-22.A3.4B.7
SIMULATION OF THE DETECTABILITY OF DIFFERENT SURFACE PROPERTIES WITH BISTATIC RADAR OBSERVATIONS
Jonas Krumme, Germany

IAC-22.A3.4B.8
DARKO: DUST ANALYSIS AND REMOTE SENSING OF KORDYLEWSKI DUST CLOUDS
Fabrizio Giordano, Delft University of Technology (TU Delft), The Netherlands, The Netherlands

IAC-22.A3.4B.9
OPTIMAL PATH PLANNING OF SWARM OF CUBESATS TO ASTEROID DETUMBLING USING ARTIFICIAL INTELLIGENCE
Fahimeh Barzamini, K. N. Toosi University of Technology, Iran

IAC-22.A3.4B.10
MISSION ARCHITECTURE AND SPACECRAFT DESIGN FOR LONG-TERM CONTACT STUDIES OF THE INTERSTELLAR ASTEROID 1I/ OUMUAMUA
Olga Bannova, University of Houston, United States

A3.5. Solar System Exploration including Ocean Worlds

September 21 2022, 15:00 — N04

Co-Chair(s): Mariella Graziano, GMV Aerospace & Defence SAU, Spain; Junichiro Kawaguchi, Australian National University (ANU), Australia;

Rapporteur(s): Charles E. Cockrell Jr., National Aeronautics and Space Administration (NASA), United States; Alain Ouellet, Canadian Space Agency, Canada;

IAC-22.A3.5.1
MERCURY SAMPLE RETURN MISSION DESIGN UTILIZING INNOVATIVE SYSTEMS AND TECHNOLOGIES
Sapna Rao, Lockheed Martin (Space Systems Company), United States

IAC-22.A3.5.2
EXPLORATION OF VENUS USING BIOINSPIRED FLIER, BREEZE
Nicholas Noviasky, University at Buffalo, United States

IAC-22.A3.5.3
FISHER-X: A BIOINSPIRED ROBOTIC ALTERNATIVE FOR THE EXPLORATION OF THE OCEANIC ENVIRONMENT ON A JUPITER'S MOON
Bruno Cevallos, Universidad Científica del Sur, Peru

IAC-22.A3.5.4
FEASIBILITY STUDY OF A ROBOTIC SPACE MISSION FOR SEARCHING TRACE OF LIFE ON EUROPA
Mario Rizzi, Politecnico di Torino, Italy

IAC-22.A3.5.5
PRELIMINARY DESIGN OF SAMPEI: SUBSURFACE ACCESS AND MOBILITY PROBE FOR EUROPA INVESTIGATION
Leonardo Ricci, Politecnico di Torino, Italy

IAC-22.A3.5.6
DESIGNING OF A MULTI-USE SATELLITE STRUCTURE TO STUDY TITAN
Sukhjit Singh, India

IAC-22.A3.5.8
CASE STUDY ON EXPLORATION OF ENCELADUS THROUGH CONSTELLATION OF CUBESATS
Vipul Mani, TU Berlin, Germany

IAC-22.A3.5.9
STRATEGIES FOR OCEAN WORLDS SURFACE EXPLORATION
Javier Gomez-Elvira, Instituto Nacional de Tecnica Aeroespacial (INTA), Spain

IAC-22.A3.5.10
A TECHNICAL GUIDE TO THE ARCANUM MISSION: A MULTIROLE NEPTUNIAN MISSION.
Sophie Bulla, Conex Research, Germany

A4. 51st IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) – The Next Steps

Coordinator(s): Claudio Maccone, International Academy of Astronautics (IAA) and Istituto Nazionale di Astrofisica (INAF), Italy;

A4.1. SETI 1: SETI Science and Technology

September 19 2022, 10:15 — W04

Co-Chair(s): Andrea Melis, INAF - Istituto Nazionale di Astrofisica, Italy; Beatriz Villarroel, Uppsala University, Sweden;

Rapporteur(s): Franck Marchis, SETI Institute, United States; Steve Croft, University California Berkeley, United States;

IAC-22.A4.1.1
KEYNOTE (PESEK LECTURE): BREAKTHROUGH LISTEN SEARCH FOR INTELLIGENT LIFE IN THE GALACTIC PLANE WITH THE PARKES TELESCOPE
Karen Perez, Columbia University, United States

IAC-22.A4.1.2
INTERFEROMETRIC SETI SEARCHES WITH THE VERY LARGE ARRAY AND MEERKAT
Cherry Ng, University of Toronto, Canada

IAC-22.A4.1.3
AUTOMATION AND TARGET SELECTION FOR COMMENSAL SETI OBSERVING
Daniel Czech, University of California, Berkeley, United States

IAC-22.A4.1.4
BREAKTHROUGH LISTEN ON THE GREEN BANK TELESCOPE - BIG DATA SETI WITH A BIG DISH
Steve Croft, University California Berkeley, United States

IAC-22.A4.1.5
GREEN BANK TELESCOPE TECHNOSIGNATURE SEARCH OF TESS TARGETS OF INTEREST
Raffy Traas, Berkeley SETI Research Center, United States

IAC-22.A4.1.6
THE BREAKTHROUGH LISTEN SEARCH FOR INTELLIGENT LIFE: TECHNOSIGNATURE SEARCH OF TRANSITING TESS TARGETS OF INTEREST
Noah Franz, Berkeley SETI Research Center, United States

IAC-22.A4.1.7
THE SARDINIA RADIO TELESCOPE IN THE FRAMEWORK OF THE BREAKTHROUGH LISTEN PROGRAM: TECHNICAL & SCIENTIFIC COMMISSIONING AND FIRST RESULTS
Andrea Melis, INAF - Istituto Nazionale di Astrofisica, Italy

IAC-22.A4.1.8
SETI INDIA: A SEARCH FOR TECHNO-SIGNATURES FROM EXTRATERRESTRIAL LIFE USING UGMRT.
Akshay Eranhalodi, Amity University Mumbai, India

IAC-22.A4.1.9
ON THE INTERPLANETARY MEDIUM INDUCED SPECTRAL BROADENING OF THE PUTATIVE NARROWBAND SIGNALS FROM ETI (EXTRATERRESTRIAL INTELLIGENCE)
Sagarika Rao Valluri, RNSIT Bangalore, India

IAC-22.A4.1.10
EXTRAGALACTIC SETI
Mike Garrett, University of Manchester, United Kingdom

IAC-22.A4.1.12
UPPER BOUNDS ON TECHNOEMISSION RATES FROM 60 YEARS OF SILENCE
Claudio Grimaldi, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland

IAC-22.A4.1.13
KALMAN FILTERS FOR RADIO ASTRONOMY
Nicolò Antonietti, INAF - IRA, Italy

IAC-22.A4.1.14
A DEEP DIVE INTO DE-DOPPLER ALGORITHMS FOR SETI
Kenneth Houston, Berkeley SETI Research Center, United States

IAC-22.A4.1.15
AN INVESTIGATION OF FAST RADIO BURSTS AND ITS FEASIBILITY AS TECHNOSIGNATURE
Koena Maji, Manipal Institute of Technology, India

A4.2. SETI 2: SETI and Society

September 19 2022, 15:00 — W04

Co-Chair(s): Paolo Musso, University of Insubria, Italy; Steve Croft, University California Berkeley, United States;

Rapporteur(s): Nicolò Antonietti, Politecnico di Torino, Italy;

IAC-22.A4.2.1
KEYNOTE (BILLINGHAM CUTTING EDGE LECTURE): A SIGN IN SPACE: AN INTERDISCIPLINARY EXPLORATION OF THE POTENTIAL RECEPTION OF AN EXTRATERRESTRIAL SIGNAL
Daniela De Paulis, The Netherlands

IAC-22.A4.2.2
FIFTY YEARS OF SETI IN THE IAF DIGITAL LIBRARY
Claudio Maccone, International Academy of Astronautics (IAA) and Istituto Nazionale di Astrofisica (INAF), Italy

IAC-22.A4.2.3
RADIO BRIDGES BY GRAVITATIONAL LENSING FROM ALPHA CEN A OUTWARD IN ALL DIRECTIONS
Claudio Maccone, International Academy of Astronautics (IAA) and Istituto Nazionale di Astrofisica (INAF), Italy

IAC-22.A4.2.4
CIVILIZATIONS THROUGH THE EYE OF KARDASHEV: AN EXTENDED SCALING
Anuj Soni, Spaceonova, India

IAC-22.A4.2.5
ENGINEERING STELLAR GRAVITATIONAL LENSES FOR INTERSTELLAR COMMUNICATION AND ARTIFACT SETI
Akshat Mohite, India

IAC-22.A4.2.6
NUMERICAL UNCERTAINTY PROPAGATION TO THE NUMBER OF POSSIBLE GALACTIC HABITABLE ISLANDS IN THE MILKY WAY
Teófilo Vargas, Universidad Nacional Mayor de San Marcos, Peru

IAC-22.A4.2.7
SETI SPACE TELESCOPE MISSION CONCEPTS DESIGNED AROUND UPCOMING FULLY-REUSABLE LAUNCH VEHICLES
Eric Michaud, Massachusetts Institute of Technology (MIT), United States

IAC-22.A4.2.8
SPACESHIPS IN SETI RESEARCH AND POTENTIAL FOR SPACEFLIGHT TECHNOLOGY
Ugur Drguven, UN CSSTEAP, United Kingdom

IAC-22.A4.2.9
ARE WE ALONE? PEOPLE'S PERCEPTION ON AN EXOWORLD, ITS PLANET AND POSSIBLE LIFE ON IT
Suresh Bhattarai, Nepal Astronomical Society (NASO), Nepal

IAC-22.A4.2.10
MOON FARSIDE PROTECTION FOR SETI AND ASTRONOMY
Claudio Maccone, International Academy of Astronautics (IAA) and Istituto Nazionale di Astrofisica (INAF), Italy

IAC-22.A4.2.11
THE LEGAL IMPLICATIONS OF BELONGING TO AN EXTRATERRESTRIAL POLITY
Mclee Kerolle, The Space Court Foundation Inc., United States

IAC-22.A4.2.12
THE WORLD CONFIGURATION IF ALIENS WERE OUR NEIGHBORS
Léanne Fortuna, Université Paris-Sud 11 Faculté Jean Monnet, France

IAC-22.A4.2.13
ASTROBIOLOGY IMMERSIVE VIRTUAL FIELD TRIP CREATION NOW AS EASY AS POWERPOINT
Carol Oliver, University of New South Wales, Australia

IAC-22.A4.2.14
CETI ACROSS THE IRON CURTAIN
Rebecca Charbonneau, National Radio Astronomy Observatory, United States

IAC-22.A4.2.15
ROMANTICISM IN SCIENCE AS A FORM OF COGNITIVE BIAS AND SETI
Gabriel G. De la Torre, University of Cádiz, Spain

A5. 25th IAA SYMPOSIUM ON HUMAN EXPLORATION OF THE SOLAR SYSTEM

Coordinator(s): Christian Sallaberger, Canadensys Aerospace Corporation, Canada; Maria Antonietta Perino, Thales Alenia Space Italia, Italy;

A5.1. Human Exploration of the Moon and Cislunar Space

September 20 2022, 10:15 — W03

Co-Chair(s): Nadeem Ghafoor, Avalon Space, Canada; Michael Raftery, Boeing Defense Space & Security, United States;
Rapporteur(s): Marc Haese, DLR, German Aerospace Center, Germany;

IAC-22.A5.1.1
TO ENABLE EQUALITY OF SCIENCE IN THE SPACE SECTOR THROUGH THE CASE OF DESIGN FOR LUNAR BASES.
Coralie Lhabitant, France

IAC-22.A5.1.2
A CANADIAN PERSPECTIVE ON EARLY PLANNING FOR GATEWAY UTILIZATION
Luc Lefebvre, Canadian Space Agency, Canada

IAC-22.A5.1.3
DEVELOPMENTS OF SPACE DOSIMETRY SYSTEMS FOR HUMAN EXPLORATION MISSIONS
Attila Hirn, Hungary

IAC-22.A5.1.4
LUNAR BASE BUILDUP TIMELINE AND OPPORTUNITIES
Xavier Simon, The Boeing Company, United States

IAC-22.A5.1.5
ENABLING LONG DURATION EXPLORATION USING THE LARGE INTEGRATED FLEXIBLE ENVIRONMENT (LIFE) HABITAT
Loren McDaniel, Sierra Space, United States

IAC-22.A5.1.6
OUTFITTING A LUNAR LABORATORY TO PERFORM SCIENTIFIC EXPERIMENTATION TO SERVE THE NEEDS OF THE SCIENTIFIC COMMUNITY ON THE MOON AND BEYOND
Adriana Aiello, Nanoracks, Italy

IAC-22.A5.1.7
A MODULAR LUNAR HOTEL
Giancarlo Genta, Politecnico di Torino, Italy

IAC-22.A5.1.8
NEW SIMULATIONS FOR RADIATION SHIELDING MATERIALS IN LUNAR HABITATS
Yulia Akisheva, Institut Supérieur de l'Aéronautique et de l'Espace (ISAE), France

IAC-22.A5.1.9
LADE: A MOBILE HABITAT PAVING THE WAY FOR SUSTAINED LUNAR EXPLORATION
Daniele Florenzano, Politecnico di Milano, Italy

IAC-22.A5.1.10
FROM REGOLITH TO REBAR: A REPORT OUT FROM A NASA STMD LSIC WORKSHOP ON THE IN-SITU EXTRACTION AND SUBSEQUENT USE OF METALS ON THE LUNAR SURFACE
Charles Hibbitts, The John Hopkins University Applied Physics Laboratory, United States

IAC-22.A5.1.11
THE DESIGN AND DEVELOPMENT OF LOW FREQUENCY COMMUNICATION SYSTEM FOR LUNAR SURFACE OPERATIONS
Tomasz Mis, Warsaw University of Technology (WUT), Poland

A5.2. Human Exploration of Mars

September 20 2022, 15:00 — W03

Co-Chair(s): Maria Antonietta Perino, Thales Alenia Space Italia, Italy; Kathy Laurini, Dynetics, United States;
Rapporteur(s): Norbert Frischauf, TU Graz, Austria;

IAC-22.A5.2.1
PLANETARY PROTECTION POLICY AND TECHNOLOGY DEVELOPMENTS FOR THE CREWED EXPLORATION OF MARS
J Andy Spry, SETI Institute, United States

IAC-22.A5.2.2
ARCHITECTURE REQUIREMENTS FOR SAFE HUMAN EXPEDITIONS TO MARS
Azita Valinia, NASA Engineering and Safety Center (NESC), United States

IAC-22.A5.2.3
CRITICAL ANALYSIS AND REVIEW OF CURRENT MARS MISSION SCENARIOS FOR SPACEX STARSHIP
Bjarne Westphal, TU Braunschweig, Germany

IAC-22.A5.2.4
18 MONTHS OF MOXIE (MARS OXYGEN ISRU EXPERIMENT) OPERATIONS ON THE SURFACE OF MARS - PREPARING FOR HUMAN MARS EXPLORATION
Jeffrey Hoffman, Massachusetts Institute of Technology (MIT), United States

IAC-22.A5.2.5
MASSIVE: A FUEL PRODUCTION MISSION IN THE FRAMEWORK OF MARTIAN ISRU
Simone Poppi, Politecnico di Milano, Italy

IAC-22.A5.2.6
EXOFORCE-1: A ROBOTIC EXOSKELETON SPACESUIT FOR MARTIAN EXPLORATION
Shashank Nagabhushan, R V College of Engineering, Bengaluru, India

IAC-22.A5.2.7
SEMI-AUTONOMOUS GUIDANCE, NAVIGATION AND CONTROL SYSTEM FOR PLANETARY ROVERS
Simone Andolfo, Sapienza University of Rome, Italy

IAC-22.A5.2.8
STUDY OF AN INTERPLANETARY OPTICAL COMMUNICATIONS SYSTEM VIA LASER BETWEEN EARTH AND MARS
Borja Pozo, IK4-TEKNIKER, Spain

IAC-22.A5.2.9
RADIATION SHIELDING BUILDING METHOD
ALON SHIKAR, DMARS - Desert Mars Analog Ramon Station, Israel

IAC-22.A5.2.10
THE NOPAL, A PROPOSAL TO HARVEST IN SPACE
Alvaro Regules, Universidad Nacional Autónoma de México (UNAM), Mexico

IAC-22.A5.2.11
TOWARDS A UNIFIED COST-BENEFIT ASSESSMENT METRIC OF MISSION, STAKEHOLDER, AND ASTRONAUT VALUES
Isaac Lipsky, University of California, Berkeley, United States

IAC-22.A5.2.12
THE APPLICATION OF RADIATION, MICROOXIC, AND COLD-DROUGHT CHALLENGES IN SIMULATED INORGANIC MARTIAN REGOLITH WITH CYANOBACTERIA FOR SELECTIVE BREEDING OF FOOD AND GRAIN CROP A. HYPOCHONDRIUS FOR INTERPLANETARY HUMAN EXPLORATION MISSIONS.
Jake Bullard, United States

IAC-22.A5.2.13
NEUROVESTIBULAR RESPONSE TO VIRTUAL REALITY SENSORY PRESENTATION IN MIXED-GRAVITATIONAL CONDITIONS
Katie Harris, Memorial University of Newfoundland, Canada

A5.4-D2.8. Space Transportation Solutions for Deep Space Missions

September 22 2022, 10:15 — S06

Co-Chair(s): Kenneth Bruce Morris, Sierra Space, United States; Josef Wiedemann, MT Aerospace AG, Germany;
Rapporteur(s): Gerhard Schwehm, ESA (retired), The Netherlands;

IAC-22.A5.4-D2.8.1 (non-confirmed)
INTERSTELLAR TERMINAL AND STARSHIP ASSEMBLY IN THE KUYPER BELT
Giorgio Gaviraghi, Unispace Exponential Creativity, Italy

IAC-22.A5.4-D2.8.2
NASA ENVISIONED FUTURE PRIORITIES FOR IN-SPACE TRANSPORTATION
John Dankanich, NASA, United States

IAC-22.A5.4-D2.8.3
THE CERES HUMAN EXPLORATION AND TRANSIT ARCHITECTURE (CHEATA): A MISSION ARCHITECTURE FOR SMALL BODIES EXPLORATION
Jessica Todd, Massachusetts Institute of Technology (MIT), United States

IAC-22.A5.4-D2.8.4
MISSION TO MARS USING SPACE-SOURCED PROPELLANT
Jan Thoemel, University of Luxembourg, Luxembourg

IAC-22.A5.4-D2.8.5
CRYOGENIC ELECTRONICS IN DEEP SPACE MISSIONS
Ashly Thomas, Ramaiah Institute of Technology, India

IAC-22.A5.4-D2.8.6
PROTECTION AGAINST RADIATION WITH THE USE OF FUNGI - MULTIPURPOSE USE OF MUSHROOMS
Eszter Gulacsi, International Space University (ISU), France

IAC-22.A5.4-D2.8.7
USING UPGRADED VERSIONS OF CLOSE APPROACH MANEUVERS AS TRANSPORTATION SOLUTIONS FOR DEEP SPACE MISSIONS
Antonio Fernando Bertachini Almeida Prado, Instituto Nacional de Pesquisas Espaciais (INPE), Brazil

IAC-22.A5.4-D2.8.8
VASMIR ENGINE MODULE FOR INTERPLANETARY MISSIONS.
Abhishek Singh, National Space Society (USA) -Mumbai chapter, India

IAC-22.A5.4-D2.8.9
EXPLORATORY MISSION TO HELIOPAUSE AND BEYOND FOR PRECURSOR TO INTERSTELLAR SPACE TRAVEL
Ugur Drguven, UN CSSTEAP, United Kingdom

IAC-22.A5.4-D2.8.10 (non-confirmed)
COMPARATIVE ASSESSMENT OF PATCHED CONIC MISSION TO TITAN VIS-A-VIS CASSINI MISSION
Deepak Gaur, Amity School of Engineering, India

A6. 20th IAA SYMPOSIUM ON SPACE DEBRIS

Coordinator(s): Christophe Bonnal, Centre National d'Etudes Spatiales (CNES), France; Riccardo Bevilacqua, Embry-Riddle Aeronautical University, United States;

A6.1. Space Debris Detection, Tracking and Characterization - SST

September 22 2022, 13:45 — S04

Co-Chair(s): Mark A. Skinner, The Aerospace Corporation, United States; Vladimir Agapov, Russian Federation;
Rapporteur(s): Thomas Schildknecht, SwissSpace Association, Switzerland;

IAC-22.A6.1.1
MANEUVERING INTO THE FUTURE: OPEN-ARCHITECTURE DATA REPOSITORY (OADR) PROTOTYPE: TOWARDS CIVIL AND COMMERCIAL SPACE TRAFFIC COORDINATION
Mark A. Skinner, The Aerospace Corporation, United States

IAC-22.A6.1.2
THERMAL INFRARED MAGNITUDES OF LOW EARTH ORBIT SATELLITES
Patrick Seitzer, University of Michigan, United States

IAC-22.A6.1.3
LIGHTCURVE GENERATION USING NEUROMORPHIC EVENT-BASED SENSORS.
Andrew Jolley, Western Sydney University, Australia

IAC-22.A6.1.4
A NEW GLOBAL LASER RANGING NETWORK FOR SATELLITE AND DEBRIS TRACKING
Hira Virdee, Lumi Space, United Kingdom

IAC-22.A6.1.5
DESIGN AND TEST OF AN OPTICAL DAYLIGHT TRACKING CAPABILITY FOR LEO, MEO, GEO
Pyanet Marine, ArianeGroup SAS, France

IAC-22.A6.1.6
INCREASING CAPABILITIES IN A GROWING RADAR NETWORK
Benedikt Reihls, LeoLabs, United States

IAC-22.A6.1.7
OBSERVATION AND ANALYSIS OF COSMOS 1408 FRAGMENTATION.
Andrea Muciaccia, Politecnico di Milano, Italy

IAC-22.A6.1.8
ON-ORBIT OPTICAL DETECTION OF LETHAL NON-TRACKABLE DEBRIS
Andrew Nicholas, Naval Research Laboratory, United States

IAC-22.A6.1.9
ON-ORBIT SSA: BESPOKE AND MULTI-PURPOSE OPTICAL SENSORS TO SUPPORT IN-ORBIT SERVICING
George Brydon, Astroscale Ltd, United Kingdom

IAC-22.A6.1.10
DEBRIS MITIGATION FACILITY - SMALL FLUX UPDATES FROM IMPACT DETECTORS
Esfandiar Farahvashi, Etamax Space GmbH, Germany

A6.2. Modeling and Risk Analysis

September 20 2022, 15:00 — S04

Co-Chair(s): Marlon Sorge, The Aerospace Corporation, United States; Dan Oltrogge, COMSPOC Corp., United States;
Rapporteur(s): Carmen Pardini, ISTI-CNR, Italy;

IAC-22.A6.2.1
A MAP OF THE STATISTICAL COLLISION RISK IN LEO
Darren McKnight, LeoLabs, United States

IAC-22.A6.2.2
FINDING THE UPPER THRESHOLD OF LEO ACTIVITY THAT MAKES LONG-TERM SPACE OPERATIONS UNSUSTAINABLE
Gregory Henning, The Aerospace Corporation, United States

IAC-22.A6.2.3
A NETWORK-BASED RISK ANALYSIS FOR SPACE TRAFFIC MANAGEMENT
Matteo Romano, University of Namur (FUNDP), Belgium

IAC-22.A6.2.4
SHOULD I STAY OR SHOULD I GO? MACHINE LEARNING APPLIED TO CONJUNCTION ANALYSIS
Cristina Pérez Hernández, CDTI (Centre for the development of Industrial Technology), Spain

IAC-22.A6.2.5
SWOT REENTRY: MANEUVERS STRATEGY AND RISK COMPUTATION
Aurélie Bellucci, Centre National d'Etudes Spatiales (CNES), France

IAC-22.A6.2.6
A PARTICIPATIVE APPROACH TO SPACE DEBRIS RISK AND MITIGATION ANALYSES
Vitali Braun, IMS Space Consultancy, Germany

IAC-22.A6.2.7
PREDICTION OF THE DEBRIS DISTRIBUTION IN LEO BASED ON A LONG-TERM EVOLUTION MODEL OF THE SPACE ENVIRONMENT
Yurun Yuan, Beijing Institute of Technology, China

IAC-22.A6.2.8
MODELLING THE RESILIENCE OF SPACE INFRASTRUCTURE TO COLLISIONS IN SPACE
Lucy Berthoud, University of Bristol, United Kingdom

IAC-22.A6.2.9
A CRAMER-RAO LOWER BOUND-BASED EVALUATION OF SPACE SURVEILLANCE NETWORK DATA FOR COLLISION RISK ASSESSMENT
Sanat K Biswas, IIIT Delhi, India

IAC-22.A6.2.10
SIMULATIONS OF SATELLITES MOCK-UP FRAGMENTATION
Lorenzo Olivieri, CISAS "G. Colombo" - University of Padova, Italy

A6.3. Impact-Induced Mission Effects and Risk Assessments

September 20 2022, 10:15 — S04

Co-Chair(s): Darren McKnight, LeoLabs, United States; Ziheng Gong, Beijing Institute of Spacecraft Environment Engineering, China Academy of Space Technology (CAST), China;
Rapporteur(s): Jean-Claude Traineau, Office National d'Etudes et de Recherches Aérospatiales (ONERA), France;

IAC-22.A6.3.3
THE SHORT-TERM IMPACT OF THE COSMOS 1408 FRAGMENTATION ON NEIGHBORING SPACE REGIONS: FROM INHABITED SPACE STATIONS TO LARGE SATELLITE CONSTELLATIONS
Carmen Pardini, ISTI-CNR, Italy

IAC-22.A6.3.4
IMPACT FRAGMENTS FROM HONEYCOMB SANDWICH PANELS
Lorenzo Olivieri, CISAS "G. Colombo" - University of Padova, Italy

IAC-22.A6.3.5
SOLVING SPACE MYSTERIES - BEST PRACTICES FOR DETERMINING ROOT CAUSE OF SPACECRAFT ANOMALIES
Darren McKnight, LeoLabs, United States

IAC-22.A6.3.6
EXPERIMENTAL INVESTIGATION ON THE DAMAGE BEHAVIOUR OF HONEYCOMB SANDWICH WITH KEVLAR EPOXY COMPOSITE FACE SHEETS UNDER HIGH VELOCITY IMPACT AT ELEVATED TEMPERATURES
Venkatesh Kumar M, SASTRA University, India

IAC-22.A6.3.7
INITIAL STUDY FOR THE RESPONSE OF TI-6AL-4V PLATE USED IN TANK MATERIAL
Kumi Nitta, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.A6.3.8
EXPERIMENT DESIGN OF A PAYLOAD FOR A SUB-ORBITAL ROCKET TO STUDY SPACECRAFT REPAIR AFTER SPACE DEBRIS IMPACTS
Leonardo Barilaro, Malta

IAC-22.A6.3.9
NUMERICAL STUDY OF WHIPPLE SHIELD'S SPALLATION FAILURE CAUSED BY HYPERVELOCITY IMPACT AT 8KM/S
Yixiao Li, China Aerospace Science and Industry Corporation (CASIC), China

IAC-22.A6.3.10
MODELLING HYPERVELOCITY IMPACTS ON WHIPPLE SHIELDS USING A COUPLED FINITE ELEMENT-DISCRETE ELEMENT METHOD
Rannveig Marie Færgestad, Norwegian University of Science and Technology, Norway

A6.4. Mitigation - Tools, Techniques and Challenges - SEM

September 19 2022, 15:00 — S04

Co-Chair(s): Pierre Omaly, CNES, France; Satomi Kawamoto, Japan Aerospace Exploration Agency (JAXA), Japan;
Rapporteur(s): Holger Krag, European Space Agency (ESA), Germany;

IAC-22.A6.4.1
EVALUATION OF THE SHARE OF THE SPACE CAPACITY SHARE USED BY A MISSION
Camilla Colombo, Politecnico di Milano, Italy

IAC-22.A6.4.2
PROCEDURE FOR THE ASSESSMENT OF THE SPACE DEBRIS ENVIRONMENT IMPACT OF A MISSION
Francesca Letizia, European Space Agency (ESA), Germany

IAC-22.A6.4.3
SUSTAINABILITY: THINKING BEYOND ORBIT
Dharshun Sridharan, Australia

IAC-22.A6.4.4
THE IMPACT ASSESSMENT OF ACCIDENTAL EXPLOSIONS OF LARGE CONSTELLATIONS ON LOW EARTH ORBIT ENVIRONMENT
Ryusuke Harada, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.A6.4.5
INSPECTION OF ACTIVE SATELLITES WITH CUBESATS: THE SROC+ MISSION
Sabrina Corpino, Politecnico di Torino, Italy

IAC-22.A6.4.6
DEVELOPMENT AND VALIDATION OF DRAG SAILS FOR SPACE DEBRIS MITIGATION
Zaria Serfontein, Cranfield University, United Kingdom

IAC-22.A6.4.7
EARLY IDENTIFICATION AND ATTITUDE RECONSTRUCTION OF LED-EQUIPPED SATELLITES FOR SPACE TRAFFIC MANAGEMENT AND IMPROVED TRACKABILITY
Paolo Marzioli, Sapienza University of Rome, Italy

IAC-22.A6.4.8
REFLECTOR-BASED ATTITUDE DETECTION SYSTEM
Michael Steindorfer, Space Research Institute, Austrian Academy of Sciences, Austria

IAC-22.A6.4.9
DESIGN OF HIGH ALTITUDE INCLINED ORBIT CONSTELLATIONS ACCOUNTING FOR THE EFFECT OF ORBITAL PERTURBATIONS ON MISSION AND DISPOSAL OBJECTIVES
Chelsea Thangavelu, Aerospace Corporation, United States

IAC-22.A6.4.10
COMMUNITY POLLING RESULTS IN TANDEM WITH THE LEO KINETIC SPACE SAFETY WORKSHOP
Moataz AbdelAzim, LeoLabs, United States

IAC-22.A6.4.11
THE FRENCH SPACE OPERATION ACT TECHNICAL REGULATION AND ASSOCIATED GOOD PRACTICES IN THE FIELD OF ORBITAL SPACECRAFT'S. WHERE ARE WE AND WHERE DO WE GO?
Nicolas Pillet, Centre National d'Etudes Spatiales (CNES), France

A6.5. Post Mission Disposal and Space Debris Removal 1 - SEM

September 21 2022, 10:15 — S04

Co-Chair(s): Balbir Singh, Manipal Institute of Technology, Manipal Academy of Higher Education, India; Roberto Opromolla, University of Naples "Federico II", Italy;
Rapporteur(s): Laurent Francillout, CNES, France;

IAC-22.A6.5.1
OPERATIONAL PROGRESS UPDATE ON THE ELSA-D DEBRIS REMOVAL MISSION
Jason Forshaw, Astroscale Ltd, United Kingdom

IAC-22.A6.5.2
IMPACT OF MISSION PARAMETERS ON THE PREFERRED VARIANT OF LARGE SPACE DEBRIS TRANSFER TO THE DISPOSAL ORBIT
Dmitriy Grishko, Bauman Moscow State Technical University, Russian Federation

IAC-22.A6.5.3
EXPLOITATION OF THERMAL RADIATION RESONANCE FOR DEORBITATION OF SPACECRAFT THROUGH ATTITUDE CONTROL
Catherine Massé, McGill University, Canada

IAC-22.A6.5.4
BRIDGING THE DOMAIN SHIFT OF CNN-BASED POSE ESTIMATION SYSTEMS IN ACTIVE DEBRIS REMOVAL SCENARIOS
Lorenzo Pasqualetto Cassinis, Delft University of Technology (TU Delft), The Netherlands

IAC-22.A6.5.5
AN ADVANCED TOOL TO DETERMINE THE APPARENT ROTATION PERIOD OF A SPACE OBJECT FROM A FUSION OF MEASUREMENTS
Guillaume Quint, GMV Innovating Solutions, France

IAC-22.A6.5.6
INERTIA TENSOR ESTIMATION OF TETHERED DEBRIS THROUGH TETHER TRACKING
Derek Bourabah, University at Buffalo, United States

IAC-22.A6.5.7
ANALYSIS OF POST-MISSION DISPOSAL STRATEGIES FOR ROCKET BODIES
Lucía Ayala Fernández, Technische Universität Braunschweig, Germany

IAC-22.A6.5.8
DEPLOYMENT FUNCTIONAL TESTS OF AN ELECTRODYNAMIC TAPE FOR SPACE DEBRIS MITIGATION
Alice Brunello, CISAS "G. Colombo" - University of Padova, Italy

IAC-22.A6.5.9
PHASE SPACE EVOLUTION OF A TUMBLING SOLAR SAIL AND IMPLICATIONS FOR END-OF-LIFE DEORBITING
Makrina Agaoglou, Consejo Superior de Investigaciones Científicas (CSIC), Spain

IAC-22.A6.5.10
DEBRIS SWEEPER IN HIGH ORBIT - DEBRIS BUMPER THAT DO NOT GENERATE EJECTA -
Satomi Kawamoto, Japan Aerospace Exploration Agency (JAXA), Japan

A6.6. Post Mission Disposal and Space Debris Removal 2 - SEM

September 21 2022, 15:00 — S04

Co-Chair(s): Marko Jankovic, DFKI GmbH, Robotics Innovation Center, Germany; Dmitriy Grishko, Bauman Moscow State Technical University, Russian Federation;
Rapporteur(s): John Auburn, Astroscale Ltd, United Kingdom;

IAC-22.A6.6.1
EXPERIMENTAL VALIDATION OF INERTIA PARAMETERS AND ATTITUDE ESTIMATION OF UNCOOPERATIVE SPACE TARGETS USING SOLID STATE LIDAR
Alessia Nocerino, University of Naples "Federico II", Italy

IAC-22.A6.6.2
DYNAMICS ANALYSIS AND OPTIMAL STRATEGY OF PYRAMID DEORBIT SAIL
Ruonan Zhang, Beijing Institute of Technology, China

IAC-22.A6.6.3
OPTIMAL DEBRIS REMOVAL SEQUENCE WITH MULTIPLE SPACECRAFTS USING NON-POPULATION GRADIENT SEARCH
Liqiang Hou, Shanghai Jiaotong University, China

IAC-22.A6.6.4
DYNAMIC MODEL AND SYSTEM DESIGN OF A 1U CUBESAT DRAG SAIL MODULE
Luca Diazzi, Politecnico di Milano, Italy

IAC-22.A6.6.5
HYBRID BRAKING SYSTEM FOR LARGE SPACE DEBRIS OBJECTS TO ACCELERATE DEGRADATION OF 25-YEARS DISPOSAL ORBIT
Victoria Mayorova, Bauman Moscow State Technical University, Russian Federation

IAC-22.A6.6.6
TOWARDS THE OBSERVATION AND REMOVAL OF AN UPPER STAGE ROCKET BODY - THE JAXA-ASTROSCALE ADRAS-J MISSION
Mike Lindsay, Astroscale Pte. LTD, Japan

IAC-22.A6.6.7
REMOVED DEBRIS, MISSION ACCOMPLISHED AND LESSON LEARN
Guglielmo Aglietti, University of Auckland, New Zealand

IAC-22.A6.6.8
DYNAMICS AND CONTROL OF SPACE DEBRIS WITH FLEXIBLE APPENDAGES DURING CONTACTLESS ION BEAM TRANSPORTATION
Vladimir S. Aslanov, Samara National Research University (Samara University), Russian Federation

IAC-22.A6.6.9
AN END-OF-LIFE COLD GAS CONTROL SYSTEM FOR SMALL SATELLITES
Alina Toidjanov, University of Manitoba, Canada

IAC-22.A6.6.10
FACILITATING ACTIVE DEBRIS REMOVAL WITH HIGH TEMPERATURE SUPERCONDUCTING MAGNETS.
Adam Baker, Rocket Engineering Ltd., United Kingdom

A6.7. Operations in Space Debris Environment, Situational Awareness - SSA

September 18 2022, 15:15 — S04

Co-Chair(s): Vincent Martinot, Thales Alenia Space France, France; T.S. Kelso, COMSPOC Corp., United States;
Rapporteur(s): Noelia Sanchez Ortiz, Barrabes.biz, Spain;

IAC-22.A6.7.1
A PAN-EUROPEAN EXPERT CENTRE SERVICE AND COORDINATION FACILITY IN SUPPORT OF SPACE SURVEILLANCE
Christophe Paccolat, Astronomical Institute of the University of Bern, Switzerland

IAC-22.A6.7.2
MITIGATING CUBESAT CONFUSION: FURTHER RESULTS OF IN-FLIGHT TECHNICAL DEMONSTRATIONS OF CANDIDATE TRACKING AND IDENTIFICATION TECHNOLOGIES
Mark A. Skinner, The Aerospace Corporation, United States

IAC-22.A6.7.5
MULTIPLE SPACE OBJECT TRACKING UNDER EPISTEMIC UNCERTAINTY
Han Cai, Beijing Institute of Technology, China

IAC-22.A6.7.6
GEOTRACKER - AUTOMATION OF CATALOGUE MAINTENANCE AND TRACKING CAPABILITIES WITH ARTIFICIAL INTELLIGENCE FOR SPACE SITUATIONAL AWARENESS
Romain Bourrier, ArianeGroup SAS, France

IAC-22.A6.7.7
A USE CASE STUDY ON PROVENANCE-BASED DATA ASSESSMENTS FOR MISSION CRITICAL SOFTWARE SYSTEMS
Martin Stoffers, German Aerospace Center (DLR), Germany

IAC-22.A6.7.8
FIRST RESULTS OF ESA'S COLLISION RISK ASSESSMENT AND AUTOMATED MITIGATION PROGRAMME
Volker Schaus, IMS Space Consultancy, Germany

IAC-22.A6.7.10
SINGLE-AVERAGED MODELS FOR LOW-THRUST COLLISION AVOIDANCE UNDER UNCERTAINTIES
Juan Luis Gonzalo, Politecnico di Milano, Italy

A6.8-E9.1. Political, Legal, Institutional and Economic Aspects of Space Debris Mitigation and Removal - STM Security

September 22 2022, 10:15 — S04

Co-Chair(s): David Spencer, The Aerospace Corporation, United States; Serge Plattard, University College London (UCL), United Kingdom; Tanja Masson-Zwaan, International Institute of Air and Space Law, Leiden University, The Netherlands;

Rapporteur(s): Victoria Samson, Secure World Foundation, United States; Emma Kerr, Deimos Space UK Ltd, United Kingdom;

IAC-22.A6.8-E9.1.1
KEYNOTE: ADDRESSING SPACE DEBRIS: A SIMPLE BEGINNING TO A VERY COMPLEX PROBLEM
Henry Hertzfeld, Space Policy Institute, George Washington University, United States

IAC-22.A6.8-E9.1.2
BRIDGING NATIONAL AND INTERNATIONAL EFFORTS ON SPACE DEBRIS REMEDIATION
Brian Weeden, Secure World Foundation, United States

IAC-22.A6.8-E9.1.3
SPACE TRAFFIC MANAGEMENT AS A NECESSITY FOR FUTURE ORBITAL OPERATIONS - A FRENCH PERSPECTIVE
Jean-Youri Marty, CNES, France

IAC-22.A6.8-E9.1.4
GAINING NATIONAL SUPPORT FOR SPACE SUSTAINABILITY - THE UK APPROACH
Jacob Geer, UK Space Agency, United Kingdom

IAC-22.A6.8-E9.1.5
AN EU APPROACH FOR SPACE TRAFFIC MANAGEMENT: UPDATED INSTRUMENTS TO TACKLE RISING CHALLENGES
Giulia Pavesi, KU Leuven – University of Leuven, Belgium

IAC-22.A6.8-E9.1.7
IDENTIFYING CRITICAL LEO KINETIC SPACE SAFETY ACTIVITIES
Darren McKnight, LeoLabs, United States

IAC-22.A6.8-E9.1.8
THE SPACE SUSTAINABILITY RATING: AN OPERATIONAL PROCESS INCENTIVIZING OPERATORS TO IMPLEMENT SUSTAINABLE DESIGN AND OPERATION PRACTICES
Adrien Saada, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland

IAC-22.A6.8-E9.1.9
QUESTIONS OF FAULT LIABILITY: A CASE STUDY ANALYSIS OF IN-ORBIT COLLISIONS WITH DEBRIS
Andrea Capurso, LUISS Guido Carli University, Italy

IAC-22.A6.8-E9.1.10
FINANCIAL INCENTIVES FOR DEBRIS REMOVAL SERVICES
Morgane Lecas, Astroscale Ltd, United Kingdom

IAC-22.A6.8-E9.1.11
LIGHTING UP DOWN UNDER: A SCIENCE AND TECHNOLOGY STUDIES EXAMINATION OF POLICY, LEGAL AND ORGANISATIONAL CHALLENGES ENCOUNTERED DURING THE DEVELOPMENT OF ACTIVE DEBRIS REMOVAL TECHNOLOGY IN AUSTRALIA
Annie Handmer, The University of Sydney, Australia

IAC-22.A6.8-E9.1.12
ORBITAL DEBRIS COMPLIANCE CONTINUUM – REGULATION AS A SERVICE
Jonathan Mitchell, New Zealand Space Agency, New Zealand

IAC-22.A6.8-E9.1.13
THE ENHANCED ECONOMICS, INCENTIVES, AND MULTINATIONAL COOPERATION ENABLED BY REFUELING ARCHITECTURES CENTERED AROUND DEBRIS CLUSTERS FOR SUSTAINABLE ACTIVE DEBRIS REMOVAL
Aiden O'Leary, Orbit Fab, United States

A6.9. Orbit Determination and Propagation - SST

September 19 2022, 10:15 — S04

Co-Chair(s): Jan Siminski, ESA - European Space Agency, Germany; Juan Carlos Dolado Perez, Centre National d'Etudes Spatiales (CNES), France;

Rapporteur(s): Paolo Marzioli, Sapienza University of Rome, Italy;

IAC-22.A6.9.1
APPLYING GRAPH-BASED CLUSTERING TO TRACKLET-TRACKLET CORRELATION
Franziska Griese, German Aerospace Center (DLR), Germany

IAC-22.A6.9.2
A MULTIFIDELITY APPROACH TO ROBUST ORBIT DETERMINATION
Alberto Fossò, Institut Supérieur de l'Aéronautique et de l'Espace (ISAE), France

IAC-22.A6.9.3
POLYNOMIAL ALGEBRA FOR UNCERTAINTY PROPAGATION IN EQUINOCTIAL ORBITAL ELEMENTS
Max Hallgarten La Casta, Imperial College London, United Kingdom

IAC-22.A6.9.4
DETECTION OF SATELLITE MANOEUVRES USING NON-LINEAR KALMAN FILTERS ON PASSIVE-OPTICAL MEASUREMENTS
Christoph Bergmann, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

IAC-22.A6.9.5
MODERN METHODS FOR COLLISION RISK ASSESSMENT
Daniel Saez-Bo, GMV Aerospace & Defence SAU, Spain, Spain

IAC-22.A6.9.6
UNCERTAINTY REDUCTION FOR SPACE OBJECTS COLLISION ANALYSIS BY PRECISE ORBIT: A CASE STUDY OF SPACE DEBRIS APPROACHING Q-SAT
Pu Huang, Tsinghua University, China

IAC-22.A6.9.7
UNCERTAINTY EVALUATION TOOL FOR MEDIUM-TERM LOW-EARTH ORBIT PROPAGATION
Giorgio Isoletta, University of Naples "Federico II", Italy

IAC-22.A6.9.8
SSA OBSERVATION CAMPAIGN OF THE ELSA-D MISSION
Toby Harris, Astroscale Ltd, United Kingdom

IAC-22.A6.9.9
LUNAR OBSERVER EFFICACY FOR NRHO TARGET TRACKING
Samuel Fedeler, Colorado Center for Astrodynamics Research, University of Colorado, United States

IAC-22.A6.9.10
APPLICATION OF THE OPTIMAL MAINTENANCE AND SURVEY TASKING (OMST) STRATEGY AT THE TELESCOPE NETWORK SMARTNET
Johannes Herzog, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

A7. IAF SYMPOSIUM ON ONGOING AND NEAR FUTURE SPACE ASTRONOMY AND SOLAR-SYSTEM SCIENCE MISSIONS

Coordinator(s): Pietro Ubertini, INAF, Italy; Eric Wille, ESA, The Netherlands;

A7.1. Space Astronomy missions, strategies and plans

September 21 2022, 10:15 — E04B

Co-Chair(s): Eric Wille, ESA, The Netherlands; Pietro Ubertini, INAF, Italy;

Rapporteur(s): Maria Cristina Falvella, Italian Space Agency (ASI), Italy;

IAC-22.A7.1.1
SATELLITE CONSTELLATIONS OBSERVATORIES FOR GEOHAZARDS MONITORING AND EARLY WARNING APPLICATIONS
Roberto Battiston, University of Trento, Italy

IAC-22.A7.1.3
PLATO PASSES ITS CRITICAL MILESTONE REVIEW: \ \ GREEN LIGHT FOR PRODUCTION OF FLIGHT HARDWARE, \ \ SPACECRAFT STATUS AND OVERVIEW
Anneke Monsky, OHB System AG-Bremen, Germany

IAC-22.A7.1.4
THE ASTRONOMICAL LUNAR OBSERVATORY (ALO) - PROBING THE COSMOLOGICAL DARK AGES AND COSMIC DAWN WITH A DISTRIBUTED LOW-FREQUENCY RADIO ARRAY ON THE LUNAR FAR SIDE
Marc Klein Wolt, Radboud University Nijmegen, The Netherlands

IAC-22.A7.1.5
THE NEXT GENERATION Arecibo Telescope - A POWERFUL CONCEPT FOR ASTRONOMICAL DISCOVERY, SPACE SCIENCES AND PLANETARY DEFENSE.
Francisco Cordova, University of Central Florida (UCF), United States

IAC-22.A7.1.6
SAPIENZA S5LAB STUDENT DRIVEN SMALL-SCALE SPACE MISSIONS AND EXPERIMENTS
Paolo Marzioli, Sapienza University of Rome, Italy

IAC-22.A7.1.7
TRACING THE EVOLVING SCIENTIFIC AND MEDIA IMPACT OF SPACE SCIENCE MISSIONS
Lindsey Wiser, Arizona State University, United States

IAC-22.A7.1.8
STEP I: THE PATHFINDER MISSION TO SEARCH FOR TERRESTRIAL EXO-PLANETS
Ding Chen, Shanghai Academy of Spaceflight Technology (SAST), China Aerospace and Technology Corporation (CASC), China

A7.2. Science Goals and Drivers for Future Exoplanet, Space Astronomy and Space Physics

September 22 2022, 10:15 — E04B

Co-Chair(s): Pietro Ubertini, INAF, Italy; Maria Cristina Falvella, Italian Space Agency (ASI), Italy;

Rapporteur(s): Eric Wille, ESA, The Netherlands;

IAC-22.A7.2.1
BUILDING A SOLAR RADIO SPECTROMETER
Mohammad Baker Rihan, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

IAC-22.A7.2.2
PREDICTING EXOPLANETS USING PREDICTIVE ANALYSIS NEURAL NETWORK
Vijayalakshmi V, ASTROPHYSICAST, India

IAC-22.A7.2.3
ACCRETION ENVIRONMENT IN SGHMXB WITH SMALL SATELLITES
Antonios Manousakis, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

IAC-22.A7.2.4
REDEFINED APPROACH TO HABITABILITY ASSESSMENT OF EXOPLANETS.
Abdul Ahad, India

IAC-22.A7.2.5
OPTIMIZATION OF PARTICLE-IN-CELL CODE FOR THE STUDY OF SOLAR WIND-SPACECRAFT INTERACTION THROUGH PARTICLE REZONING
Jorge Alberto Garcia Perez, Department of Engineering, The University of Tokyo, Japan

IAC-22.A7.2.7
NEW APPROACH INTO UNDERSTANDING THE CORRELATION BETWEEN SOLAR ACTIVITY AND SUNSPOT AREA (SSA)
Prateek Boga, SASTRA University, India

IAC-22.A7.2.9
DETECTION POSSIBILITY OF COSMIC RELIC NEUTRINO SIGNALS AND GATE TO CONSTRUCTION OF RELIC NEUTRINO TELESCOPE
Vali Huseynov, Azerbaijan National Academy of Sciences, Azerbaijan

A7.3. Technology Needs for Future Missions, Systems, and Instruments

September 22 2022, 13:45 — 731/732

Co-Chair(s): Eric Wille, ESA, The Netherlands; Maria Cristina Falvella, Italian Space Agency (ASI), Italy;

Rapporteur(s): Pietro Ubertini, INAF, Italy;

IAC-22.A7.3.1
HIPTC A DUAL STAGE CRYOCOOLER FOR 10K-40K COOLING OF SCIENCE PAYLOADS
Pierre-Olivier MINE, Air Liquide, France

IAC-22.A7.3.2
DESIGN AND DEVELOPMENT OF VINE ROBOT FOR THE EXPLORATION OF MARS AND TITAN.
Vanshika Vanshika, Spaceonova, India

IAC-22.A7.3.3
THE METHOD AND RESULT OF THE CENTER OF MASS CALIBRATION OF "TAIJI-1" DURING ITS EXTENDED TASKS
Jianfeng Deng, Shanghai Jiao Tong University, China

IAC-22.A7.3.4
DESIGN AND TESTING OF A 3U CUBESAT TO TEST THE IN-SITU VETOING FOR THE NUSOL SOLAR NEUTRINO DETECTOR
Jonathan Folkerts, Wichita State University, United States

IAC-22.A7.3.5
PERFORMANCE AND CHARACTERISTICS OF THE NEW TESSERACT HIGH-STABILITY MAGNETOMETER DESIGN FOR APPLICATIONS ON MAGNETOSPHERIC SCIENCE MISSIONS
Kenton Greene, University of Iowa, United States

IAC-22.A7.3.6
OPTICAL COATING HERITAGE & TECHNOLOGY ADVANCEMENTS FOR SPACE EXPLORATION
David Harrison, United States

IAC-22.A7.3.7
SPICA – A SPACE INFRARED TELESCOPE: TECHNICAL CHALLENGES FOR PLATFORM TO SUPPORT HIGH-PERFORMING INFRARED TELESCOPE
Masaki Nagai, OHB System AG, Germany

IAC-22.A7.3.8
THE ARCANUM TELESCOPE: A SPACE OBSERVATION PLATFORM ON THE OUTER SOLAR SYSTEM
Jesus Galinzoga, Conceptual Exploration Research, Russian Federation

IAC-22.A7.3.9
SEA SLUGG - STUDENT EXPERIMENT AGAIN: SUBMARINE LAUNCHED INTO MGRAVITY FROM GDANSK
Szymon Krawczuk, Gdansk University of Technology, Poland

IAC-22.A7.3.10
DEVELOPMENT AND SUBORBITAL VALIDATION OF TECHNOLOGIES FOR DIRECT IMAGING OF NEARBY EXOPLANETARY SYSTEMS IN REFLECTED VISIBLE WAVELENGTHS
Supriya Chakrabarti, University of Massachusetts, United States

IAC-22.A7.3.11
AN EMERGING HYBRID TECHNOLOGY TOWARD ULTRA-LIGHT & SELF-CORRECTING “LIVE” MIRRORS, DEDICATED TO IMAGING EXO-PLANETS – THE ELF PROJECT
Kritsadi Thetraphi, INSA de Lyon, France

IAC-22.A7.3.12
THE ELF PROJECT: PERFORMANCE OF AN EXTREME ADAPTIVE OPTICS SYSTEM COMPENSATING FOR ATMOSPHERIC TURBULENCE, COPHASING A DILUTED PUPIL AND PERFORMING DARK HOLE CORONOGRAPHY IN ORDER TO REACH HIGH CONTRAST EXOPLANET DIRECT DETECTION
Maud Langlois, CNRS, France

IAC-22.A7.3.13
DEFINING THE SOLUTION SPACE FOR AUTONOMOUS CONTROL OF IN-SITU ASTROBIOLOGY MISSIONS
Caitlyn Singam, University of Maryland - College Park, United States

B1. IAF EARTH OBSERVATION SYMPOSIUM

Coordinator(s): Andrew Court, TNO, The Netherlands; Harry A. Cikaneck, National Oceanic and Atmospheric Administration (NOAA), United States;

B1.1. International Cooperation in Earth Observation Missions

September 18 2022, 15:15 — W02

Co-Chair(s): Mukund Kadursrinivas Rao, National Institute of Advanced Studies (NIAS), India; José Gavira Izquierdo, European Space Agency (ESA), The Netherlands;

Rapporteur(s): Brent Smith, National Oceanic and Atmospheric Administration (NOAA), United States;

IAC-22.B1.1.1 (non-confirmed)
KEYNOTE: COMMITTEE ON EARTH OBSERVATION SATELLITES (CEOS): 2022 REPORT OF ACTIVITIES TO THE 73RD INTERNATIONAL ASTRONAUTICAL CONGRESS
Selma CHERCHALI, CNES, France

IAC-22.B1.1.2
NASA-ESA COOPERATION FOR EARTH OBSERVATION: THE SBG AND CHIME HYPERSPECTRAL MISSIONS
Valentina Boccia, ESA - European Space Agency, Italy

IAC-22.B1.1.3
A SYSTEMS ENGINEERING APPROACH TO STUDY ROBUSTNESS OF THE EARTH OBSERVATION SATELLITE NETWORK FOR ADDRESSING THE UN SUSTAINABLE DEVELOPMENT GOALS
Olabamiji Olojo, University of Strathclyde / Mechanical and Aerospace Engineering, United Kingdom

IAC-22.B1.1.4
SENTINEL-6/JASON-CS: INTERNATIONAL PARTNERSHIP BUILDING THE UNPRECEDENTED LONG TERM DATA CONTINUITY FOR OCEAN SURFACE TOPOGRAPHY EARTH OBSERVATION
Julia Figa Saldana, EUMETSAT, Germany

IAC-22.B1.1.5
VENUS MISSION: RESULTS AND PERSPECTIVES FOR A NEW OPTICAL 1-DAY REVISIT MISSION
JEAN-LOUIS RAYNAUD, Centre National d’Etudes Spatiales (CNES), France

IAC-22.B1.1.6 (non-confirmed)
INTER-CONTINENTAL COOPERATIONS AND SYNERGIES ON GEOSPATIAL APPLICATIONS TO SUPPORT WATER RESOURCES MANAGEMENT AND WATER SUSTAINABILITY IN AFRICA
Manuel Ntumba, Space Generation Advisory Council (SGAC), Austria

IAC-22.B1.1.7
THE SPECTRAL SENSOR OF THE KANYINI MISSION AND THE POTENTIAL SOUTH AUSTRALIAN APPLICATIONS
Marco Esposito, Cosine Remote Sensing B.V., The Netherlands

IAC-22.B1.1.8
COLLABORATIONS UTILIZING EARTH OBSERVATION DATA IN AFRICA AND THE MIDDLE EAST
Kaitlyn Holm, University of Pennsylvania, United States

IAC-22.B1.1.9
STATUS OF THE METEOSAT 3RD GENERATION (MTG) AND EPS 2ND GENERATION (EPS-SG) SYSTEMS AND FUTURE MISSION OPPORTUNITIES
Cristian Bank, EUMETSAT, Germany

B1.2. Future Earth Observation Systems

September 20 2022, 10:15 — W02

Co-Chair(s): Timo Stuffer, OHB System AG, Germany; Alain Gleyzes, CNES, France;
Rapporteur(s): Gunter Schreier, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;

IAC-22.B1.2.1
SCARBO: A CONSTELLATION OF SMALL SATELLITES FOR THE MONITORING OF ANTHROPOGENIC GREENHOUSE GASES
Laure Brooker Lizon-Tati, Airbus Defence and Space, France

IAC-22.B1.2.2
CHORUS – CHANGING HOW AND WHEN YOU SEE THE WORLD
Mark Senez, MDA, Canada

IAC-22.B1.2.3
THE MTG-IRS INSTRUMENT: A BREAKTHROUGH FOR METEOROLOGICAL APPLICATIONS AND DETECTION OF EXTREME WEATHER EVENTS
Francisc Lucas Carbo, OHB System AG, Germany

IAC-22.B1.2.4
SURFACE WATER AND OCEAN TOPOGRAPHY (SWOT) MISSION READINESS STATUS
THIERRY LAFON, CNES, France

IAC-22.B1.2.5
ENMAP: THE GERMAN SPACEBORNE IMAGING SPECTROSCOPY MISSION
Ricarda Wernitz, DLR, German Aerospace Center, Germany

IAC-22.B1.2.6
FUTURE EO SYSTEM: THE FIRST OPERATIONAL SUBMETER CCD CAMERA CONSTELLATION WITH 138 MICROSATELLITES
Alexandre Wiefels, China HEAD Aerospace Technology Co., France

IAC-22.B1.2.7
THE MICROCARB MISSION, AN INNOVATIVE PATHFINDER TO CO₂ MONITORING
Philippe Landiech, Centre National d’Etudes Spatiales (CNES), France

IAC-22.B1.2.8
THE ARCTIC WEATHER SATELLITE INSTRUMENT AND MISSION
Anders Emrich, Sweden

IAC-22.B1.2.9
TERRA SPACE LAB SATELLITES TO IMPROVE THE TEMPORAL AND SPATIAL RESOLUTION OF EARTH OBSERVATION IN SWIR AND MWIR DIAPASON
Gregoriy Kaplan, Terra Space Lab., Israel

IAC-22.B1.2.10
HIVE, AN AGILE MICROSATELLITE CONSTELLATION FOR THERMAL INFRARED EARTH OBSERVATION ENABLING “MORE CROP PER DROP”
Riccardo Benvenuto, ConstellR GmbH, Germany

B1.3. Earth Observation Sensors and Technology

September 20 2022, 15:00 — W02

Co-Chair(s): Andrew Court, TNO, The Netherlands; Roland Le Goff, SODERN, France;
Rapporteur(s): Kate Becker, National Oceanic and Atmospheric Administration (NOAA), United States;

IAC-22.B1.3.1
THE CHIME SPECTROMETERS: TECHNICAL CHALLENGES AND ADVANCED DEVELOPMENTS.
Etienne Renotte, Advanced Mechanical and Optical Systems (AMOS), Belgium

IAC-22.B1.3.2
ADVANCES IN SPACEBORNE MICROWAVE RADIOMETERS
Shannon Brown, Jet Propulsion Laboratory - California Institute of Technology, United States

IAC-22.B1.3.3
COPERNICUS SENTINEL-6 MICHAEL FREILICH ON-GROUND AND IN-ORBIT VERIFICATION, AND IN-ORBIT PERFORMANCES
Mattia Marengo, Airbus DS GmbH, Germany

IAC-22.B1.3.4
EAGLEEEY VLEO MISSION - IMAGING PAYLOAD WITH 1 M GSD
Mikolaj Podgorski, Scanway sp. z o.o., Poland

IAC-22.B1.3.5
LIDAR EMITTER AND MULTI-SPECIES GREENHOUSE GASES OBSERVATION INSTRUMENT (LEMON) : ADVANCES ON A MULTI-SPECIES DIFFERENTIAL ABSORPTION LIDAR SYSTEM
Jean-Baptiste Dherbecourt, ONERA - The French Aerospace Lab, France

IAC-22.B1.3.6
HOLDON: DEVELOPMENT AND CHARACTERIZATION OF STATE OF THE ART DETECTION MODULES FOR FUTURE GREENHOUSE GASES SPACE LIDAR MISSIONS
Olivier Saint-Pé, Airbus Defence and Space - Space Systems, France

IAC-22.B1.3.7
LDRS – THE SCALABLE SOLUTION OF LARGE DEPLOYABLE REFLECTOR SUBSYSTEMS FOR EARTH OBSERVATION AND TELECOMMUNICATION
Martin Loesch, HPS GmbH, Germany

IAC-22.B1.3.8
ACCELEROMETERS OF EARTH GRAVITY MISSION GRACE-FO
Bruno Christophe, Office National d’Etudes et de Recherches Aéronautiques (ONERA), France

IAC-22.B1.3.9
A SURVEY OF COMPACT OPTICAL CAMERAS FOR EARTH OBSERVATION CUBESAT MISSIONS
Imène TALEB, Agence Spatiale Algérienne (ASAL), Algeria

IAC-22.B1.3.10
INFRARED REMOTE SENSING USING LOW NOISE AVALANCHE PHOTODIODE DETECTOR
Joice Mathew, Australian National University (ANU), Australia

IAC-22.B1.3.11
IRIS: AN INNOVATIVE EARTH OBSERVATION INSTRUMENT FOR THE DETECTION OF POLLUTION TRACES IN THE SEAS.
Alessio Bocci, Politecnico di Milano, Italy

IAC-22.B1.3.12
FUTURE EARTH OBSERVATION – ENMAP SENSOR CHARACTERISTICS
Hans-Peter Honold, OHB System AG - Munich, Germany

B1.4. Earth Observation Data System Development and Management

September 21 2022, 10:15 — W02

Co-Chair(s): Gunter Schreier, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany; James Graf, Jet Propulsion Laboratory, United States;
Rapporteur(s): Annamaria Nassisi, Thales Alenia Space Italia, Italy;

IAC-22.B1.4.1
AUTOMATIC SHIP WAKE DETECTION FROM SENTINEL-2 IMAGES BY DEEP LEARNING
Roberto Del Prete, Università degli Studi di Napoli “Federico II”, Italy

IAC-22.B1.4.2
SETTING UP THE KENYA DATA CUBE
Bilal Njenga, Kenya Space Agency, Kenya

IAC-22.B1.4.3 (non-confirmed)
EARTH OBSERVATION IMAGE SUPER-SAMPLING USING DEEP LEARNING TECHNIQUES FOR SMALLSAT MISSIONS
Pablo Bedialauneta, Purdue University, Spain

IAC-22.B1.4.4
HYPERSPETRAL PROTOTYPE PRODUCTS FOR USER EXPLOITATION OF PRISMA AND FUTURE HYPERSPETRAL SATELLITE DATA
Patrizia Sacco, Italian Space Agency (ASI), Italy

IAC-22.B1.4.5
HIGH SPATIAL RESOLUTION SATELLITE IMAGERY AND MACHINE LEARNING METHODS IN POST-CONFLICT TERRITORY REHABILITATION
Elman Alaskarov, Space Agency of Republic of Azerbaijan (Azercosmos), Azerbaijan

IAC-22.B1.4.6
QUANTUM COMPUTING FOR EARTH OBSERVATION: GROUND MOTION MEASUREMENTS AND SUPER-RESOLUTION
Francesca Santoro, Planetek Italia, Italy

IAC-22.B1.4.7
HIGH PERFORMANCE COMPUTING FOR EARTH OBSERVATION
Paolo Mazzucchelli, ARESYS, Italy

IAC-22.B1.4.8
RELIABILITY OF NEURAL NETWORKS IN SPACE: A FAULT INJECTOR FOR SPACE RELATED PERTURBATIONS
Benjamin Haser, Universität der Bundeswehr München, Germany

IAC-22.B1.4.9
TOWARDS ON-BOARD SUPER RESOLUTION APPLIED TO EARTH OBSERVATION IMAGES
Armando La Rocca, AIKO S.r.l., Italy

IAC-22.B1.4.10
“DON'T TRY THIS AT HOME” PILOT FOR A COGNITIVE CLOUD COMPUTING IN SPACE INFRASTRUCTURE
Leonardo Amoruso, Planetek Hellas epe, Italy

B1.5. Earth Observation Applications, Societal Challenges and Economic Benefits

September 21 2022, 15:00 — W02

Co-Chair(s): Masami Onoda, Japan Aerospace Exploration Agency (JAXA), United States; Na Yao, Qian Xuesen Laboratory of Space Technology, China Academy of Space Technology (CAST), China;
Rapporteur(s): Michael Kern, European Space Agency (ESA), The Netherlands; Annamaria Nassisi, Thales Alenia Space Italia, Italy;

IAC-22.B1.5.1
EARTH OBSERVATIONS FOR GOOD: CONSORTIA AS MODELS FOR ACHIEVING BENEFICIAL APPLICATIONS
Lawrence Friedl, National Aeronautics and Space Administration (NASA), United States

IAC-22.B1.5.2
THE SOCIOECONOMIC BENEFITS OF EARTH OBSERVATION APPLICATIONS IN THE NEW SPACE ERA
Elisabetta Lamboglia, European Space Agency (ESA-ESTEC), The Netherlands

IAC-22.B1.5.3
EUROPEAN AND INTERNATIONAL POLICY DRIVERS IN WATER SCENARIOS FOR COPERNICUS EXPLOITATION
Miraslava Kazlouskaya, Space Generation Advisory Council (SGAC), Belarus

IAC-22.B1.5.4
INVESTIGATING THE APPLICATIONS OF SMALL SATELLITES IN THE MEASUREMENT AND EVALUATION OF THE ESSENTIAL OCEAN VARIABLES
Emma Belhadfa, Space Generation Advisory Council (SGAC), Canada

IAC-22.B1.5.5
SAR WIND PRODUCTS FOR A WIDE RANGE OF SAR SATELLITES
Martine Espeseth, Kongsberg Satellite Services AS, Norway

IAC-22.B1.5.6
SOIL MOISTURE MAPPING BASED ON L-BAND SAR TECHNOLOGY
Yuval Lorig, Israel

IAC-22.B1.5.7
QUANTITATIVE ASSESSMENT OF VERTICAL AND HORIZONTAL DEFORMATIONS DERIVED BY 3D AND 2D DECOMPOSITIONS OF INTERFEROMETRIC LOS MEASUREMENTS TO SUPPLEMENT OPTIMIZED, SAFE AND COST REDUCED CASPIAN REGION PETROLEUM & GAS INDUSTRY RISK MANAGEMENT
Emil Bayramov, Nazarbayev University, Kazakhstan

IAC-22.B1.5.8
ASSESSMENT OF THE CLIMATE CHANGE EFFECTS ON CROP YIELDS USING GEOINFORMATION TECHNOLOGIES
Sona Guliyeva, National Aviation Academy - Azerbaijan, Azerbaijan

IAC-22.B1.5.9
BRINGING SOCIAL ECONOMIC BENEFITS WITH SPACE-BASED VEGETATION MONITORING TECHNOLOGY
Alexandre Wiefels, China HEAD Aerospace Technology Co., France

IAC-22.B1.5.10
ANALYSIS OF THE IMPACT OF VOLCANIC ERUPTIONS ON FISHERY RESOURCES USING EARTH OBSERVATION DATA
Zachary Rowland, The Netherlands

IAC-22.B1.5.11
BUSINESS POTENTIAL OF EARTH OBSERVATION DATA APPLIED TO THE RENEWABLE ENERGY INDUSTRY
Ana Azevedo, Faculdade de Ciências da Universidade do Porto, Portugal

IAC-22.B1.5.12
FULFILLING THE POTENTIAL OF SMART CITIES BY HARNESSING SPACE DATA
Luinaud Mathieu, PricewaterhouseCoopers Advisory (PwC), France

IAC-22.B1.5.13
EARTH OBSERVATION DATA APPLIED TO MEASURE ENVIRONMENTAL INJUSTICE IN UNITED STATES PRISON LANDSCAPES
Ufuoma Oviemhada, Massachusetts Institute of Technology (MIT), United States

IAC-22.B1.5.14
SUPPORTING SUSTAINABLE TOURISM THROUGH EARTH OBSERVATION AND TWITTER DATA: A CASE OF SKI TOURISM INDUSTRY IN JAPAN
Bernadette Joy Detera, Moon Village Association (MVA), Japan

IAC-22.B1.5.15
A REVIEW ON GEOSPATIAL INTELLIGENCE FOR INVESTIGATIVE JOURNALISM
Harshitha V, Christ University, India

B1.6. Mitigating the Climate Crisis from Space

September 22 2022, 10:15 — W02

Co-Chair(s): Harry A. Cikanek, National Oceanic and Atmospheric Administration (NOAA), United States; Elizabeth Seward, United Kingdom;
Rapporteur(s): Brent Smith, National Oceanic and Atmospheric Administration (NOAA), United States;

IAC-22.B1.6.1
THE ROLE OF SPACE-BASED DATA IN EUROPEAN CLIMATE POLICIES
Clémence Poirier, European Space Policy Institute (ESPI), Austria

IAC-22.B1.6.2
USE OF SATELLITE REMOTE SENSING DATA TO VALIDATE FORTUNE 500 CLIMATE PLEDGES
Fletcher Franklin, Bryce Space and Technology, United States

IAC-22.B1.6.3
NOCTUACH4, COMPACT SINGLE SITE METHANE EMISSION MONITORING FROM SPACE
Wencke van der Meulen, Airbus Defence and Space Netherlands, Netherlands Antilles

IAC-22.B1.6.4
GESAT CONSTELLATION: FIGHTING CLIMATE CHANGE BY MEASURING METHANE EMISSIONS FROM SPACE
Tristan Laurent, France

IAC-22.B1.6.5
DEVELOPING A SMALL SATELLITE MISSION TO MONITOR OCEAN ACIDIFICATION WITHIN THE POLAR SEAS
Emma Belhadfa, Space Generation Advisory Council (SGAC), Canada

IAC-22.B1.6.6
CONCEPT, SET-UP, AND PLANNED DATA ANALYSIS OF A LOW-COST SOFTWARE DEFINED RECEIVER FOR BALLOON-BORNE GNSS RADIO OCCULTATION: ROMULUS EXPERIMENT
Clara Di Nunzio, Sapienza University of Rome, Italy

IAC-22.B1.6.7
THE CO2M MISSION: MONITORING ANTHROPOGENIC CO2 EMISSIONS FROM SPACE
Robert Hook, OHB System AG-Bremen, Germany

IAC-22.B1.6.8
UTILIZING SATELLITE EARTH OBSERVATION ANALYSES AND THE ENVIRONMENT-VULNERABILITY-DECISION-TECHNOLOGY MODELING FRAMEWORK TO SUPPORT THE YUOK TRIBE IN MITIGATING CLIMATE CHANGE IMPACTS THROUGH NATURAL RESOURCE MANAGEMENT
Seamus Lombardo, Massachusetts Institute of Technology (MIT), United States

IAC-22.B1.6.9
EARTH OBSERVATION DATA, A WAY TO FIND SUITABILITY FOR SHELTERS SITES AND TO CREATE RESILIENCE IN THE CARIBBEAN COAST OF NICARAGUA
Saira O. Williams, Space Generation Advisory Council (SGAC), Costa Rica

IAC-22.B1.6.10
SATELLITE IMAGERY OF THE FUTURE: VISUALIZING ARCTIC SEA ICE MELT WITH PHYSICALLY-CONSISTENT GENERATIVE ADVERSARIAL NETWORKS
Björn Lütjens, Massachusetts Institute of Technology (MIT), United States

IAC-22.B1.6.11
THE INTERNATIONAL PLANETARY SUNSHADE - AN UMBRELLA PROJECT TO FOSTER INTERNATIONAL COLLABORATION TO MITIGATE GLOBAL WARMING
Tharshan Maheswaran, Institute of Space Systems, University of Stuttgart, Germany

B2. IAF SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM

Coordinator(s): Morio Toyoshima, National Institute of Information and Communications Technology (NICT), Japan; Rita Lollok, The Aerospace Corporation, United States;

B2.1. Advances in Space-based Navigation Technologies

September 19 2022, 10:15 — 731/732

Co-Chair(s): Peter Buist, European Union Agency for the Space Programme (EUSPA), The Netherlands; Joe M. Straus, The Aerospace Corporation, United States;
Rapporteur(s): Sanat K Biswas, IIT Delhi, India;

IAC-22.B2.1.1
METHODS FOR NAVIGATION IN THE NEARBY INTERSTELLAR MEDIUM
John Christian, Georgia Institute of Technology, United States

IAC-22.B2.1.2
A ROBUST GRAPH SLAM APPROACH FOR NEAR EARTH ASTEROID NAVIGATION
Arjun Chhabra, University of Toronto, Canada

IAC-22.B2.1.3
LUNAR GATEWAY AUTONOMOUS ORBIT DETERMINATION AND TIME SYNCHRONIZATION BY THE USE OF ONE OR TWO SMALL ORBITERS
Edoardo De Angeli, University of Rome - Tor Vergata, Italy

IAC-22.B2.1.4
LUNAR SURFACE EXPLORATION BASED ON LCNS ORBITERS AND ONBOARD SENSOR OBSERVABLES
Giuseppe Tomasicchio, Telespazio, Italy

IAC-22.B2.1.5
AI BASED LOCATION ESTIMATION USING DIGITAL TWINS IN RENDEZVOUS AND DOCKING SCENARIOS
Andre Kupetz, Germany

IAC-22.B2.1.6
IN-ORBIT PERFORMANCE ASSESSMENT OF ARGO 1.0 STAR TRACKER FOR SMALLSATS
Gabriella Caporaletti, EICAS Automazione S.p.A, Italy

IAC-22.B2.1.7
MINIMISING COMMUNICATION EFFORTS IN SELF-ORGANISED RELATIVE ATTITUDE CONTROL FOR FORMATION FLIGHT SCENARIOS USING DIRECTION OF ARRIVAL METHODS
Daniel Garbe, University of Würzburg, Germany

IAC-22.B2.1.8
NAVIGA: MULTI PURPOSE EUROPEAN SPACE NAVIGATION UNIT
Sergio Ramirez Navidad, SENER, Spain

IAC-22.B2.1.9
A GPS SIMULATOR FOR THE DESIGN AND DEVELOPMENT OF A FUTURE LOW-COST GNSS
Sultan Suhail, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

IAC-22.B2.1.10
AN ARCHITECTURE FOR A VISUAL-BASED PNT ALTERNATIVE
Joshua Critchley-Marrows, The University of Sydney, Australia

B2.2. Advances in Space-based Communication Systems and Services, Part 1

September 19 2022, 15:00 — 731/732

Co-Chair(s): Robert D. Briskman, Sirius XM Radio, United States; Laszlo Bacsardi, Hungarian Astronautical Society (MANT), Hungary;
Rapporteur(s): Dunay Badirkhanov, Space Agency of Republic of Azerbaijan (Azercosmos), Azerbaijan;

IAC-22.B2.2.1
A COMPETITIVE WAY TO PROVIDE GLOBAL HIGH SPEED TRUNKING SERVICES WITH A LEO CONSTELLATION
Jean-Didier Gayraud, Thales Alenia Space France, France

IAC-22.B2.2.2
TOWARDS AUTONOMOUS SATELLITE COMMUNICATIONS: AN AI-BASED FRAMEWORK TO ADDRESS SYSTEM-LEVEL CHALLENGES
Juan Jose Garau Luis, Massachusetts Institute of Technology (MIT), United States

IAC-22.B2.2.3
DYNAMIC FREQUENCY ASSIGNMENT FOR MOBILE USERS IN MULTIBEAM SATELLITE CONSTELLATIONS
Guillem Casades Vila, Massachusetts Institute of Technology (MIT), United States

IAC-22.B2.2.4
TOWARDS SPACE-BASED EDGE COMPUTING AND CONNECTIVITY AS GLOBAL INDUSTRIAL BACKBONE – A LAB SETUP FOR INDUSTRY APPLICATIONS
Markus Sauer, Siemens AG, Germany

IAC-22.B2.2.6
SATELLITE-BASED QUANTUM INFORMATION NETWORKS: USE CASES, ARCHITECTURE, AND ROADMAP
Mathias VAN DEN BOSSCHE, Thales Alenia Space France, France

IAC-22.B2.2.7
QUANTUM KEY DISTRIBUTION FOR SECURE COMMUNICATION BY NANO-SATELLITES
Roland Haber, Zentrum für Telematik, Germany

IAC-22.B2.2.8
IMPLEMENTING LEO-TO-GROUND GAUSSIAN MODULATED CONTINUOUS VARIABLE QUANTUM KEY DISTRIBUTION
Mikhael Sayat, University of Auckland, New Zealand

IAC-22.B2.2.9
SPACEBORNE QUANTUM RANDOM NUMBER GENERATORS (QRNG) – DEVELOPMENTS TOWARDS A PRODUCT
Norbert M.K. Lemke, OHB System AG - Oberpfaffenhofen, Germany

IAC-22.B2.2.10
ADVANCED QUBIT GENERATOR AND SYNCH FOSTERING QUANTUM COMMUNICATIONS IN SPACE
Marco Avesani, Università degli Studi di Padova, Italy

IAC-22.B2.2.11
AN OPTICAL GROUND STATION FOR SPACE BASED QUANTUM KEY DISTRIBUTION
Moritz Mihm, National University of Singapore, Singapore, Republic of

IAC-22.B2.2.12
A MONITORING, CONTROL & AUTOMATION SYSTEM FOR OPTICAL COMMUNICATION GROUND STATIONS
Himani Jain, German Aerospace Center (DLR), Germany

B2.3. Advances in Space-based Communication Systems and Services, Part 2

September 20 2022, 10:15 — 731/732

Co-Chair(s): Otto Koudelka, Joanneum Research, Austria; Morio Toyoshima, National Institute of Information and Communications Technology (NICT), Japan;

Rapporteur(s): Steven Shumsky, Lockheed Martin Corporation, United States;

IAC-22.B2.3.1
BRINGING TERRESTRIAL NETWORKING CAPABILITIES TO SPACE: UPDATE ON THE EUROPEAN SPACE AGENCY'S PUSH FOR NEXT GENERATION OPTICAL TELECOMMUNICATION TECHNOLOGIES
Christopher Vasko, European Space Agency (ESA), The Netherlands

IAC-22.B2.3.2
BROADBAND OPTICAL COMMUNICATION TERMINALS FOR CONSTELLATIONS IN OPERATION
Matthias Motzigemba, Tesat-Spacecom GmbH & Co. KG, Germany

IAC-22.B2.3.3
HIGH-THROUGHPUT LASER COMMUNICATION WITHOUT ADAPTIVE OPTICS : EXPERIMENTAL DEMONSTRATION AND ROADMAP
Jean-François Morizur, Cailabs, France

IAC-22.B2.3.4
TRANSMISSION OF GROUND-TO-SPACE NARROW BEAM FOR SMALL SATELLITE OPTICAL COMMUNICATION THROUGH GPS-BASED PRECISE ORBITAL DETERMINATION
Andrea Vettor, Italy

IAC-22.B2.3.5
DEVELOPMENT OF TETHERED UNMANNED AERIAL VEHICLE LASER COMMUNICATION STATION FOR BEYOND-5G APPLICATIONS
Femi Ishola, National Institute of Information and Communications Technology (NICT), Japan

IAC-22.B2.3.6
HIGH-SPEED FREE-SPACE OPTICAL COMMUNICATIONS VIA AN AIRBORNE PSEUDO-SATELLITE
Benjamin Dix-Matthews, The University of Western Australia, Australia

IAC-22.B2.3.7 (non-confirmed)
WINNING THE INTERNET: HOW LOW CAN (SATELLITE-BASED INTERNET COSTS) GO?
Ryan Xiao, Massachusetts Institute of Technology (MIT), United States

IAC-22.B2.3.8
SAFE IN-FLIGHT FPGA RECONFIGURATION ON OPS-SAT
Maximilian Henkel, Graz University of Technology (TU Graz), Austria

IAC-22.B2.3.9
ADVANCED SPACE-BASED INTERNET-OF-THINGS (IOT) CONSTELLATION BRINGING HIGH REVISIT & LOW LATENCY COMMUNICATION SERVICES
Wei Sun, China HEAD Aerospace Technology Co., United Kingdom

IAC-22.B2.3.10
ENABLING MULTI-TENANT CELLULAR IOT SERVICES OVER LEO CONSTELLATIONS IN FUTURE 6G NETWORKS
Timo Kellermann, i2CAT, Spain

IAC-22.B2.3.11
THE SMALL OPTICAL GROUND STATIONS FOCAL-OPTICS ASSEMBLY (SOFA)
Marcus Knopp, German Aerospace Center (DLR), Germany

B2.4. Advances in Space-based Communication Systems and Services, Part 3

September 20 2022, 15:00 — 731/732

Co-Chair(s): Dipak Srinivasan, The John Hopkins University Applied Physics Laboratory, United States; Ramon P. De Paula, National Aeronautics and Space Administration (NASA), United States;

Rapporteur(s): Sara AlMaeni, Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates;

IAC-22.B2.4.1
FROM EARTH TO MARS - THE DEEP SPACE NETWORK SERVICES FOR NASA'S PERSEVERANCE ROVER, UAE'S HOPE, AND ESA'S EXOMARS ROVER SURFACE PLATFORM MISSIONS
Krisjani Angkasa, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States

IAC-22.B2.4.2
NASA'S INTEREST IN 3GPP MOBILE TELECOMMUNICATIONS PROTOCOLS FOR NEAR EARTH SPACE AND THE LUNAR SURFACE
Bernard Edwards, NASA Goddard Space Flight Center Greenbelt MD 20771, United States

IAC-22.B2.4.3
A MICROSATELLITE-BASED LUNAR CONSTELLATION FOR COMMUNICATION AND NAVIGATION SERVICES
Dario Riccobono, Argotec, Italy

IAC-22.B2.4.4
K-BAND UPLINK SYSTEM FOR THE NASA DEEP SPACE NETWORK LUNAR EXPLORATION UPGRADE (DLEU)
Remi LaBelle, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States

IAC-22.B2.4.5
COMMUNICATIONS ARCHITECTURE FOR MARTIAN SURFACE EXPLORATION WITH A SWARM OF WIND-DRIVEN ROVERS
Felix Abel, Germany

IAC-22.B2.4.6
ADAPTIVE DATA RATE FEATURE ON JHU APPLIED PHYSICS LABORATORY FRONTIER RADIO LITE
Adam Crifasi, Johns Hopkins University Applied Physics Laboratory, United States

IAC-22.B2.4.7
WESTERN AUSTRALIAN OPTICAL GROUND STATION READINESS FOR LUNAR COMMUNICATION
Skevos Karpathakis, The University of Western Australia, Australia

IAC-22.B2.4.8
SALSAT: FIRST MISSION RESULTS OF THE GLOBAL RF SPECTRUM ANALYSIS IN THE VHF, UHF AND SPACE RESEARCH BANDS MEASURED BY THE SPECTRUM ANALYSIS SATELLITE
Jens Freymuth, Technische Universität Berlin, Germany

IAC-22.B2.4.9
TWIN SATELLITE MISSION TO L4 AND L5 FOR MARS COMMUNICATION
Vijayalakshmi V, ASTROPHYSICAST, India

IAC-22.B2.4.10
CONCEPT ARCHITECTURE OF CIS-LUNAR SATELLITE CONSTELLATION FOR UNINTERRUPTED COMMUNICATION LINK BETWEEN A SINGLE GROUND-BASED TRACKING STATION AND A LUNAR POLAR OUTPOST
Neelesh Ranjan Saxena, TU Berlin, Germany

IAC-22.B2.4.11
DIGITAL AND OPTICAL COMMUNICATION CAPABILITIES FOR HIGH THROUGHPUT CONSTELLATIONS
Fabio Curreli, OHB System AG-Bremen, Germany

B2.5. Advances in Space-based Communication Technologies, Part 1

September 21 2022, 10:15 — 731/732

Co-Chair(s): Debra Emmons, The Aerospace Corporation, United States; Amane Miura, National Institute of Information and Communications Technology (NICT), Japan;

Rapporteur(s): Nader Alagha, ESA, The Netherlands;

IAC-22.B2.5.1
ULTRA-HIGH THROUGHPUT E/W-BAND DOWNLINK CUBESAT MISSION
Laura Manoliu, University of Stuttgart, Germany

IAC-22.B2.5.2
TROPOSPHERIC PROPAGATION STUDIES CARRIED OUT BY CNES AND ONERA FOR SATELLITE COMMUNICATION SYSTEMS AT KA AND Q/V BANDS
Laurent CASTANET, Office National d'Etudes et de Recherches Aéropatiales (ONERA), France

IAC-22.B2.5.3
AUTO-TDS: ENABLING LASER COMMUNICATION NETWORKS TO AUTO DETECT INCOMING LINKS, SECURING CONNECTION AND AUTO-ROUTING THE DATA
Andreas Hornig, Jena-Optronik GmbH, Germany

IAC-22.B2.5.4
TECHNOLOGY DEVELOPMENT FOR BREAKTHROUGH STARSHOT INTERSTELLAR COMMUNICATIONS SYSTEM
Philip Mauskopf, Arizona State University, United States

IAC-22.B2.5.5
MANAGEMENT METHODOLOGY FOR SATELLITE-TERRESTRIAL INTERCONNECTED SYSTEMS WITH FLEXIBLE SATELLITE PAYLOADS
Yuma Abe, National Institute of Information and Communications Technology (NICT), Japan

IAC-22.B2.5.6
RECONFIGURABLE SOFTWARE DEFINED RADIO (SDR) TRANSCIVER WITH SELECTIVE FREQUENCY ALGORITHM FOR ATMOSPHERIC RADIO SENSING MEASUREMENTS ON SMALL SATELLITES
Ramson Nyamukondiwa, LaSEINE, Kyushu Institute of Technology, Japan

IAC-22.B2.5.7
RECONFIGURABLE SPATIAL MODULATION BASED DIGITAL TRANSMITTER FOR NANOSATELLITES COMMUNICATIONS
Aysha Alharam, National Space Science Agency (NSSA), Bahrain

IAC-22.B2.5.8
SATELLITE UPLINK INTERFERENCE MEASUREMENTS IN THE 437 MHZ UHF AMATEUR RADIO BAND ONBOARD LUME-1
Gara Quintana Díaz, Norwegian University of Science and Technology, Norway

IAC-22.B2.5.9
DOPPLER FREQUENCY COMPENSATION IN LEO SATELLITE BASED OFDM TRANSMISSION SYSTEMS
Aimal Siraj, Void inc., Japan

IAC-22.B2.5.10
RELATIVE ATTITUDE ESTIMATION VIA RADIO FREQUENCY LINKS - FEASIBILITY STUDY BASED ON HIGH-FIDELITY CO-SIMULATION
Antonius Adler, Julius Maximilians Universität Würzburg, Germany

B2.6. Advances in Space-based Communication Technologies, Part 2

September 21 2022, 15:00 — 731/732

Co-Chair(s): Elemer Bertenyi, Canadian Aeronautics and Space Institute, Canada; Enrique Pacheco Cabrera, Incomspace, Mexico;
Rapporteur(s): K.R. Sridhara Murthi, NIAS, India; Steven Shumsky, Lockheed Martin Corporation, United States;

IAC-22.B2.6.1
DEMONSTRATION OF 40GB/S WDM SIGNAL TRANSMISSIONS WITH OPTICAL PHASED ARRAYS SYSTEM
Yuta Takemoto, Mitsubishi Electric Corporation Information Technology R & D Center, Japan

IAC-22.B2.6.2
FEASIBILITY STUDY ON A PLASMA BASED REFLECTIVE SURFACE FOR SATCOM SYSTEMS
Mirko Magarotto, University of Padova - DII/CISAS, Italy

IAC-22.B2.6.3
ESTIMATION OF THE CO-FREQUENCY INTERFERENCE WITH THE CONSIDERATION OF THE BEAM BEHAVIOR CHARACTERISTICS OF NOVEL SPACEBORNE ANTENNA
Huilian Liu, China Academy of Space Technology (CAST), China

IAC-22.B2.6.4
OPTICAL COMMUNICATION CAPABILITIES OF THE ELECTRA PLATFORM
Fabio Curreli, OHB System AG-Bremen, Germany

IAC-22.B2.6.5
DEVELOPMENT OF AN INNOVATIVE UHF-BAND ANTENNA FOR 6S POLISPACE CUBESAT 1U
Nadia Lamera, Universitat Politècnica de València - UPV, Italy

IAC-22.B2.6.6
ANTENNA ARRAY OPTIMIZATION USING HEURISTIC ALGORITHMS FOR SMALL SATELLITES
Katia Lisset Ibarra Sanchez, IPN, Mexico

IAC-22.B2.6.7
MULTI-FUNCTIONAL RADIATING STRUCTURES FOR SOLAR SAILING MISSIONS
Nicolas Appel, Technical University of Munich, Germany

IAC-22.B2.6.8
STATUS UPDATE ON RESEARCH AND DEVELOPMENT OF HIGH-SPEED LASER COMMUNICATION SYSTEM "HICALI" ONBOARD ENGINEERING TEST SATELLITE 9
Hideaki Kotake, National Institute of Information and Communications Technology (NICT), Japan

IAC-22.B2.6.9
IMPLEMENTING SPACEWIRE ON OPS-SAT IN-FLIGHT
Maximilian Henkel, Graz University of Technology (TU Graz), Austria

IAC-22.B2.6.10
SPACE COMMUNICATIONS BASED ON DIGITAL TWINS, BUILT FROM MODELS, SIMULATIONS AND KINEMATICS
Mark Lombardi, United States

IAC-22.B2.6.11
DESIGN AND OPTIMIZATION OF A COMBLINE FILTER HAVING HELICAL RESONATOR
Dheeraj G, R V College of Engineering, Bengaluru, India

IAC-22.B2.6.12
A LOW-COST FULL DUPLEX GROUND STATION AND ANTENNA SYSTEM DESIGN FOR NANOSATELLITES
Hrishikesh Kembhavi, College of Engineering, Pune, India

B2.7. Advances in Space-based Navigation Systems, Services, and Applications

September 22 2022, 10:15 — 731/732

Co-Chair(s): Giovanni B. Palmerini, Sapienza University of Rome, Italy; Raj Thilak Rajan, Technical University of Delft, The Netherlands;

Rapporteur(s): Joshua Critchley-Marrows, The University of Sydney, Australia; Norbert Frischauf, TU Graz, Austria;

IAC-22.B2.7.1

DESIGN AND DEVELOPMENT OF A DEDICATED LEO SATELLITE PAYLOAD FOR DETECTION AND LOCALIZATION OF EARTH BOUNDED GNSS INTERFERENCE SOURCES.

Nikolas Dütsch, Universität der Bundeswehr München, Germany

IAC-22.B2.7.2

IN-ORBIT PERFORMANCE OF THE DUAL-CONSTELLATION GNSS POD RECEIVER OF SENTINEL-6 MICHAEL FREILICH

Heinz Reichinger, Beyond Gravity, Austria

IAC-22.B2.7.3

PERFORMANCES OF A LOW-COST COMMERCIAL GNSS RECEIVER IN LEO

Riccardo Di Roberto, G.A.U.S.S. Srl, Italy

IAC-22.B2.7.5

DEVELOPMENT OF A CUBESAT GNSS RECEIVER FOR PRECISE POSITIONING

Alexandru Pandele, Romanian InSpace Engineering SRL, Romania

IAC-22.B2.7.6

GPS CARRIER-TO-NOISE DENSITY PREDICTION USING REGRESSION TREES

Abdollah Darya, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

IAC-22.B2.7.7

MAIN APPROACHES OF THE RUSSIAN MISSION CONTROL CENTER TO NAVIGATION SUPPORT OF CURRENT AND ADVANCED DEEP SPACE EXPLORATION MISSIONS

Maksim Matyushin, Central Research Institute for Machine Building (JSC TSNIMASH), Russian Federation

IAC-22.B2.7.8

NAVIGATION SERVICES FROM LEO CONSTELLATIONS

Giovanni B. Palmerini, Sapienza University of Rome, Italy

IAC-22.B2.7.9

AN EXAMINATION OF DIFFERENT MODELS FOR PROVIDING LUNAR PNT SERVICES

Sarah Withee, Johns Hopkins University Applied Physics Laboratory, United States

IAC-22.B2.7.10

THE LUGRE PROJECT: A SCIENTIFIC OPPORTUNITY TO INVESTIGATE GNSS SIGNALS AT THE MOON

Fabio Dovis, Politecnico di Torino, Italy

IAC-22.B2.7.11

NASA'S INTEROPERABLE SERVICES TO MITIGATE LUNAR POSITION, NAVIGATION, AND TIMING CHALLENGES

Cheryl Gramling, NASA-Goddard Space Flight Center, United States

IAC-22.B2.7.12

LUNARPOINT: INTEREST POINT DETECTOR AND DESCRIPTOR FOR LUNAR LANDSCAPES

Quazi Saimoon Islam, University of Tartu, Estonia

B2.8-GTS.3. Space Communications and Navigation Global Technical Session

September 18 2022, 15:15 — W07

Co-Chair(s): Kevin Shortt, Airbus Defence & Space, Germany; Stephanie Wan, Space Generation Advisory Council (SGAC), United States;

Rapporteur(s): Eric Wille, ESA, The Netherlands; Joshua Critchley-Marrows, The University of Sydney, Australia;

IAC-22.B2.8-GTS.3.1

INTEROPERABILITY AND STANDARDS ARE KEYS TO SPACE MISSIONS SUCCESS

Sami Asmar, Jet Propulsion Laboratory - California Institute of Technology, United States

IAC-22.B2.8-GTS.3.2

CURRENT STATUS AND FUTURE TRENDS IN RADIO LINK INTERFERENCE RESEARCH FOR THE PLANNING OF SUSTAINABLE GEOCENTRIC SATELLITE CONSTELLATIONS

Eva Fernandez Rodriguez, Spain

IAC-22.B2.8-GTS.3.3

DEVELOPMENT OF MMIC FOR THREE DIMENSIONAL PHASED ARRAY ANTENNA

Nobuyuki Kaya, Kobe University, Japan

IAC-22.B2.8-GTS.3.4

TECHNOLOGICAL DEVELOPMENT INTO DIRECT SAMPLING ARCHITECTURES FOR HIGH BANDWIDTH SATELLITE COMMUNICATION SYSTEMS

Dhruva Anantha Datta, Indian Institute of Space Science and Technology (IIST), India

IAC-22.B2.8-GTS.3.5 (non-confirmed)

A WAY OUT: STANDARDIZED SPACE-TO-GROUND-TO-EVERYWHERE SECURITY

Kenneth Schmitz, OHB System AG, Germany

IAC-22.B2.8-GTS.3.6

TRANSMITTING QUANTUM ENTANGLEMENT IN SCARCE SATELLITE NETWORKS

András Mihály, Budapest University of Technology and Economics, Hungary

IAC-22.B2.8-GTS.3.7

LUNAR EARTH COMMUNICATION: A CONSTELLATION OF RELAY SATELLITES

Harshit Goel, University of Petroleum and Energy Studies, India

IAC-22.B2.8-GTS.3.8

SOFTWARE-DEFINED CONSTELLATION OF SMALL LEO SATELLITES OF THE W-BAND WIRELESS NETWORK: REALITY AND FUTURE PROSPECTS.

Ksenia Kosmyrina, Skoltech Space Center, Russian Federation

IAC-22.B2.8-GTS.3.9

RESEARCH ON TOPOLOGY OPTIMIZATION SCHEME FOR INTER-SATELLITE LINKS OF LASER & KA HYBRID NETWORK IN GNSS

Kai HAN, University of Chinese Academy of Sciences, China

IAC-22.B2.8-GTS.3.10

CASCADE MASK R-CNN ARCHITECTURE FOR CRATER DETECTION IN AUTONOMOUS PLANETARY NAVIGATION

Alfonso Saveriano, University of Naples "Federico II", Italy

B3. IAF HUMAN SPACEFLIGHT SYMPOSIUM

Coordinator(s): Kevin D. Foley, The Boeing Company, United States; Igor V. Sorokin, S.P. Korolev Rocket and Space Corporation Energia, Russian Federation; Peter Batenburg, Netherlands Space Society (NVR), The Netherlands;

B3.1. Governmental Human Spaceflight Programmes (Overview)

September 18 2022, 15:15 — S03

Co-Chair(s): Sam Scimemi, National Aeronautics and Space Administration (NASA), United States; Juergen Schlutz, European Space Agency (ESA), Germany;

Rapporteur(s): Rainer Willnecker, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;

IAC-22.B3.1.1

ESA'S TERRAE NOVAE EXPLORATION PROGRAMME: STATUS AND STRATEGY 2030+

David Parker, European Space Agency (ESA/ESTEC), The Netherlands

IAC-22.B3.1.2

JAXA'S INITIATIVE ON HUMAN SPACEFLIGHT PROGRAM FOR ISS AND SPACE EXPLORATION ACTIVITIES

Fuki Taniguchi, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.B3.1.3

CANADIAN SPACE AGENCY'S LUNAR SURFACE EXPLORATION INITIATIVE – CANADIAN INFRASTRUCTURE OPTIONS ON THE MOON

Taryn Baker, Canadian Space Agency, Canada

IAC-22.B3.1.4

NASA'S PLANS FOR HUMAN SPACEFLIGHT OPERATIONS

Kathy Lueders, NASA Headquarters, United States

IAC-22.B3.1.5

THE HUNGARIAN ASTRONAUT PROGRAM HUNOR

Balazs Zabori, MTA Centre for Energy Research, Hungary

IAC-22.B3.1.6

EXPERIMENTAL VALIDATION OF SERVICE MODULE PROPULSION SYSTEM MODELLING CAPABILITIES FOR THE HUMAN SPACE FLIGHT MISSION

Devakumar Thammisetty, Indian Space Research Organization (ISRO), Liquid Propulsion Systems Centre (LPSC), India

IAC-22.B3.1.7

STEWARDSHIP HUMANITY'S GLOBAL MOVEMENT TO DEEP SPACE

James (Jim) Free, NASA, United States

IAC-22.B3.1.8

GATEWAY PROGRAM PROGRESS AND OVERVIEW

Sean Fuller, National Aeronautics and Space Administration (NASA), Johnson Space Center, United States

IAC-22.B3.1.9

NASA'S INITIAL ARTEMIS HUMAN LANDING SYSTEM

Laura Means, NASA Marshall Space Flight Center, United States

IAC-22.B3.1.10

ARTEMIS LUNAR MISSION AVAILABILITY & DESIGN

Nujoud Merancy, National Aeronautics and Space Administration (NASA), United States

IAC-22.B3.1.11

THE 2022 UPDATED LUNAR EXPLORATION SCENARIO FOR THE GLOBAL EXPLORATION ROADMAP (GER): THE GROWING GLOBAL EFFORT AND MOMENTUM GOING FORWARD TO THE MOON AND MARS

John Guidi, NASA, United States

B3.2. Commercial Human Spaceflight Programmes

September 19 2022, 10:15 — S03

Co-Chair(s): Sergey K. Shaevich, Khrunichev State Research & Production Space Center, Russian Federation; W. Michael Hawes, Lockheed Martin Corporation, United States; Michael E. Lopez Alegria, MLA Space, LLC, United States;

Rapporteur(s): Gene Rice, RWI - Rice Wiggels Int'l, United States;

IAC-22.B3.2.1

THE NEED FOR A SPACE VERSION OF HAND SIGNALS, A COMMUNICATION TOOL FOR SPACE TRAVELERS

Chikako Murayama, Japan

IAC-22.B3.2.2

SPACE TOURISM GENERATION: BORN AFTER 2021

Avid Roman-Gonzalez, Business on Engineering and Technology S.A.C. (BE Tech), Peru

IAC-22.B3.2.3

INTEGRATION OF A SHORT DURATION PAYLOAD FOR THE AXIOM-1 MISSION TO THE ISS

Adam Sirek, Leap Biosystems, Canada

IAC-22.B3.2.4

WHAT GOES UP MUST COME DOWN: CIVILIANS, COGNITION AND CENTRIFUGAL FORCE ON THE EVERYDAY ASTRONAUT

Anushri Rajendran, Deakin University, Australia

IAC-22.B3.2.5

ASTRONAUT TRAINING - THE NECESSITY TO TAILOR CURRENT TRAINING FOR AGENCY ASTRONAUTS TO PRIVATE ASTRONAUTS

Laura Andre-Boyet, European Astronaut Centre, Germany

IAC-22.B3.2.6

VIDEO EDITING SERVICES FOR SPACE TRAVELLERS

Akifumi Mimura, Japan

IAC-22.B3.2.7

CASE STUDY: DESIGN OF A SPACEPORT IN ABU DHABI FOR SPACE TOURISM VIABILITY

Ugur Drguven, UN CSSTEAP, United Kingdom

IAC-22.B3.2.8

REGULATORY PREPARATION FOR U.S. COMMERCIAL HUMAN SPACE FLIGHT

Kelvin Coleman, Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST), United States

IAC-22.B3.2.9

THE RISE OF THE SPACEFLIGHT PARTICIPANT: AN ANALYSIS OF SFP TRAINING PROGRAMS AND REQUIREMENTS IN THE US

Jessica Grapentine, Embry-Riddle Aeronautical University, United States

IAC-22.B3.2.10

THE ROLE OF SPACE FLIGHT ATTENDANTS IN LARGE, LONG-DURATION SPACE TRAVEL

Chieko Takahashi, ASTRAX IMAGINE, Inc., Japan

IAC-22.B3.2.11

THE AIR ZERO G ODYSSEY: TEN YEARS OF COMMERCIAL PARABOLIC FLIGHTS AND WHAT WE LEARNT FROM THEM

Thibault PARIS, Novespace, France

IAC-22.B3.2.12

PROSPECTS FOR THE DEVELOPMENT OF THE HUMAN SUBORBITAL FLIGHTS SECTOR ON THE EXAMPLE OF THE PROJECT PREPARED FOR THE STUDENT AEROSPACE CHALLENGE 2020 COMPETITION.

Justyna Pelc, INNSPACE, Poland

IAC-22.B3.2.13

NASA'S SUPPORT FOR COMMERCIAL LEO DESTINATIONS

Angela Hart, NASA, United States

B3.3. Utilization & Exploitation of Human Spaceflight Systems

September 19 2022, 15:00 — S03

Co-Chair(s): Cristian Bank, EUMETSAT, Germany; Eleanor Morgan, Lockheed Martin Space Systems, United States;

IAC-22.B3.3.1
THE DECADE OF RESULTS: THE INTERNATIONAL SPACE STATION'S NEXT 10 YEARS
Robyn Gatens, NASA, United States

IAC-22.B3.3.2
THE ISS NAUKA MODULE: COMMISSIONING PHASE AND BEGINNING OF UTILIZATION
Igor V. Sorokin, S.P. Korolev Rocket and Space Corporation Energia, Russian Federation

IAC-22.B3.3.3
AN INSIGHT INTO ESA PROCESSES FOR ISS RESEARCH PAYLOADS
Chiara Piacenza, European Space Agency (ESA), Space Applications Services N.V. (SAS), The Netherlands

IAC-22.B3.3.4
CLASS-1 RACK MODERNIZATION FOR NEW PAYLOAD EXPERIMENTS
Stefan Petschelt, Airbus DS GmbH, Germany

IAC-22.B3.3.5
DEVELOPMENT OF SPACE SHOWER IN JAPAN
Taichi Yamazaki, ASTRAX, Inc., Japan

IAC-22.B3.3.6
COLUMBUS NEW SYSTEM DATA MANAGEMENT INFRASTRUCTURE
Stefan Petschelt, Airbus DS GmbH, Germany

IAC-22.B3.3.7
RESULTS FROM THE OPEN INNOVATION CROWDSOURCE CHALLENGE: RECYCLING IN SPACE: WASTE HANDLING IN A MICROGRAVITY ENVIRONMENT
Anne Meier, National Aeronautics and Space Administration (NASA), United States

IAC-22.B3.3.8
ASTRONAUTS WITH DISABILITIES: A DREAM BECOMING REALITY FOR A BIGGER PART OF HUMANITY
Tania Gres, Space Generation Advisory Council (SGAC), Italy

IAC-22.B3.3.9
GATEWAY UTILIZATION CAPABILITIES AND STATUS
Stephanie Buskirk Dudley, NASA, United States

IAC-22.B3.3.10
TECHNOLOGICAL DEMONSTRATION OF ALUMINA AND SILICA PRODUCTION FROM LUNAR ANORTHITE BY ARTIFICIAL WEATHERING
Bertrand Thibodeau, Carleton University, Space Exploration and Engineering Group, Canada

IAC-22.B3.3.11
PLANETARY SURFACE OPERATIONS AND UTILIZATION: HOW ISS AND ARTEMIS MISSIONS CAN BE USED TO MODEL HUMAN EXPLORATION OF MARS
Stephen Hoffman, The Aerospace Corporation, United States

B3.4-B6.4. Flight & Ground Operations aspects of Human Spaceflight - Joint Session of the IAF Human Spaceflight and IAF Space Operations Symposia

September 20 2022, 10:15 — S03

Co-Chair(s): Dieter Sabath, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany; Annamaria Piras, Thales Alenia Space Italia, Italy;

Rapporteur(s): Thomas A.E. Andersen, Danish Aerospace Company A/S, Denmark; Maria Grulich, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;

IAC-22.B3.4-B6.4.1
GETTING TO LAUNCH: LESSONS LEARNED FROM ARTEMIS I GROUND OPERATIONS
Ruth Siboni, NASA Headquarters, United States

IAC-22.B3.4-B6.4.2
IN-ORBIT FLIGHT STATE CONTROL METHOD OF LARGE HUMAN SPACECRAFT
LIU MIN, China Academy of Space Technology (CAST), China

IAC-22.B3.4-B6.4.3
THE ROAD TO ON-BOARD CREW AUTONOMY: USING ISS' COLUMBUS MODULE AS BASIS FOR GROUND PROCEDURE AUTOMATION
Carsten Hartmann, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

IAC-22.B3.4-B6.4.4
TRAVEL SPACE REAL TIME: AN APPROACH TO INTEGRATED DIGITAL TECHNOLOGIES TO SUPPORT SPACE EXPLOITATION
Domenico Tedone, Thales Alenia Space Italia, Italy

IAC-22.B3.4-B6.4.5
DESIGN AND APPLICATION OF REMOTE TEST MODE FOR SPACE STATION
Peng Ying, China Academy of Space Technology (CAST), China

IAC-22.B3.4-B6.4.6
PREPARATION AND FIRST OPERATIONS EXPERIENCE OF THE LIFE SUPPORT RACK AT COL-CC
Linda Holl, Deutsches Zentrum fuer Luft- und Raumfahrt (DLR), Germany

IAC-22.B3.4-B6.4.8
COLUMBUS OPERATIONS THROUGHOUT THE COVID-19 PANDEMIC.
Jérôme Campan, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

IAC-22.B3.4-B6.4.9
LUNA AND THE NEXT GENERATION OF GROUND SEGMENT TECHNOLOGIES
Thomas Mueller, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

IAC-22.B3.4-B6.4.10
MAPPING ANALOGUES
Ilaria Cinelli, AIKO S.r.l., Italy

IAC-22.B3.4-B6.4.11
OPERABILITY AS AN EARLY STAGE DESIGN METRIC FOR HUMAN SPACEFLIGHT VEHICLES
Srinivasa Bhattaru, Blue Origin LLC, United States

IAC-22.B3.4-B6.4.12
LESSONS LEARNED FROM NASA'S DEEP SPACE NETWORK SUPPORT FOR THE ARTEMIS I MISSION TO THE MOON
Kathleen Harmon, Jet Propulsion Laboratory - California Institute of Technology, United States

B3.5. Astronaut Training, Accommodation, and Operations in Space

September 20 2022, 15:00 — S03

Co-Chair(s): Igor V. Sorokin, S.P. Korolev Rocket and Space Corporation Energia, Russian Federation; Alan T. DeLuna, American Astronautical Society (AAS), United States;
Rapporteur(s): Keiji Murakami, Japan Aerospace Exploration Agency (JAXA), Japan;

AF-ASE Astronauts Panel

IAC-22.B3.5.2
ADAPTIVE TRAINING USING VIRTUAL REALITY FOR ENTRY, DESCENT, AND LANDING DURING LONG DURATION EXPLORATION MISSIONS
Esther Putman, University of Colorado Boulder, United States

IAC-22.B3.5.3
DEVELOPMENT OF A VIRTUAL REALITY SPACE DOCKING SIMULATOR FOR RESEARCH AND TRAINING - A CASE APPLICATION IN THE SPACE ANALOG SIRIUS-21
Miquel Bosch Bruguera, Institute of Space Systems, University of Stuttgart, Germany

IAC-22.B3.5.4
A COMMON HUMAN FACTORS AND LIFE SUPPORT ARCHITECTURE FOR THE ARTEMIS CAMPAIGN
Chrishma Singh-Derewa, United States

IAC-22.B3.5.5
HUMAN-SUIT INTERACTION DURING EVA OF THE FOOT USING A FORCE SENSING SYSTEM
Niraliben Patel, University of South Florida, United States

IAC-22.B3.5.6
FEASIBILITY STUDY ON COMFORTABLE SPACE ENVIRONMENT UNDER LOW GRAVITY
Katsuhiko Shibata, Takasago Thermal Engineering Co., Ltd., Japan

IAC-22.B3.5.7
OPTIMIZING ALGORITHMS FOR VISUAL AND INSTRUMENTAL OBSERVATIONS TAKEN BY THE CREW OF THE RUSSIAN SEGMENT OF THE INTERNATIONAL SPACE STATION
Mikhail Yu. Belyaev, Korolev RSC Energia, Russian Federation

IAC-22.B3.5.8
THE ELECTRONIC FIELDBOOK TOOL SUITE: FIELD SCIENCE SUPPORT TOOLS FOR STRUCTURED INFORMATION COLLECTION AND DISTRIBUTION DURING HUMAN PLANETARY EXPLORATION AND ASTRONAUT TRAINING
Leonardo Turchi, European Space Agency (ESA), Italy

IAC-22.B3.5.9
NEW TECHNOLOGIES FOR COSMONAUT TRAINING FOR FUTURE EXPLORATION MISSIONS
Elena Popova, Yu.A. Gagarin Research and Test Cosmonaut Training Center, Russian Federation

B3.6-A5.3. Human and Robotic Partnerships in Exploration - Joint session of the IAF Human Spaceflight and IAF Exploration Symposia

September 21 2022, 10:15 — S03

Co-Chair(s): Christian Sallaberger, Canadensys Aerospace Corporation, Canada; Mark Hempell, The British Interplanetary Society, United Kingdom;
Rapporteur(s): Jan Marius Bach, DLR (German Aerospace Center), Germany;

IAC-22.B3.6-A5.3.1
AUTOMATED CARGO HANDLING: JAXA'S PROSPECTS AND CURRENT R&D ACTIVITY
Seiko Piotr Yamaguchi, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.B3.6-A5.3.2
ASTROBEE'S MULTI-YEAR ACTIVITIES AT THE INTERNATIONAL SPACE STATION'S JAPANESE EXPERIMENTAL MODULE
Andres Mora Vargas, NASA Ames Research Center, United States

IAC-22.B3.6-A5.3.3
THE ZENOLITH: A ROBOTIC ASSISTANT FOR HUMAN ORIENTATION AND PSYCHOLOGICAL TETHERING IN MICROGRAVITY
Sands Fish, Massachusetts Institute of Technology (MIT), United States

IAC-22.B3.6-A5.3.4
INTRODUCTION TO SURFACE AVATAR: THE FIRST HETEROGENEOUS ROBOTIC TEAM TO BE COMMANDED WITH SCALABLE AUTONOMY FROM THE ISS
Neal Y. Lii, German Aerospace Center (DLR), Germany

IAC-22.B3.6-A5.3.5
ON REALIZING MULTI-ROBOT COMMAND THROUGH EXTENDING THE KNOWLEDGE DRIVEN TELEOPERATION APPROACH
Peter Schmaus, German Aerospace Center (DLR), Germany

IAC-22.B3.6-A5.3.6
TOWARDS REAL-TIME COMMUNICATION COVERAGE PREDICTION FOR COOPERATIVE NETWORKED ROBOTS: RESULTS FROM A SPACE-ANALOGUE CAMPAIGN ON MT. ETNA
Emanuel Staudinger, German Aerospace Center (DLR), Germany

IAC-22.B3.6-A5.3.8
ELECTROMYOGRAPHY-DRIVEN EXTRAMUSCULAR-ASSISTED SPACESUIT GLOVE OPTIMIZATION AND INTEGRATION
Spencer Dansereau, University of Colorado Boulder, United States

IAC-22.B3.6-A5.3.9
LUNAR EXPLORATION VIA MANNED-UNMANNED TEAMING WITH AUTONOMOUS ROBOTIC SWARMS
Ken Center, Orbit Logic, United States

IAC-22.B3.6-A5.3.10
THE "LIVING" HABITAT: INTERACTION BETWEEN LIFE SUPPORT SYSTEM, SENSOR NETWORKS AND HUMAN INHABITANTS
Christiane Heinicke, ZARM, University of Bremen, Germany

IAC-22.B3.6-A5.3.11
EVALUATING THE UTILITY OF ROBOTIC PRECURSOR, ASSISTANT, AND POSTCURSOR PARTNERSHIPS IN SUPPORT OF HUMAN LUNAR EXPLORATION
Gordon Osinski, Institute for Earth and Space Exploration, Western University, Canada

IAC-22.B3.6-A5.3.12
FRAMEWORK FOR ONLINE MENTAL WORKLOAD MODELING IN HUMAN ROBOT TEAMS
Robert Wilson, University of California, Santa Cruz (UCSC), United States

IAC-22.B3.6-A5.3.13
STUDY AND DEVELOPMENT OF AN AI ASSISTANT FOR FUTURE MOON AND MARS STATIONS.
Elizaveta SHASHKOVA, ISAE-Supaero University of Toulouse, France

B3.7. Advanced Systems, Technologies, and Innovations for Human Spaceflight

September 21 2022, 15:00 — S03

Co-Chair(s): Michele Gates, NASA Headquarters, United States; Sebastien Barde, Centre National d'Etudes Spatiales (CNES), France;
Rapporteur(s): Gi-Hyuk Choi, Korea Aerospace Research Institute (KARI), Korea, Republic of;

IAC-22.B3.7.1
AN OVERVIEW OF JAXA ECLSS RESEARCH AND DEVELOPMENT FOR FUTURE EXPLORATION MISSIONS
Shotaro Futamura, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.B3.7.2
SPACESHIP FR'S PROGRESS AND CONTRIBUTIONS TO SPACE EXPLORATION AND HUMAN SPACEFLIGHT
Alexis Paillet, Centre National d'Etudes Spatiales (CNES), France

IAC-22.B3.7.3
A LOW-COST ADAPTER FOR THE REHYDRATION OF COMMERCIALY AVAILABLE FOOD AND BEVERAGES FOR SPACEFLIGHT
Roxanne Fournier, University of British Columbia, Canada

IAC-22.B3.7.4
APPLICATIONS OF AUGMENTED REALITY FOR EXTRAVEHICULAR ACTIVITY: FIELD RESULTS FROM THE IMPLEMENTATION OF SCOUT ASSISTANT ON EVA SPACESUITS
Charlotte Pouwels, International Space University (ISU), The Netherlands

IAC-22.B3.7.5
CATEGORISATION OF FUTURE APPLICATIONS FOR AUGMENTED REALITY IN HUMAN LUNAR EXPLORATION
Paul Topf Aguiar de Medeiros, ESA, European Astronaut Centre (EAC), Germany

IAC-22.B3.7.6
CREATING HUMAN EXPERIENCE THROUGH FOOD IN SPACE
Carla Uyeda, United States

IAC-22.B3.7.7
CLEANING METHODS FOR REUSING CLOTHES IN SPACE
MIKA ISLAM, Japan

IAC-22.B3.7.8 (non-confirmed)
TOWARDS A SOFT EXOSUIT FOR HYPOGRAVITY ADAPTATION: DESIGN AND CONTROL OF LIGHTWEIGHT BUBBLE ARTIFICIAL MUSCLES
Emanuele Pulvirenti, University of Bristol, United Kingdom

IAC-22.B3.7.9
EXPERIMENTAL INVESTIGATION OF CARBON NANOTUBE DUST MITIGATION SYSTEM FOR LUNAR HABITAT STRUCTURES
Kavya K. Manyapu, Department of Space Studies, University of North Dakota, United States

IAC-22.B3.7.10
DUST RESISTANT NEXT GENERATION SPACESUIT THROUGH CITIZEN SCIENCE
Guadalupe Espinoza Gastelum, International Institute for Astronautical Sciences (IIAS), United States

IAC-22.B3.7.11
ECOPACK: NEW PACKAGING SOLUTIONS FOR HUMAN EXPLORATION MISSIONS
Alain Maillet, MEDES - IMPS, France

IAC-22.B3.7.12
STATE OF TRASH-TO-GAS TECHNOLOGIES FOR FUTURE EXPLORATION MISSIONS
Anne Meier, National Aeronautics and Space Administration (NASA), United States

IAC-22.B3.7.13
USING DESIGN THINKING AS A TOOL FOR INNOVATION IN HUMAN SPACEFLIGHT
Neel Mehta, India

B3.8. Human Space & Exploration

September 22 2022, 10:15 — S03

Co-Chair(s): Dan King, MDA Corporation, Canada;

IAC-22.B3.8.1
OPPORTUNITIES FOR ARTEMIS EVOLUTION TO A FUTURE LUNAR ECO-SYSTEM
Sam Scimemi, National Aeronautics and Space Administration (NASA), United States

IAC-22.B3.8.2
IMPLEMENTING A LEAN OPERATIONAL SET-UP FOR GATEWAY ESA MODULES
Cecilia Marasini, Rhea for ESA, The Netherlands

IAC-22.B3.8.3
ARTEMIS'S HALO AS A USE CASE FOR DESIGNING AGAINST HUMAN ERROR IN DEEP SPACE
Shawnette Adams, Northrop Grumman Corporation, United States

IAC-22.B3.8.4
TRANSITIONING FROM FIRST TO SECOND GENERATION LUNAR INFRASTRUCTURES
Mark Hempell, The British Interplanetary Society, United Kingdom

IAC-22.B3.8.5
DYNETICS HUMAN LANDING SYSTEM: OVERVIEW AND STATUS OF THE DEVELOPMENT OF A LUNAR TRANSPORTATION ARCHITECTURE
Andrew Crocker, Dynetics, United States

IAC-22.B3.8.6
MARS MISSION CAPABILITIES ENABLED BY NUCLEAR THERMAL PROPULSION
Christine Edwards, Lockheed Martin (Space Systems Company), United States

IAC-22.B3.8.7
MARS 2033 HUMAN FLYBY MISSION
Matthew Duggan, The Boeing Company, United States

IAC-22.B3.8.8
GATEWAY AVIONICS CONCEPT OF OPERATIONS AND COMMAND AND DATA HANDLING ARCHITECTURE
Svetlana Hanson, NASA, United States

IAC-22.B3.8.9
PREPARING FOR ARTEMIS: THE IMPORTANCE OF FIELD GEOLOGY TRAINING IN HIGH FIDELITY IMPACT ANALOGUE SITES
Gordon Osinski, Institute for Earth and Space Exploration, Western University, Canada

IAC-22.B3.8.10
THE LUNAR SURFACE INNOVATION CONSORTIUM (LSIC)
Rachel Klima, Johns Hopkins University Applied Physics Laboratory, United States

IAC-22.B3.8.11
A VISION FOR HUMAN MARS EXPLORATION MADE IN BREMEN
Marc Avila, University of Bremen, Germany

IAC-22.B3.8.12
THE IMPACT OF LONG-DURATION SPACEFLIGHT ON THE HORIZONTAL VESTIBULO-OCULAR REFLEX (HVOR) AS A MEASURE OF THE SEMICIRCULAR CANALS FUNCTION
Chloë De Laet, University of Antwerp, Belgium

B3.9-GTS.2. Human Spaceflight Global Technical Session

September 22 2022, 13:45 — W07

Co-Chair(s): Guillaume Girard, Zero2infinity, Spain; Andrea Jaime, Isar Aerospace, Germany;

IAC-22.B3.9-GTS.2.1
PRODUCTION OF SPACE SUITS AND REPLICAS FOR SPACE TRAVEL
Taichi Yamazaki, ASTRAX, Inc., Japan

IAC-22.B3.9-GTS.2.2
"THE CHALLENGE" PROJECT: A NEW APPROACH TO COMMERCIAL SPACEFLIGHTS
Andrey Alyokhin, JSC Glavkosmos, Russian Federation

IAC-22.B3.9-GTS.2.3
SPACEFLIGHT AND ITS EFFECTS ON INTRACRANIAL PRESSURE: A REVIEW AND THEORETICAL DELVE INTO THE PHYSIOLOGY AND MANAGEMENT OF INTRACRANIAL PRESSURE ELEVATION IN MICROGRAVITY ENVIRONMENT
Mark Rosenberg, Medical University of South Carolina, United States

IAC-22.B3.9-GTS.2.4 (non-confirmed)
CHASE – COMMERCIAL HUMAN SPACEFLIGHT EXPEDITIONS
Madhu Thangavelu, University of Southern California, United States

IAC-22.B3.9-GTS.2.5 (non-confirmed)
NEXT GENERATION SPACE SUIT DEVELOPMENT: A CASE STUDY OF THE SPACE SUIT SYSTEMS ENGINEERING & INTEGRATION BRANCH WITHIN NASA CONTRACTING AND IMPLEMENTATION OF AGILE DEVELOPMENT IN DESIGN & TESTING
Michael Cabrera, Jacobs Technology, ESCG, United States

IAC-22.B3.9-GTS.2.6 (non-confirmed)
MEDICAL GUIDELINES FOR COMMERCIAL ORBITAL SPACEFLIGHT: WHO GETS TO GO?
Shawna Pandya, Canada

IAC-22.B3.9-GTS.2.7
LOGISTICAL LESSONS FOR UNDERWATER ANALOGS FROM A FIVE-DAY AQUANAUTIC EXPEDITION
Kyle Foster, George Mason University, United States

IAC-22.B3.9-GTS.2.8
SIRIUS-19
Catherine Trainor, Montana State University, United States

IAC-22.B3.9-GTS.2.9
ASTRONAUT PROFILE EVOLUTION THROUGH TIME AND SPACE: STUDY OF THE PAST, CURRENT AND FUTURE REQUIREMENTS
Tania Gres, Space Generation Advisory Council (SGAC), Italy

B4. 29th IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS

Coordinator(s): Alex da Silva Curiel, Surrey Satellite Technology Ltd (SSTL), United Kingdom; Jian Guo, Delft University of Technology (TU Delft), The Netherlands;
Support(s): Rhoda Shaller Hornstein, United States;

B4.1. 23rd Workshop on Small Satellite Programmes at the Service of Developing Countries

September 19 2022, 10:15 — S02

Co-Chair(s): Sias Mostert, Space Commercial Services Holdings (Pty) Ltd, South Africa; Nathalie RICARD, United Nations Office for Outer Space Affairs, Austria;

Rapporteur(s): Danielle Wood, Massachusetts Institute of Technology (MIT), United States; Pierre Molette, France;

IAC-22.B4.1.2
THE FIRST ETHIOPIAN MICRO-SATELLITE (ETRSS-1): LESSONS LEARNED AND SATELLITE TECHNOLOGY KNOW-HOW
Yilkal Eshete, Ethiopian Space Science and Technology Institute (ESSTI), Ethiopia

IAC-22.B4.1.3
MORAZÁN PROJECT GROUND AND SPACE SYSTEMS: RESULTS OF A SUCCESSFUL PRELIMINARY DESIGN FOR SPACE AND GROUND SEGMENTS, INTERNATIONAL COOPERATION, KNOWLEDGE TRANSFER AND LESSONS LEARNED.
Moacir Fonseca Becker, Colegio Federado de Ingenieros y de Arquitectos de Costa Rica (CFIA), Costa Rica

IAC-22.B4.1.4
K'OTO PROJECT, A LEAP INTO THE SPACE FOR MÉXICO
Rafael-Guadalupe Chávez-Moreno, School of Engineering, National Autonomous University of Mexico, Mexico

IAC-22.B4.1.5
DEVELOPMENT STATUS OF IMAGING HOMETOWN FROM SPACE MISSION FOR THE TEMUULEL 1U CUBESAT
Usukhbayar Erdenebat, National University of Mongolia, Mongolia

IAC-22.B4.1.6 (non-confirmed)
SPACE EDUCATION AND ACCESSIBILITY WITH SMALL SATELLITES- PAKISTAN PERSPECTIVE
Muhammad Rizwan Mughal, Institute of Space Technology (IST), Pakistan

IAC-22.B4.1.7
AN OVERVIEW OF ON-GOING SATELLITE TECHNOLOGY TRANSFER PROGRAMS AT BERLIN SPACE TECHNOLOGIES
Jens Riesselmann, Technische Universität Berlin, Germany

IAC-22.B4.1.8
DEVELOPMENT OF THE COLOMBIAN SPACE PROGRAM
Sonia Rincón, Colombia

IAC-22.B4.1.9
BIRDS-4 SATELLITES CONSTELLATION: APRS MISSION PRELIMINARY RESULTS FOR REMOTE DETECTION OF TRIATOMINES IN THE PARAGUAYAN CHACO.
Adolfo Jara, Kyushu Institute of Technology, Japan

IAC-22.B4.1.10
OPPORTUNITIES FOR CUBESAT DEPLOYMENT UNDER THE UNITED NATIONS ACCESS TO SPACE 4 ALL INITIATIVE: ACHIEVEMENTS IN 2021-2022
Jorge Del Rio Vera, United Nations Office for Outer Space Affairs, Austria

IAC-22.B4.1.11
ESTABLISHING A NETWORK OF GROUND SENSOR TERMINALS (GSTS) FOR SATELLITE BASED GLOBAL STORE AND FORWARD DATA COLLECTION MISSION IN DEVELOPING COUNTRIES
Pooja Lepcha, Kyushu Institute of Technology, Japan

IAC-22.B4.1.12
IOT SATELLITE MISSION ANALYSIS FOR SMART AGRICULTURE AND WATER MANAGEMENT
Haitham Akah, National Authority for Remote Sensing and Space Sciences (NARSS), Egypt

IAC-22.B4.1.13 (non-confirmed)
SPECIALIZATION AS A SOURCE OF CONTINUOUS MISSION RESULTS OUTPUT FOR DEVELOPING NATIONS: THE SETEC LAB CASE IN COSTA RICA
Adolfo Chaves Jiménez, Instituto Tecnológico de Costa Rica (TEC), Costa Rica

B4.2. Small Space Science Missions

September 18 2022, 15:15 — S02

Co-Chair(s): Larry Paxton, The John Hopkins University Applied Physics Laboratory, United States; Norbert M.K. Lemke, OHB System AG - Oberpfaffenhofen, Germany;

Rapporteur(s): Roberta Mugellesi-Dow, European Space Agency (ESA), United Kingdom; Oana van der Togt, TNO, The Netherlands;

IAC-22.B4.2.1
OVERVIEW AND ROADMAP OF ITALIAN SPACE AGENCY ACTIVITIES IN THE MICRO- AND NANO-SATELLITE DOMAIN
Giuseppe Leccese, ASI - Italian Space Agency, Italy

IAC-22.B4.2.2
A DISTRIBUTED SPACE-WEATHER SENSOR SYSTEM USING SMALL SATELLITES
Steve Eckersley, Surrey Satellite Technology Ltd (SSTL), United Kingdom

IAC-22.B4.2.3
THE IXRD ON SHARJAH-SAT-1 CUBESAT, THE SCIENCE MISSION AND GROUND CALIBRATION
Emrah Kalemci, Sabanci University, Turkey

IAC-22.B4.2.4
ATISE: MISSION CONCEPT FOR AURORAL AND PARTICLE MONITORING WITH A 12U CUBESAT
Imane El Khantouti, Space Generation Advisory Council (SGAC), France

IAC-22.B4.2.5
FIRST RESULTS FROM INSPIRESAT-1
Amal Chandran, Nanyang Technological University, Singapore, Republic of

IAC-22.B4.2.6
INTRA-ORBIT IN-SITU PLASMA MEASUREMENT USING COST-EFFECTIVE RESEARCH AND OBSERVATION IN MEDIUM EARTH ORBIT (ROMEO) MICROSATELLITE PLATFORM
Leroy George, IRS, University of Stuttgart, Germany

IAC-22.B4.2.7
AUXILIARY SENSOR PACKAGE (ASP) DESIGN FOR CHARACTERIZING AURORAL EMISSIONS WITH THE AERO AND VISTA CUBESATS
Cadence Payne, Massachusetts Institute of Technology (MIT), United States

IAC-22.B4.2.8
MISSION DESIGN OF 12U CUBESAT FOR EXPLORATION DETECTION AND CHARACTERIZATION BASED ON NULLING INTERFEROMETRY
He Zhou, Dalian University of Technology (DUT), China

IAC-22.B4.2.9
THE STAR-PLANET ACTIVITY RESEARCH CUBESAT (SPARCS): DETERMINING INPUTS TO PLANETARY HABITABILITY
David Ardila, Jet Propulsion Laboratory - California Institute of Technology, United States

IAC-22.B4.2.10
WOLFSAT-1: 1U LEO DEMONSTRATION OF BIOLOGICAL DEGRADATION OF PET
Kevin Simmons, BLUECUBE Aerospace, United States

B4.3. Small Satellite Operations

September 19 2022, 15:00 — S02

Co-Chair(s): Andreas Hornig, Jena-Optronik GmbH, Germany; Peter M. Allan, STFC, United Kingdom; Stephan Roemer, Antwerp Space, Belgium;

Rapporteur(s): Lynette Tan, Singapore Space and Technology LTD (SSTL), Singapore, Republic of;

IAC-22.B4.3.1
CUBE LASER COMMUNICATION TERMINAL STATE OF THE ART
Patricia Martin Pimentel, Tesat-Spacecom, Germany

IAC-22.B4.3.2
LORA COMMUNICATION SYSTEM FOR THE SOLAR SAILCRAFT PAYANKEU AND THE EARTH-MOON CHALLENGE
LAN-SUN-LUK JEAN DANIEL, University of La Réunion, La Reunion

IAC-22.B4.3.3
IMAGE-BASED CHARACTERIZATION OF A CUBESAT'S ADCS
Boris Segret, Observatoire de Paris, France

IAC-22.B4.3.4
HUMSAT-D REVIVAL: RECOVERY OPERATIONS AND ROOT CAUSE ANALYSIS AFTER 7 YEARS OF NO CONTACT
Alejandro Camanzo-Mariño, Universidad de Vigo, Spain

IAC-22.B4.3.5
OPTIMAL LOW THRUST CONTROLLED MANEUVER DESIGN TO CHASE AND DE-ORBIT THE PSLV DEBRIS.
Roshan Sah, Tata Consultancy Services, India

IAC-22.B4.3.6
CAPSTONE: A UNIQUE CUBESAT PLATFORM OPERATING IN Cislunar SPACE
Thomas Gardner, Advanced Space, United States

IAC-22.B4.3.7
AUGMENTING DIGITAL SIGNAL PROCESSING WITH MACHINE LEARNING TECHNIQUES USING THE SOFTWARE DEFINED RADIO ON THE OPS-SAT SPACE LAB
Tom Mladenov, SES Engineering, Luxembourg

IAC-22.B4.3.8
SUPPORTING CUBESAT OPERATIONS USING SMILE INFRASTRUCTURE AT ESA
Vidushi Jain, York University, Canada

IAC-22.B4.3.9
CONSTRAINT PROGRAMMING FOR SCHEDULING THE OPERATIONS OF STRATHCUBE: A NANOSATELLITE FOR DETECTING SPACE DEBRIS
Iain Hall, University of Strathclyde, United Kingdom

IAC-22.B4.3.10
SHARING MISSION DATABASES ON A SOFTWARE-DEFINED SATELLITE
Yuri Matheus Dias Pereira, EnduroSat AD, Bulgaria

IAC-22.B4.3.12
FIRST IN-ORBIT OPERATIONS FOR THE WILDTRACKCUBE-SIMBA AND LEDSAT 1U CUBESATS
Lorenzo Frezza, Sapienza University of Rome, Italy

B4.4. Small Earth Observation Missions

September 20 2022, 10:15 — S02

Co-Chair(s): Carsten Tobehn, European Space Agency (ESA), The Netherlands; Larry Paxton, The John Hopkins University Applied Physics Laboratory, United States;

Rapporteur(s): Werner R. Balogh, European Space Agency (ESA), Switzerland; Marco Gomez Jenkins, United Kingdom;

IAC-22.B4.4.1
JLDAILYVISION CONSTELLATION, ON-ORBIT LOW COST MICROSAT USING SUPERLEGGERA CAMERA AT 15 MINS REVISIT
Jean-Daniel Tragus, China HEAD Aerospace Technology Co., France

IAC-22.B4.4.2
COMPARING PRE- AND POST-LAUNCH IMAGES FROM THE HYPSO-1 CUBESAT HYPERSPECTRAL IMAGER
Marie Henriksen, Norwegian University of Science and Technology, Norway

IAC-22.B4.4.3
IN-FLIGHT RESULTS OF THE NAPA-2 TURN-KEY HIGH RESOLUTION IMAGING SYSTEM – A STEPPING STONE TO WORLD-LEADING EO MISSIONS USING CUBESAT TECHNOLOGY
Zeger de Groot, Innovative Solutions in Space BV, The Netherlands

IAC-22.B4.4.4
NANOSMAD - A SATELLITE MISSION ANALYSIS AND DESIGN TOOL FOR LEO NANO SATELLITES
Amitha Saleem, Nanyang Technological University, Singapore, Republic of

IAC-22.B4.4.5
GNSS REMOTE SENSING MISSIONS IN TAIWAN
Yung-Fu Tsai, National Space Organization, Taipei

IAC-22.B4.4.6
DESIGN AND DEVELOPMENT OF A NEXT-GENERATION GREENHOUSE GAS MONITORING MICROSATELLITE CLUSTER
Rahul Ravin, Space Flight Laboratory, University of Toronto, Canada

IAC-22.B4.4.7
HARP: A 3U CUBESAT FOR AEROSOL AND CLOUD OBSERVATIONS
Anin Puthukkudy, Joint Center for Earth Systems Technology, (JCET/UMBC), United States

IAC-22.B4.4.8
SOVA – THE CZECH SMALL SATELLITE MISSION TO ENHANCE CLIMATE MODEL PRECISION
Ondrej Krepl, OHB Czechspace, Czech Republic

IAC-22.B4.4.9
SATURN – A SYNTHETIC APERTURE RADAR CUBESATS SWARM MISSION FOR EARTH OBSERVATION
Vito Lamarca, OHB Italia SpA, Italy

IAC-22.B4.4.10
MONITORING AND EARLY DETECTION OF WILDFIRES USING MULTIPLE-PAYLOAD FRACTIONATED SPACECRAFT
M. Reza Emami, University of Toronto Institute for Aerospace Studies, Canada

IAC-22.B4.4.11
THE CUAVA-2 EARTH OBSERVATION SATELLITE: DESIGN AND LESSONS LEARNT FROM ITS PREDECESSOR CUAVA-1
Xueliang Bai, The University of Sydney, Australia

IAC-22.B4.4.12
CALIBRATION AND VALIDATION OF THE PRE-OPERATIONAL HYPERSCOUT 2 DATA.
Nathan Verduyssen, Cosine Remote Sensing B.V., The Netherlands

IAC-22.B4.4.13
AEROS: OCEANOGRAPHIC HYPERSPECTRAL IMAGING AND ARGOS-TRACKING 3U CUBESAT
Sophie Prendergast, Portugal

B4.5. Access to Space for Small Satellite Missions

September 20 2022, 15:00 — S02

Co-Chair(s): Yves Gerard, Airbus Defence & Space, France; Philip Davies, Deimos Space UK Ltd, United Kingdom;

Rapporteur(s): Jeff Emdee, The Aerospace Corporation, United States; Carlos Niederstrasser, Northrop Grumman Corporation, United States;

IAC-22.B4.5.1
THE SMALL LAUNCH VEHICLE SURVEY - A 2022 UPDATE (A REGULAR CADENCE?)
Carlos Niederstrasser, Northrop Grumman Corporation, United States

IAC-22.B4.5.2
COMPREHENSIVE CAPACITY BUILDING INITIATIVES AND INTERNATIONAL CONTRIBUTION THROUGH THE CUBESAT DEPLOYMENT FROM ISS, KIBO
Yasuko Shibano, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.B4.5.3
VEGA FAMILY ENHANCED FLEXIBILITY FOR MULTIPAYLOAD MISSIONS
Elisa Nardi, Avio Spa, Italy

IAC-22.B4.5.4
ARIANE 6'S MAIDEN FLIGHT RIDESHARE MISSION
Mathieu CHAIZE, ArianeGroup SAS, France

IAC-22.B4.5.5
NOVEL SATELLITE SEPARATION SOLUTIONS FOR THE NEXT GENERATION OF SATELLITE CONSTELLATIONS
Nisanur Eker, DcubeD (Deployables Cubed GmbH), Germany

IAC-22.B4.5.6 (non-confirmed)
RAPID, AFFORDABLE, DEDICATED SMALLSAT LAUNCH TO MEO OR GEO ENABLED BY THE USE OF LEO DEPOT REFUELING
Michel Loucks, Space Exploration Engineering Co., United States

IAC-22.B4.5.7
PROSPECTS FOR THE SMALL SATELLITE MARKET
Alexandre Najjar, Euroconsult, France

IAC-22.B4.5.8
LAUNCHUK UPDATE
Laura Ciccone, UK Space Agency, United Kingdom

IAC-22.B4.5.9
A CONCEPTUAL STUDY OF KICKSTAGE AND DUAL LAUNCH SCHEME FOR MISSION EXPANSION OF KOREAN SMALLSAT-DEDICATED LAUNCH VEHICLE
Daeban Seo, Korea Aerospace Research Institute (KARI), Korea, Republic of

IAC-22.B4.5.10
DESIGN AND PROGRAMMATIC OPPORTUNITIES FOR SMALL SATELLITE MISSIONS CONSIDERING RECENT TRENDS IN LAUNCH VEHICLE MARKET
Julian Fischer, University of Bremen, Germany

IAC-22.B4.5.11
TIANZHOU CARGO SHIP EXPERIMENT INTERFACE AND ITS CUBESAT DEPLOYMENT SYSTEM
Jianyu Lei, China Academy of Space Technology, China

B4.6A. Generic Technologies for Small/Micro Platforms

September 22 2022, 13:45 — S02

Co-Chair(s): Philip Davies, Deimos Space UK Ltd, United Kingdom; Joost Elstak, Airbus Defence and Space Netherlands, The Netherlands;

Rapporteur(s): Jian Guo, Delft University of Technology (TU Delft), The Netherlands; Thomas Terzibaschian, DLR, German Aerospace Center, Germany;

IAC-22.B4.6A.1
ASSESSMENT OF A DEPLOYABLE AERODYNAMIC CONTROL SYSTEM FOR MICROSATELLITES RECOVERY
Emanuela Gaglio, Scuola Superiore Meridionale, Italy

IAC-22.B4.6A.2
HIGH FIDELITY CORRELATION OF DEPLOYABLE STRUCTURES FOR MICRO-SATELLITES
Emilio Lozano, ICEYE Oy, Finland

IAC-22.B4.6A.3
INTER-SATELLITE RELATIVE POSITION MEASUREMENT MODULE FOR FORMATION FLYING OF MICROSATELLITES
Yingkai Cai, Tsinghua University, China

IAC-22.B4.6A.4
EXPLORATION AND PRACTICE OF MASS PRODUCTION MODE FOR COMMERCIAL SATELLITES
SHIJI ZHANG, State Key Laboratory of Media Convergence Production Technology and Systems (China), China

IAC-22.B4.6A.5
MA61C SMART ADAPTER ON-BOARD COMPUTER
Saish Sridharan, Space Products and Innovation, Germany

IAC-22.B4.6A.6
ISISPACE 16U SATELLITE PLATFORM FOR NEXT GENERATION EARTH OBSERVATION CONSTELLATIONS
Zeger de Groot, Innovative Solutions in Space BV, The Netherlands

IAC-22.B4.6A.7
FERROFLUID-BASED ATTITUDE CONTROL FOR SMALL SATELLITES
Felix Schäfer, Institute of Space Systems, Universität Stuttgart, Germany

IAC-22.B4.6A.8
SOFTWARE DEFINED PAYLOAD HANDLING UNIT FOR SHARED SMALL SATELLITE MISSIONS FOR IN-ORBIT-DEMONSTRATION
Daria Stepanova, German Orbital Systems GmbH, Germany

IAC-22.B4.6A.9
ON-BOARD IMAGE PROCESSING WITH FPGA ACCELERATION USING DEEP NEURAL NETWORK INFERENCE
Maria Jose Luna Mejia, Fraunhofer - Institut für Kurzzeitdynamik, Ernst-Mach-Institut (EMI), Germany

IAC-22.B4.6A.10
SOFTWARE AND HARDWARE IN THE LOOP TESTS - FROM PICO TO SMALL SATELLITES WITH AIR BEARING TEST STANDS
Anja Nicolai, Astro- und Feinwerktechnik Adlershof GmbH, Germany

IAC-22.B4.6A.11
ON-ORBIT DEMONSTRATION OF MICROWAVE APERTURE SYNTHESIS ON DEPLOYABLE MEMBRANE STRUCTURE: STATUS REPORT
Ahmed Kiyoshi Sugihara El Maghraby, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.B4.6A.12
Lolasat – NANO-SATELLITE IN-ORBIT DEMONSTRATION FOR VERY LOW LATENCY COMMUNICATION
Oliver Ruf, Germany

B4.6B. Generic Technologies for Nano/Pico Platforms

September 21 2022, 10:15 — S02

Chairman(s): Andy Vick, RAL Space, United Kingdom;
Co-Chair(s): Zeger de Groot, Innovative Solutions in Space BV, The Netherlands;
Rapporteur(s): Martin von der Ohe, Lacuna Space, Germany; Eugene D Kim, Satrec Initiative, Korea, Republic of;

IAC-22.B4.6B.1
CHARACTERIZATION OF A FLUX-PINNING INTERFACE FOR THE CONTROL OF NANOSATELLITES IN VERY CLOSE PROXIMITY
Stefano Carletta, Sapienza University of Rome, Italy

IAC-22.B4.6B.2
CONTINUOUS PAYLOAD OPERATIONS FOR NANOSATELLITES ENABLED BY AN AUTONOMOUS MULTIPURPOSE SOLAR ARRAY DRIVER ACTUATOR
Aleksander Fiuk, Poland

IAC-22.B4.6B.3
BDSAT: A CUBESAT BASED PLATFORM FOR EXPERIMENTS AND IOD MISSIONS
Tomas Valer, Czech Republic

IAC-22.B4.6B.4
AUTONOMOUS CULTIVATION SYSTEM FOR NANO PLATFORMS: THE GREENCUBE MISSION
Paolo Marzioli, Sapienza University of Rome, Italy

IAC-22.B4.6B.5
SINGLE-GIMBAL CONTROL MOMENT GYRO WITH SPHERICAL MOTOR TECHNOLOGY FOR ATTITUDE DETERMINATION AND CONTROL SYSTEM
Johnny Liao, Tensor Tech CO., LTD., Taipei

IAC-22.B4.6B.6
NEPAL'S IN-ORBIT TECHNOLOGY DEMONSTRATION MISSION OF REPURPOSING PX4 DRONE AUTOPILOT AS A CUBESAT OPERATING SYSTEM
Janardhan Silwal, Nepal Space Foundation, Nepal

IAC-22.B4.6B.7
SMALL SATELLITES FOR CYBER SECURITY APPLICATIONS AT THE TU BERLIN - THE RACCOON AND CYBESAT MISSIONS
Jens Freymuth, Technische Universität Berlin, Germany

IAC-22.B4.6B.8
AN INNOVATIVE RADIATION MONITOR AND EPS SYSTEM FOR FUTURE CUBESAT MISSIONS
Wolfgang Treberspurg, University of Applied Science Wiener Neustadt, Austria

IAC-22.B4.6B.9
DEVELOPMENT AND DEMONSTRATION OF RENDEZVOUS/ DOCKING TECHNOLOGIES USING NANOSATELLITE
Hae-Dong Kim, Gyeongsang National University, Korea, Republic of

IAC-22.B4.6B.10
OPTICAL EMISSION SPECTROSCOPY AS THRUST MEASUREMENT TECHNIQUE FOR MICROPROPULSION SYSTEMS FOR SMALL SATELLITES
Katherine Fowee Gasaway, Purdue University, United States

IAC-22.B4.6B.11
PREPARING FOR BEYOND-LEO NANO-SATELLITE MISSIONS: BENEFITS OF NEW GNC STRATEGIES
Harish Rao Ramavaram, Department of Space Engineering, Lulea University of Technology, Sweden

IAC-22.B4.6B.12
SPACE RIDER OBSERVER CUBE – SROC: A CUBESAT MISSION FOR PROXIMITY OPERATIONS DEMONSTRATION
Sabrina Corpino, Politecnico di Torino, Italy

B4.7. Constellations and Distributed Systems

September 21 2022, 15:00 — S02

Co-Chair(s): Rainer Sandau, International Academy of Astronautics (IAA), Germany; Michele Grassi, University of Naples "Federico II", Italy;

Rapporteur(s): Jaime Esper, National Aeronautics and Space Administration (NASA), United States; Aaron Rogers, Maxar Technologies, United States;

IAC-22.B4.7.1
THE CLOUDCT FORMATION OF 10 NANO-SATELLITES FOR COMPUTED TOMOGRAPHY TO IMPROVE CLIMATE PREDICTIONS
Maximilian von Arnim, Zentrum für Telematik, Germany

IAC-22.B4.7.2
OPTICAL SYSTEM DESIGN FOR A MULTI-CUBESATS DEBRIS SURVEILLANCE MISSION
Dan Pineau, Cranfield University, Cranfield UK, United Kingdom

IAC-22.B4.7.3
BEAMFORMING AND MULTI-PLATFORM IMAGE SYNTHESIS FOR RODIO DISTRIBUTED SAR MISSION
Alfredo Renga, University of Naples "Federico II", Italy

IAC-22.B4.7.4
A REVIEW OF SMALL SATELLITE CONSTELLATIONS FOR IOT CONNECTIVITY
Jorge Bordalo Monteiro, Centre for Mechanical and Aerospace Science and Technologies (C-MAST), Portugal

IAC-22.B4.7.6
SPARTAN: A HIGH-PERFORMANCE NEXT-GENERATION NANOSATELLITE PLATFORM FOR DEMANDING NEWSPACE APPLICATIONS
Rami Kandela, Space Flight Laboratory (SFL), Canada

IAC-22.B4.7.7
A CONSTELLATION BASED APPROACH TO AN ORBITAL MANUFACTURING ECOSYSTEM
Bruce Clarke, Space Generation Advisory Council (SGAC), United Kingdom

IAC-22.B4.7.8
DEVELOPING A DISTRIBUTED AND FRACTIONATED SYSTEM OF 10 GRAMS SATELLITES FOR PLANETARY OBSERVATION
Olivia Borge, University of Luxembourg, Luxembourg

IAC-22.B4.7.9
FORCE: A FORMATION FLYING SAR BASED ON CUBESAT ASSEMBLIES
Michele Grassi, University of Naples "Federico II", Italy

IAC-22.B4.7.10
TOM/TIM REALIZATION -A SATELLITE EO FORMATION FLYING MISSION OF THREE NANO SATELLITES FOR RETRIEVING MULTI VIEW STEREOSCOPIC DATA
Alexander Kleinschrodt, Zentrum für Telematik, Germany

IAC-22.B4.7.11
NASA'S GODDARD SPACE FLIGHT CENTER'S DISTRIBUTED SYSTEMS MISSIONS ARCHITECTURE
Cheryl Gramling, NASA-Goddard Space Flight Center, United States

IAC-22.B4.7.12
GLOBAL GREENHOUSE GASES EMISSIONS ESTIMATION THROUGH SMALL SATELLITE CONSTELLATIONS
Daria Stepanova, German Orbital Systems GmbH, Germany

B4.8. Small Spacecraft for Deep-Space Exploration

September 22 2022, 10:15 — S02

Co-Chair(s): Leon Alkalai, Mandala Space Ventures, United States; Rene Laufer, Luleå University of Technology, Sweden;
Rapporteur(s): Amanda Stiles, Rocket Lab, United States; Jaime Esper, National Aeronautics and Space Administration (NASA), United States;

IAC-22.B4.8.1
ON THE LOW-COST ASYNCHRONOUS ONE-WAY RANGE MEASUREMENT METHOD AND THE DEVICE FOR MICRO TO NANO DEEP SPACE PROBES
Junichiro Kawaguchi, Australian National University (ANU), Australia

IAC-22.B4.8.2
OPERA: ONBOARD PROCESSING ORBIT DETERMINATION BY ONE-WAY RANGING FOR LUNAR EXPLORATION MISSION
Makiko Kishimoto, LaSEINE, Kyushu Institute of Technology, Japan

IAC-22.B4.8.3
PROJECT OVERVIEW AND STATUS UPDATE OF DUAL-SATELLITE LUNAR GLOBAL NAVIGATION MISSION WITH 6U-CUBESATS
Toshiki Tanaka, University of Houston, United States

IAC-22.B4.8.4
DESIGN AND VALIDATION OF AN AUTONOMOUS ORBIT DETERMINATION SYSTEM FOR A SMALLSAT CONSTELLATION
Luca Vigna, Argotec, Italy

IAC-22.B4.8.5
THE MARS COMMUNICATIONS AND NAVIGATION CONSTELLATION MISSION DESIGN: SMALL SATELLITES AROUND MARS
Stefania Cornara, Deimos Space S.L., Spain

IAC-22.B4.8.6
DESIGN OF THE VISION-BASED GNC SUBSYSTEM OF HERA'S MILANI MISSION
Felice Piccolo, Politecnico di Milano, Italy

IAC-22.B4.8.7
CAPSTONE MISSION LAUNCH AND OPERATIONS
Jeffrey Parker, Advanced Space, United States

IAC-22.B4.8.8
TRAJECTORY DESIGN AND DISPERSION ANALYSIS OF NANO MOON LANDER OMOTENASHI
Junji Kikuchi, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.B4.8.9
ITALIAN CUBESATS FOR MOON AND ASTEROID IMAGING
Marilena Amoroso, Italian Space Agency (ASI), Italy

IAC-22.B4.8.10
JUVENTAS CUBESAT IN SUPPORT OF HERA MISSION TO DIDYMOS ASTEROID SYSTEM: TEST-DRIVEN IMPLEMENTATION
Mehdi Scoubeau, GomSpace Aps, Luxembourg

IAC-22.B4.8.11
A GRAVIMETER FOR SOLAR SYSTEM SMALL BODIES IN THE FIRST EUROPEAN SPACE AGENCY PLANETARY DEFENCE MISSION
José A Carrasco, Universidad Miguel Hernández, Spain

IAC-22.B4.8.12
EVOLUTION OF BIOLOGICAL SATELLITES: FROM LOW EARTH ORBIT TO NASA'S BIOSENTINEL DEEP SPACE MISSION
Sergio Santa Maria, NASA Ames Research Center, United States

IAC-22.B4.8.13
DEEP SPACE SMALLSATS: SUMMARY OF THE CURRENT THINKING, APPROACHES AND LESSONS LEARNED
Aaron Zucherman, Cornell University, United States

B4.9-GTS.5. Small Satellite Missions Global Technical Session

September 21 2022, 15:00 — W07

Co-Chair(s): Matthias Hetscher, DLR (German Aerospace Center), Germany; Norbert M.K. Lemke, OHB System AG - Oberpfaffenhofen, Germany;
Rapporteur(s): Alex da Silva Curiel, Surrey Satellite Technology Ltd (SSTL), United Kingdom; Victoria Barabash, Luleå University of Technology, Sweden;

IAC-22.B4.9-GTS.5.1
QARMAN RE-ENTRY CUBESAT: FROM DESIGN AND PRE-FLIGHT TESTING TO POST-FLIGHT LESSONS LEARNED
Amandine Denis, von Karman Institute for Fluid Dynamics, Belgium

IAC-22.B4.9-GTS.5.2
IMPLEMENTATION OF SYSTEMS ENGINEERING PRACTICES FOR UNIVERSITY-LEVEL SMALL SATELLITE PROGRAMS
Rishin Aggarwal, Missouri University of Science and Technology (Missouri S&T), United States

IAC-22.B4.9-GTS.5.3
STRATEGY FOR THE COST-EFFECTIVE IN-ORBIT CHARACTERIZATION OF A SET OF DIFFERENT PEROVSKITE SOLAR CELLS
Marco Giugliarelli, Politecnico di Milano, Italy

IAC-22.B4.9-GTS.5.4
PRELIMINARY DESIGN OF A PLURI-APPLICATIONS & OPERATIONS EXAMINATION SATELLITE (PANOPTES)
Julien DOCHE, ISAE-Supaero University of Toulouse, France

IAC-22.B4.9-GTS.5.5
QUBE-II – DEMONSTRATION OF QUANTUM KEY DISTRIBUTION (QKD) WITH A CUBESAT
Martin Hutterer, OHB System AG - Oberpfaffenhofen, Germany

IAC-22.B4.9-GTS.5.6
DE-RISKING SPACE MISSIONS THROUGH COMMISSIONING AND QUALIFICATION OF THAILAND'S NATIONAL ASSEMBLY, INTEGRATION, AND TESTING FACILITY THROUGH THE THEOS-2 SMALLSAT MISSION
Nathanan Sachdev, Geo-Informatics and Space Technology Development Agency (GISTDA), Thailand

IAC-22.B4.9-GTS.5.7
MICROGREENS GROWTH TESTS AND SPACE QUALIFICATION FOR THE GREENCUBE CUBESAT CULTIVATION LABORATORY
Paolo Marzioli, Sapienza University of Rome, Italy

IAC-22.B4.9-GTS.5.8
DESIGN AND DEVELOPMENT OF SPACECRAFT SIMULATOR TESTBED: PLATFORM FOR VALIDATING MANEUVERING CONTROL STRATEGIES IN FRICTIONLESS ENVIRONMENT
Vikram Saini, Indian Institute of Technology Kanpur, India

IAC-22.B4.9-GTS.5.9
SEAMLESS RADIO ACCESS NETWORK FOR INTERNET OF SPACE (SERANIS): NEW SPACE MISSION FOR RESEARCH, DEVELOPMENT, AND IN-ORBIT DEMONSTRATION OF CUTTING-EDGE TECHNOLOGIES
Artur Kinzel, Universität der Bundeswehr München, Germany

IAC-22.B4.9-GTS.5.10
BUILDING AND LAUNCHING THAI 1ST-MADE COTS FLIGHT EXPERIMENTAL PAYLOAD ONBOARD THEOS-2 SMALLSAT
Panatchai Bunniti, Geo-Informatics and Space Technology Development Agency (GISTDA), Thailand

IAC-22.B4.9-GTS.5.11
THE CONCEPT OF A REUSABLE SMALL SATELLITE FOR A CARBON NEGATIVE FUTURE
Ana Paula Nunes, United Kingdom

IAC-22.B4.9-GTS.5.12
APPLICATIONS OF PARAGLIDER-HIGH ALTITUDE BALLOON TELEMETRY FOR SUCCESSFUL SECONDARY STUDENT CUBESAT MISSIONS
Argyrios Vaitos, United States

IAC-22.B4.9-GTS.5.13
CHALLENGES IN THE DEVELOPMENT PROCESS FOR SMALL SATELLITE MISSION
Purichmun Low, Universität der Bundeswehr München, Germany

IAC-22.B4.9-GTS.5.14
HOW A SELFIE FROM SPACE CAN SIMULTANEOUSLY LEAD TO CUBE SATELLITE DEVELOPMENT AND ENGAGE THE GENERAL PUBLIC IN SPACE ACTIVITIES
Wilhelm Kristiansen, NTNU, Norway

IAC-22.B4.9-GTS.5.15
HOW THE TRITON-X PLATFORMS WERE DESIGNED FOR "NEWSPACE"
Florio Dalla Vedova, LuxSpace Sarl, Luxembourg

B5. IAF SYMPOSIUM ON INTEGRATED APPLICATIONS

Coordinator(s): Jeanne Holm, City of Los Angeles, United States; Roberta Mugellesi-Dow, European Space Agency (ESA), United Kingdom;

B5.1. Tools and Technology in Support of Integrated Applications

September 18 2022, 15:15 — 731/732

Co-Chair(s): Jeanne Holm, City of Los Angeles, United States; Roberta Mugellesi-Dow, European Space Agency (ESA), United Kingdom;

Rapporteur(s): Beatrice Barresi, European Space Agency (ESA), United Kingdom;

IAC-22.B5.1.1
EARTHBIT: A DESKTOP TOOL TO INGEST AND PROCESS PRISMA HYPERSPECTRAL DATA
Luigi Agrimano, Planetek Italia, Italy

IAC-22.B5.1.2
SKYRIDER HAPS FOR INTEGRATED APPLICATIONS
Jiri Pavlik, Czech Republic

IAC-22.B5.1.3
LYNK - A MOBILE APPLICATION FOR THE DEMOCRATIZATION OF SPACE EXPLORATIONS
Leonardo Delleani, Politecnico di Milano, Italy

IAC-22.B5.1.4
CREATION INTEGRATE AND DIGITAL PROCESSING SYSTEM FOR INTELLENT CONTROL OF AZERSPACE SATELLITE INFORMATION
Sevda R. Ibrahimova, National Aviation Academy - Azerbaijan, Azerbaijan

IAC-22.B5.1.5
OPEN PLANET FACTS: SPACE AND IN SITU DATA TO EMPOWER CITIZENS FOR A SUSTAINABLE PLANET, A PROPOSITION OF FRENCH INSTITUTIONS (CNES, ADEME AND OFB)
Francois Jocteur Monrozier, Centre National d'Etudes Spatiales (CNES), France

IAC-22.B5.1.6
EDGE COMPUTING IN SPACE: A FRAMEWORK FOR ASSESSING ON-ORBIT PROCESSING AND MACHINE LEARNING APPLICATIONS.
Carmen Misa Moreira, University of Luxembourg, Luxembourg

IAC-22.B5.1.8 (non-confirmed)
USE OF SATELLITE IMAGERY FOR THE CONSTRUCTION OF 3D ENVIRONMENTS APPLIED TO MARITIME NAVIGATION SIMULATORS
Yoseli Guaramato, Bolivarian Agency for Space Activities (ABAE), Venezuela

IAC-22.B5.1.9
MODELLING AND ANALYSIS OF ACQUISITION, POINTING AND TRACKING AND ATMOSPHERIC TURBULENCE ON THE OPTICAL QKD CHANNEL BETWEEN A CUBE-SATELLITE TRANSMITTER AND OPTICAL GROUND RECEIVER FOR INDIAN SUB-CONTINENT.
Anand Nagesh, Big Dipper Exploration Technologies, India

IAC-22.B5.1.10
GEO-REFERENCING CROP LABELS FROM STREET-LEVEL IMAGES USING STRUCTURE FROM MOTION
Sneha Manimurugan, National University of Singapore, Singapore, Republic of

IAC-22.B5.1.11
MSMO MULTI-SERVICE MISSIONS OPPORTUNITIES
Carmen Velarde, OHB System AG, Germany

IAC-22.B5.1.12
OUTCOME AND LESSONS LEARNT FROM THE HEMERA BALLOON INFRASTRUCTURE - NEW AND INNOVATIVE APPROACH FOR SCIENCE, TECHNOLOGY AND PREPARATION FOR NEW SPACE AND EARTH OBSERVATION MISSIONS
Kristine Dannenberg, Swedish National Space Board (SNSB), Sweden

IAC-22.B5.1.13 (non-confirmed)
SATELLITE VIDEO TARGET TRACKING BASED ON IMPROVED YOLOV3 AND DEEP SORT
Ruihao Zhou, University of Electronic Science and Technology of China (UESTC), China

IAC-22.B5.1.14
LEVERAGING EARTH OBSERVATION DATA FOR MITIGATING THE ADVERSE EFFECTS OF GLOBAL WARMING AND CLIMATE CHANGE - PREDICTING THE RAPID MELTING OF SEA ICE AND GLACIERS.
Adeiwale Adelanwa, Nigeria

IAC-22.B5.1.15
THE GOLDCREST MISSION AND THE ON-BOARD COMPUTING REQUIREMENTS NECESSARY TO GENERATE THE DELAY-DOPPLER MAPS REQUIRED TO DETERMINE SOIL MOISTURE CONTENT
Michele Jamrozik, University of Luxembourg, Luxembourg

B5.2. Integrated Applications End-to-End Solutions

September 20 2022, 15:00 — E03A

Co-Chair(s): Boris Penne, OHB System AG, Germany; Roberta Mugellesi-Dow, European Space Agency (ESA), United Kingdom;

Rapporteur(s): Beatrice Barresi, European Space Agency (ESA), United Kingdom;

IAC-22.B5.2.1
FOOTBALL NETWORKS BY GALILEO GNSS JACKET : THE DATA WORK FLOW TO MANAGE PLAYERS
Jamel Metmati, THALES Services, France

IAC-22.B5.2.2
SATELLITE-BASED AIR TRAFFIC MANAGEMENT (ATM) SYSTEMS' IMPACT ON CO2 EMISSION
Elias Montanari, European Union Agency for the Space Programme (EUSPA), Czech Republic

IAC-22.B5.2.3
FEDERATING SPACE, AIR, AND GROUND AIR QUALITY DATA TO IMPROVE OUTCOMES IN CITIES AROUND THE WORLD
Jeanne Holm, City of Los Angeles, United States

IAC-22.B5.2.4
CONNECTIVITY FOR GREEN VALUE
Roberta Mugellesi-Dow, European Space Agency (ESA), United Kingdom

IAC-22.B5.2.5
SUPERVISED MACHINE LEARNING APPLICATIONS ON METEORS AND METEORITES
Aisha ALOWAIS, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

IAC-22.B5.2.6
SATELLITE-BASED EARTH COGNITIVE DECISION SUPPORT SYSTEM FOR COVID-19 PANDEMIC MANAGEMENT
Sofiane Atek, Sapienza University of Rome, Italy

IAC-22.B5.2.7
WATCHERCATCHER: A REAL-TIME FUNCTION OF SPACEMAP TO PREDICT SPY SATELLITES IN TIMELINE
Peter Joonghyun Ryu, SPACEMAP Inc., Korea, Republic of

IAC-22.B5.2.8
INTEGRATING SATELLITE APPLICATIONS IN DISASTER RISK MANAGEMENT
Corneel Bogaert, EURISY, France

IAC-22.B5.2.9
SPACE IN SUPPORT OF SECURITY MISSIONS: AN EVOLVING LANDSCAPE WITH UNTAPPED POTENTIAL
Mathieu Bataille, European Space Policy Institute (ESPI), Austria

IAC-22.B5.2.10
INTEGRATING SATELLITE IMAGERY AND SOCIAL MEDIA DATA TO STUDY THE SOCIO-ECONOMIC AFTERMATHS OF 2021 HURRICANE IDA
Swarnajyoti Mukherjee, Apogeo Space Srl, Italy

IAC-22.B5.2.11
THE NARAS APPROACH TO EARTH OBSERVATION AND GNSS DATA FUSION TO IMPROVE NAVIGATION RISK ASSESSMENT
Chiara Brighenti, S.A.T.E., Italy

IAC-22.B5.2.12
THE ENVIRONMENT-VULNERABILITY-DECISION-TECHNOLOGY FRAMEWORK: A PROCESS FOR DEVELOPING MULTI-DISCIPLINARY DECISION SUPPORT SYSTEMS FOR SUSTAINABLE DEVELOPMENT APPLICATIONS
Jack Reid, Massachusetts Institute of Technology (MIT), United States

B5.3. Satellite Commercial Applications

September 21 2022, 10:15 — E03A

Co-Chair(s): John M. Horack, The Ohio State University College of Engineering, United States; Dengyun Yu, China Aerospace Science and Technology Corporation (CASC), China;

Rapporteur(s): Samuel Malloy, The Ohio State University, United States; Kaitlyn Holm, University of Pennsylvania, United States;

IAC-22.B5.3.1
THE ITALIAN SPACE AGENCY SATELLITE DATA EXPLOITATION PROGRAMMES IN SUPPORT OF THE DOWNSTREAM SECTOR
Giorgio Licciardi, ASI - Italian Space Agency, Italy

IAC-22.B5.3.2
AN INTELLIGENT ALLIANCE: SATELLITE-DRONE NETWORK TO ENHANCE PRECISION AGRICULTURE
FATEMEH ENAYATOLLAHI, University of Manitoba, Canada

IAC-22.B5.3.3
SATELLITE BASED NIGHT IMAGE: NEW APPLICATIONS BRINGING SOCIAL ECONOMIC BENEFITS FROM SPACE
Alexandre Carayon, China Head Aerospace Technology Co., France

IAC-22.B5.3.4
TOWARDS THE CONSTRUCTION OF SMART CITIES IN LATIN AMERICA AND THE CARIBBEAN THROUGH THE USE OF SPACE TECHNOLOGY.
Cristina Pérez Ramos, Instituto Nacional de Astrofísica, Óptica y Electrónica, Mexico

IAC-22.B5.3.5
SATCOM IN THE CONNECTIVITY MIX FOR THE CAR OF THE FUTURE
Teodora Secara, ESA - European Space Agency, France

IAC-22.B5.3.6
SPACE SYSTEMS, SERVICES AND APPLICATIONS IN SUPPORT OF LARGE NATIONAL INFRASTRUCTURES
Luigi D'Amato, ASI - Italian Space Agency, Italy

IAC-22.B5.3.7
THE CROSS-FERTILIZATION PROCESS TO CONNECT SPACE WITH NO-SPACE: THE STRATEGY AND THE EXPERIENCE OF FONDAZIONE E. AMALDI AS ITALIAN COPERNICUS RELAY
Giorgia D'Agostinis, Fondazione E. Amaldi, Italy

IAC-22.B5.3.8
BUSINESS CASES OF THE NEW SPACE ECONOMY: THE EXPERIENCE OF ESA BUSINESS APPLICATIONS AND INCUBED+ AMBASSADOR PLATFORM FOR ITALY AS ENABLER
Valerio Roscani, Fondazione E. Amaldi, Italy

IAC-22.B5.3.9
AIRBORNE BASED SERVICES FOR THE DEVELOPMENT OF NEW EARTH OBSERVATION PAYLOADS FOR SMALL SATELLITE MISSIONS
Alexander Kläser, OHB Digital, Germany

B6. IAF SPACE OPERATIONS SYMPOSIUM

Coordinator(s): Andreas Rudolph, European Space Agency (ESA), Germany; Otrif G. Liepack, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States; Zeina Mounzer, Telespazio VEGA Deutschland GmbH, Germany;

B6.1. Ground Operations - Systems and Solutions

September 21 2022, 15:00 — E03A

Co-Chair(s): Sean Burns, EUMETSAT, Germany; Claude AUDOUY, Centre National d'Etudes Spatiales (CNES), France;

Rapporteur(s): Regina Mosenkis, Airbus Defence & Space, Germany; Keyur Patel, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States;

IAC-22.B6.1.1
THE DESIGN OF THE SPACECRAFT TEST SYSTEM 4000 BASED ON MICROSERVICES RUNNING IN CLOUD ENVIRONMENT
Haiyang Chu, China Academy of Space Technology (CAST), China

IAC-22.B6.1.2
CNES'ISIS PRODUCT LINE - FIRST OPERATIONS: LESSONS LEARNED AND WAY FORWARD
Olivier Churlaud, Centre National d'Etudes Spatiales (CNES), France

IAC-22.B6.1.3
THE EO GROUND SEGMENT: RE-IMAGINING SPACE IMAGING FOR SPACEFARING NATIONS IN THE LIGHT OF EVOLVING OPERATORS' NEEDS, NEW SATELLITE MISSIONS AND INNOVATIVE TECHNOLOGIES.
Vanessa Bonnet Souleres, Airbus Defence and Space, France

IAC-22.B6.1.4
PROPOSAL OF AN INDEX OF SATELLITE HEALTH FOR ANOMALY DETECTION
Shun Katsube, Tokyo Metropolitan University, Japan

IAC-22.B6.1.5
ERMES A MULTIMISSIION AND ADAPTATIVE MCS SW SUITE
Leonardo Amoroso, Planetek Hellas epe, Italy

IAC-22.B6.1.6
GROUND SEGMENT CONTROL SYSTEMS: CHALLENGES IN THE NEW SPACE ERA
Gianluca Montroni, Telespazio, Germany

IAC-22.B6.1.7
VIRTUALIZED SATELLITE GROUND STATIONS ENABLE NEW USE CASES FOR SATELLITE OPERATORS
John Heskett, Kongsberg Satellite Services AS, Norway

IAC-22.B6.1.8
BUILDING AND VERIFYING END-TO-END DEEP LEARNING ENGINES TO DETECT ANOMALIES IN SPACECRAFT TELEMETRY USING SATELLITE DIGITAL TWINS
Jakub Nalepa, KP Labs, Poland

IAC-22.B6.1.10
DEVELOPMENT, OPTIMIZATION AND OPERATION OF UPAEP'S MISSION OPERATION COMMAND CENTER USING SOFTWARE DEFINED RADIOS TO MONITOR SMALLSAT MISSIONS
Steve Angel Figueroa Arronte, Universidad Popular Autónoma del Estado de Puebla, Mexico

IAC-22.B6.1.11
DEEP SPACE STATION 17: A UNIVERSITY-OPERATED AFFILIATED NODE ON THE NASA DEEP SPACE NETWORK FOR INTERPLANETARY SMALL SATELLITE MISSIONS
Benjamin Malphrus, Morehead State University, United States

IAC-22.B6.1.12
USE OF SPACECRAFT SIGNAL MEASUREMENTS TO BACK-INFER ANTENNA HORIZON MASKS
William Gullotta, NOAA/NESDIS, United States

B6.2. Innovative Space Operations Concepts and Advanced Systems

September 22 2022, 10:15 — E03A

Co-Chair(s): Mario Cardano, Thales Alenia Space France, Italy; Thomas Kuch, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;

Rapporteur(s): Jackelynn Silva-Martinez, NASA, United States; Yuichiro Nogawa, Japan Manned Space Systems Corporation (JAMSS), Japan;

IAC-22.B6.2.1
DEVELOPING AN INTELLIGENT ASSISTANT FOR MISSION OPERATIONS: DRIVERS, USE CASES AND DESIGN
Evrédiki Ntagiou, European Space Agency (ESA-ESOC), Germany

IAC-22.B6.2.2
AI FOR SATELLITE ANOMALY DETECTION: ON-GROUND OPERATIONAL FEEDBACK AND DEVELOPMENT OF ON-BOARD EXPERIMENTS
Pauline Delande, Centre National d'Etudes Spatiales (CNES), France

IAC-22.B6.2.3
A LUNAR SURFACE SCENARIO SIMULATION APPLYING ADAPTIVE OPERATING SYSTEMS
Larissa Perltz, Ruhr West University of Applied Sciences, Germany

IAC-22.B6.2.4
OVERVIEW OF THE AI-BASED FAULT MANAGEMENT CONCEPT ONBOARD THE UNIBW M SERANIS MISSION
Maren Hülsmann, Universität der Bundeswehr München, Germany

IAC-22.B6.2.5
AUTONOMOUS INTEGRATED ATTITUDE AND ORBIT CONTROL OPERATION OF ALL-ELECTRIC SATELLITE WITH GPS RECEIVER
Daisuke Toyama, Mitsubishi Electric Corporation, Japan

IAC-22.B6.2.6
NEW CONCEPTS OF AUTOMATED ANOMALY DETECTION IN SPACE OPERATIONS THROUGH ML-BASED TECHNIQUES
Carlo Ciancarelli, Thales Alenia Space Italia, Italy

IAC-22.B6.2.7
MINIMUM-FUEL COST ORBIT ACQUISITION, STATION-KEEPING AND DEORBETING OPERATIONS FOR A PHASED SUN-SYNCHRONOUS MISSION
Pâmini ANNAT, Centre National d'Etudes Spatiales (CNES), France

IAC-22.B6.2.8
TOWARDS TRANSPARENT AI-SYSTEMS: BENEFITS OF MLOPS PIPELINES FOR SPACE SYSTEM DEVELOPMENT
Franca Speth, SVA System Vertrieb Alexander GmbH, Germany

IAC-22.B6.2.9
UNDERSTAND THE HUGE DATA THROUGH THE DEEP GEOSPACE : HOW TO ANALYZE AND TO DESIGN THE FUTURE SPACE MISSION
Jamel Metmati, THALES Services, France

IAC-22.B6.2.10
DEVELOPING A SMALL-SIZED SERVICE STATION FOR PERFORMING REPAIRING AND MAINTENANCE OF SATELLITES
Jaspreet Singh, University of Petroleum and Energy Studies, India

IAC-22.B6.2.11
ON-ORBIT SERVICING : IN-ORBIT DEMONSTRATION
Stéphanie BEHAR-LAFENETRE, Thales Alenia Space France, 100 Boulevard du Midi, 06150 Cannes la Bocca, France, France

IAC-22.B6.2.12
CHANDRAYAAN-2 DUAL GIMBAL ANTENNA SYSTEM
DHRUTI GAAN, U R RAO SATELLITE CENTRE (URSC), India

B6.3. Mission Operations, Validation, Simulation and Training

September 19 2022, 15:00 — E03A

Co-Chair(s): Andreas Rudolph, European Space Agency (ESA), Germany; Zeina Mounzer, Telespazio VEGA Deutschland GmbH, Germany;

Rapporteur(s): Borre Pedersen, Kongsberg Satellite Services AS, Norway; Matthew Duggan, The Boeing Company, United States;

IAC-22.B6.3.1
LAUNCHING AND DEPLOYING THE JAMES WEBB SPACE TELESCOPE
Keith Parrish, NASA Goddard Space Flight Center (USRA), United States

IAC-22.B6.3.2
JWST'S ARIANE 5 UPPER STAGE ESCAPE MANEUVER: FROM CONCEPT TO SUCCESSFUL OPERATIONAL IMPLEMENTATION
Emelyne RENARD, CNES, France

IAC-22.B6.3.3
REACTION-WHEEL BASED SAFE MODE FOR INTEGRAL MISSION
Greta De Marco, RHEA for European Space Operations Centre (ESA/ESOC), Germany

IAC-22.B6.3.4
OPERATIONAL HIGHLIGHTS OF SOLAR ORBITER'S TWO YEAR CRUISE TO THE SUN
Daniel Lakey, CGI, Germany

IAC-22.B6.3.5
ULYSSES - A STATE OF THE ART SANDBOX SIMULATOR FOR PLANETARY SURFACES
Hans Teras, University of Tartu, Estonia

IAC-22.B6.3.6
CNES FLIGHT DYNAMICS OPERATIONS DESIGN FOR THE END OF LIFE OF FOUR SATELLITES FLYING IN FORMATION
Etienne MONTAGNON, Centre National d'Etudes Spatiales (CNES), France

IAC-22.B6.3.7
A PARALLEL SIMULATION SYSTEM FOR SPACE OPERATIONS
Mingming Wang, National Key Laboratory of Aerospace Flight Dynamics, Northwestern Polytechnical University, China

IAC-22.B6.3.8
RENDEZVOUS TRAJECTORY DESIGN FOR LOGISTICS RESUPPLY MISSIONS TO THE LUNAR GATEWAY IN NEAR-RECTILINEAR HALO ORBIT
Ryo Nakamura, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.B6.3.9
TOWARDS ENSEMBLE AI BEHAVIOURS FOR SATELLITE PLAN EXECUTION
Gonzalo Montesino Valle, University of Strathclyde / Computer Science, United Kingdom

IAC-22.B6.3.10
THE CHALLENGERS OF OPERATING A SATELLITE FOR THE FIRST TIME
Muhammad Ziyaad Soreefan, Mauritius Research and Innovation Council (MRIC), Mauritius

B6.5. Large Constellations & Fleet Operations

September 22 2022, 13:45 — E03A

Co-Chair(s): John Auburn, Astroscale Ltd, United Kingdom; Zeina Mounzer, Telespazio VEGA Deutschland GmbH, Germany;

Rapporteur(s): Andreas Rudolph, European Space Agency (ESA), Germany; Shawn Linam, Qwaltec, Inc., United States;

IAC-22.B6.5.1
COLLISION RISK MITIGATION STRATEGIES OF THE ONEWEB CONSTELLATION
Calum Hervieu, OneWeb, United Kingdom

IAC-22.B6.5.2
ASTROSCALE'S ACTIVITIES ON LATE COLLISION AVOIDANCE AND THE CREAM 2 PROGRAMME
Zoé Tenacci, Astroscale Ltd, United Kingdom

IAC-22.B6.5.3
ENVIRONMENTAL IMPACT OF LARGE CONSTELLATIONS THROUGH A DEBRIS INDEX ANALYSIS
Andrea Muciaccia, Politecnico di Milano, Italy

IAC-22.B6.5.4
DEEP LEARNING ARCHITECTURES FOR GLOBAL OPERATION AND CONTROL OF MINIATURIZED SATELLITE CONSTELLATIONS
Sergio Cuevas del Valle, FOSSA Systems, Spain

IAC-22.B6.5.5
MULTI-MISSION PLANNING AND ANALYSIS FOR EARTH OBSERVATION CONSTELLATIONS
Rachel Jenkins, GMV Innovating Solutions, United Kingdom

IAC-22.B6.5.6
IMPROVING CONSTELLATIONS HEALTH STATUS MONITORING AND FAULT PREVENTION
Chiara Brighenti, S.A.T.E., Italy

IAC-22.B6.5.7
FUTURE-PROOF MISSION CONTROL SYSTEMS: LEVERAGING AGNOSTIC DESIGN FOR AUTONOMOUS AND EVENT-DRIVEN SATELLITE OPERATIONS
Lucas Bremond, Loft Orbital Solutions Inc, United States

IAC-22.B6.5.8
USING SATELLITES' COMMUNICATION PREAMBLES AS NATURAL FINGERPRINTS FOR SATELLITE IDENTIFICATION AND POSITIONING (SIDPOS) FOR ORBIT TRACKING AND SPACE TRAFFIC MANAGEMENT
Andreas Hornig, Jena-Optronik GmbH, Germany

IAC-22.B6.5.9
LIVING IN CROWDS: SPACE TRAFFIC CONGESTION DUE TO LARGE LEO CONSTELLATIONS
David Spencer, The Aerospace Corporation, United States

IAC-22.B6.5.10
WINNING THE INTERNET: COMPETITIVE STRATEGIES FOR THE AGE OF MEGA SATELLITE CONSTELLATIONS
James Dingley, Massachusetts Institute of Technology (MIT), United States

C1. IAF ASTRODYNAMICS SYMPOSIUM

Coordinator(s): Daniel Scheeres, Colorado Center for Astrodynamics Research, University of Colorado, United States;

C1.1. Attitude Dynamics (1)

September 18 2022, 15:15 — S05

Co-Chair(s): Giovanni B. Palmerini, Sapienza University of Rome, Italy; Robert G. Melton, Pennsylvania State University, United States;

Rapporteur(s): Mikhail Ovchinnikov, Keldysh Institute of Applied Mathematics, RAS, Russian Federation;

IAC-22.C1.1.1
DESIGN, REALIZATION AND CHARACTERIZATION OF A FREE-FLOATING PLATFORM FOR FLEXIBLE SATELLITE CONTROL EXPERIMENTS
Marco Sabatini, Sapienza University of Rome, Italy

IAC-22.C1.1.2
REINFORCEMENT LEARNING FOR ATTITUDE CONTROL OF A SPACECRAFT WITH FLEXIBLE APPENDAGES
Ahmed Mahfouz, University of Luxembourg, Luxembourg

IAC-22.C1.1.3
REACTION WHEEL UNLOADING USING EXTERNAL TORQUE FOR VARIABLE SHAPE SPACECRAFT
Yuki Amaki, Tokyo Institute of Technology, Japan

IAC-22.C1.1.4
FUZZY-LOGIC-BASED INTEGRATED ORBIT-ATTITUDE-VIBRATION PRESCRIBED-TIME CONTROL FOR LARGE-SCALE FLEXIBLE SPACECRAFT
Bailing Lyu, Northwestern Polytechnical University, China

IAC-22.C1.1.5
ONLINE POLICY ITERATION ADP-BASED CONTROL OF POST-CAPTURE COMBINED SPACECRAFT WITHOUT INERTIA IDENTIFICATIONS
Jingyi Liu, Delft University of Technology (TU Delft), The Netherlands

IAC-22.C1.1.6
ATTITUDE CONTROL OF SATELLITES WITH FLEXIBLE APPENDAGES USING INVERSE SIMULATION
Robert Gordon, University of Glasgow, United Kingdom

IAC-22.C1.1.7
TIME-OPTIMAL ATTITUDE CONTROLLER DESIGN FOR PRECISION POINTING OF AN AGILE SPACECRAFT USING DEEP REINFORCEMENT LEARNING
Debajyoti Chakrabarti, ISRO Satellite Centre (ISAC), India

IAC-22.C1.1.8
INVARIANT SIGMA-POINT KALMAN FILTERING ON SO(3) FOR ATTITUDE ESTIMATION OF A 3U CUBESAT
Joe Gibbs, School of Engineering, University of Glasgow, United Kingdom

IAC-22.C1.1.9
SIMULTANEOUS ORBIT-ATTITUDE CONTROL OF FORMATION FLYING SOLAR SAILS AROUND SUN-EARTH L2 USING REFLECTIVITY MODULATION
Keisuke Sugiura, Aoyama Gakuin University, Japan

IAC-22.C1.1.10
ATTITUDE DETERMINATION AND CONTROL SYSTEM OF THE STUDENT SMALL SATELLITE (SSS): AN INTERNATIONAL HANDS-ON SATELLITE PROJECT AMONG ASIA PACIFIC UNIVERSITIES
Niki Sajjad, K. N. Toosi University of Technology, Iran

C1.2. Attitude Dynamics (2)

September 19 2022, 10:15 — S05

Co-Chair(s): Gianmarco Radice, Singapore, Republic of; Toshio Kamiya, NEC Corporation, Japan;
Rapporteur(s): Zhanfeng Meng, China Academy of Space Technology (CAST), China;

IAC-22.C1.2.1
 ATTITUDE MANEUVERS OF A FLEXIBLE SPACECRAFT FOR SPACE DEBRIS DETECTION AND COLLISION AVOIDANCE
David Paolo Madonna, Sapienza University of Rome, Italy

IAC-22.C1.2.2
 ATTITUDE ESTIMATION USING EXTENDED H-INFINITY PARTICLE FILTER APPLIED TO CHINA-BRAZIL EARTH RESOURCE SATELLITE-4
William Silva, University of Brasilia, Brazil

IAC-22.C1.2.3
 LABORATORY-SCALE DEMONSTRATION OF A DISTRIBUTED MAGNETORQUER ARRAY FOR THE ATTITUDE CONTROL OF LARGE SPACE STRUCTURES
Bonar Robb, University of Glasgow, United Kingdom

IAC-22.C1.2.4
 LINE-OF-SIGHT CONTROL USING DOUBLE-GIMBAL CONTROL MOMENT GYROSCOPE FOR TETHERED SATELLITE EQUIPPED WITH TETHER-NET FOR DEBRIS CAPTURE
Haruma Suzuki, Tokyo Metropolitan University, Japan

IAC-22.C1.2.5
 OPTIMAL ACTUATOR-BASED ATTITUDE MANEUVERING OF CONSTRAINED SPACECRAFT VIA MOTION PLANNING ALGORITHMS
Riccardo Calaon, University of Colorado Boulder, United States

IAC-22.C1.2.6 (non-confirmed)
 SPACECRAFT ATTITUDE CONTROL USING PD CONTROLLER WITH GAIN TUNNING BY NEURO-FUZZY SYSTEM.
Sung-Woo Kim, Hanwha Thales, Korea, Republic of

IAC-22.C1.2.7
 ADCS RATE CONTROLLER USING INTERMEDIATE AXIS THEOREM
Sander Kvalsvik, Norwegian University of Science and Technology, Norway

IAC-22.C1.2.8
 DYNAMICS AND STABILITY ANALYSIS OF SPACECRAFT ATTITUDE CONSIDERING HIGH-FIDELITY SOLAR RADIATION PRESSURE
Masaki Kakeru, Kyushu University, Japan

IAC-22.C1.2.9
 APPLICATION OF DEEP REINFORCEMENT LEARNING FOR ATTITUDE CONTROL OF A SATELLITE IN THE PRESENCE OF UNCERTAINTIES
Jan Loettgen, School of Engineering, University of Glasgow, United Kingdom

IAC-22.C1.2.10
 CHOICE OF DESIGN PARAMETERS OF A CUBESAT 6U FOR PROVIDING THREE-AXIS PASSIVE STABILIZATION
Igor V. Belokonov, Samara National Research University (Samara University), Russian Federation

C1.3. Guidance, Navigation and Control (1)

September 19 2022, 15:00 — S05

Co-Chair(s): Juan Carlos Bastante, OHB System AG-Bremen, Germany; Guo Linli, Institute of Manned Space System Engineering, China Academy of Space Technology (CAST), China;
Rapporteur(s): Krishna Kumar, Ryerson University, Canada;

IAC-22.C1.3.1
 HYBRID NONLINEAR SEMI-ANALYTICAL UNCERTAINTY PROPAGATION FOR CONJUNCTION ANALYSIS
Yashica Khatri, Colorado Center for Astrodynamics Research, University of Colorado, United States

IAC-22.C1.3.2
 AUTONOMOUS OPTICAL NAVIGATION FOR SMALL SPACECRAFT IN CISLUNAR SPACE
Christian Xianyang Wu, Cranfield University, United Kingdom

IAC-22.C1.3.3
 NEURAL NETWORKS FOR ONBOARD MANEUVER DESIGN
Nathan Ré, Advanced Space, United States

IAC-22.C1.3.4
 MULTI-FACETED REFLECTIVITY CONTROL DEVICES: VECTORING SOLAR RADIATION PRESSURE FOR HIGH PRECISION FORMATION CONTROL
Ahmed Kiyoshi Sugihara El Maghraby, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.C1.3.5
 A DATA-DRIVEN NONLINEAR OPTIMAL CONTROL USING KOOPMAN OPERATOR ON HAMILTONIAN FLOW
Kyosuke Sato, Kyushu University, Japan

IAC-22.C1.3.6
 DESIGN OF OPTIMAL LOW-THRUST ORBIT-TO-ORBIT TRANSFERS VIA CONVEX APPROACH
Naoki Hiraiwa, Kyushu University, Japan

IAC-22.C1.3.7
 MULTI-REVOLUTION LOW-THRUST TRAJECTORY OPTIMISATION USING DIFFERENTIAL DYNAMIC PROGRAMMING IN ORBITAL ELEMENT FORMULATION
Marco Nugnes, Politecnico di Milano, Italy

IAC-22.C1.3.8
 NMPC-BASED GUIDANCE AND CONTROL FOR AUTONOMOUS HIGH-THRUST NON-COPLANAR LEO-GEO MISSIONS
Michele Pagone, Politecnico di Torino, Italy

IAC-22.C1.3.9
 POSE ESTIMATION OF A KNOWN TEXTURE-LESS SPACE TARGET USING CONVOLUTIONAL NEURAL NETWORKS
Arunkumar Rathinam, University of Luxembourg, Luxembourg

IAC-22.C1.3.10
 MULTI-OBJECTIVE ROBUST OPTIMIZATION FOR STATION-KEEPING IN HALO ORBIT: AN LMI APPROACH
Takahiro Sasaki, Japan Aerospace Exploration Agency (JAXA), Japan

C1.4. Guidance, Navigation and Control (2)

September 20 2022, 10:15 — S05

Co-Chair(s): Mai Bando, Kyushu University, Japan; Hanspeter Schaub, Colorado Center for Astrodynamics Research, University of Colorado, United States;
Rapporteur(s): Yung Fu Tsai, National Cheng Kung University, Taiwan, China;

IAC-22.C1.4.1
 KEYNOTE: "THE JOHN V. BREAKWELL MEMORIAL LECTURE" ON ELECTRODYNAMIC TETHERS AND ORBIT PROPAGATION
Jesus Pelaez, Technical University of Madrid (UPM), Spain

IAC-22.C1.4.2
 ORBIT ACQUISITION, RENDEZVOUS, AND DOCKING WITH A NONCOOPERATIVE CAPSULE IN A MARS SAMPLE RETURN MISSION
Riccardo Santoro, Sapienza University of Rome, Italy

IAC-22.C1.4.3
 ROBUST TRAJECTORY OPTIMIZATION FOR AUTONOMOUS ASTEROID RENDEZVOUS
Tomohiro Ishizuka, ISAE-Supaero University of Toulouse, France

IAC-22.C1.4.4
 SLIDING MODE AND PREDICTIVE ROBUST CONTROL TECHNIQUES FOR MULTI-PURPOSE PLATFORMS BASED ON HIGH-POWER ELECTRIC PROPULSION
Martina Mammarella, National Research Council, Rome, Italy

IAC-22.C1.4.5
 DRAG-FREE CONTROL FOR TRIANGLE FORMATION FLIGHT OF B-DECIGO SPACECRAFT
Toshio Kamiya, NEC Corporation, Japan

IAC-22.C1.4.6
 DEVELOPMENT AND TESTING OF NANOSATELLITE FORMATION CONTROL ALGORITHMS
Johannes Dauner, Zentrum für Telematik, Germany

IAC-22.C1.4.7 (non-confirmed)
 FORMATION RECONFIGURATION ON LIBRATION POINT ORBITS BASE ON CONFIGURATION GEOMETRIC INVARIANTS
Xue Bai, Beihang University, China

IAC-22.C1.4.8
 HARDWARE-IN-THE-LOOP PROXIMITY OPERATIONS IN CISLUNAR SPACE
Vivek Muralidharan, University of Luxembourg, Luxembourg

C1.5. Guidance, Navigation & Control (3)

September 20 2022, 15:00 — S05

Co-Chair(s): Miguel Bello Mora, Deimos Space SLU, Spain; Jean de Lafontaine, NGC Aerospace Ltd., Canada;
Rapporteur(s): Tang Liang, Beijing Institute of Control Engineering, China Academy of Space Technology (CAST), China;

IAC-22.C1.5.1
 RISK GUARANTEES FOR INTEGRATED TARGETING AND GUIDANCE DURING POWERED DESCENT AND LANDING
Julia Briden, Massachusetts Institute of Technology (MIT), United States

IAC-22.C1.5.2
 ASSESSMENT OF REUSABLE LAUNCH VEHICLES RE-ENTRY DYNAMICS CONTROL EFFECTIVENESS WITH ENHANCED AERODYNAMICS MODELLING
Alice De Oliveira, Politecnico di Milano, Italy

IAC-22.C1.5.3
 REAL-TIME SPACECRAFT LOCALIZATION AND MAPPING WITH OPTICAL AND RADIO-BASED ARTIFICIAL MARKERS
Genki Ohira, The Graduate University for Advanced Studies[SOKENDAI], Japan

IAC-22.C1.5.4 (non-confirmed)
 HIGH-PRECISION PREDICTIVE SKIP ENTRY GUIDANCE FOR HUMAN LUNAR RETURN VEHICLES WITH LOW LIFT-TO-DRAG RATIOS
Wenhao Du, CALT,CASC, China

IAC-22.C1.5.5
 ONBOARD TRAJECTORY OPTIMIZATION FOR ASTEROID LANDING BASED ON GENERAL KOOPMAN OPERATOR
Yang Ni, Northwestern Polytechnical University, China

IAC-22.C1.5.6
 INTELLIGENT FUEL-OPTIMAL GUIDANCE STRATEGY FOR SMALL BODY FLEXIBLE LANDING
Dongyue Zhao, Beijing Institute of Technology (BIT), China

IAC-22.C1.5.7
 AN ITERATIVE LQR METHOD FOR ADDRESSING MODEL UNCERTAINTY IN THE PLANETARY ENTRY PROBLEM
Allegra Farrar, Massachusetts Institute of Technology (MIT), United States

IAC-22.C1.5.8
 ONBOARD TRAJECTORY GENERATION FOR AUTONOMOUS LANDING ON SMALL BODIES
Larissa Balestrero Machado, Universität der Bundeswehr München, Germany

IAC-22.C1.5.9
 APPLICATION OF NEURAL ORDINARY DIFFERENTIAL EQUATIONS TO TRAJECTORY CONTROL LAWS FOR LUNAR LANDING
Satoshi Ueda, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.C1.5.10
 ANALYSIS OF MULTI-ORBIT MULTI-PAYLOAD INJECTION SCENARIOS FOR AN UPPER STAGE
Iñigo Alforja Ruiz, Politecnico di Milano, Italy

C1.6. Mission Design, Operations & Optimization (1)

September 21 2022, 10:15 — S05

Co-Chair(s): Massimiliano Vasile, University of Strathclyde, United Kingdom; Yury Razoumny, Peoples's Friendship University of Russia (RUDN), Russian Federation;
Rapporteur(s): Mauro Pontani, Sapienza University of Rome, Italy;

IAC-22.C1.6.1
 A NOVEL INDIRECT APPROACH FOR FUEL OPTIMIZATION OF LOW-THRUST TRAJECTORIES UNDER THRUST AND COAST DURATIONS CONSTRAINTS
Richard Epenoy, Centre National d'Etudes Spatiales (CNES), France

IAC-22.C1.6.2
 ADAPTIVE CLOSED-LOOP MANEUVER PLANNING FOR LOW-THRUST SPACECRAFT USING REINFORCEMENT LEARNING
Nicholas LaFarge, Purdue University, United States

IAC-22.C1.6.3
 USING DISTANT RETROGRADE ORBITS AS FUTURE SPACECRAFT GRAVEYARDS
Louis Jannin, ISAE-Supaero University of Toulouse, France

IAC-22.C1.6.4
 OVERVIEW OF THE LOW THRUST LUNAR TRANSIT SPIRAL TRAJECTORY AND CISLUNAR TRANSFERS USING THE POWER AND PROPULSION ELEMENT OF NASA'S GATEWAY
Melissa McGuire, NASA Glenn Research Center, United States

IAC-22.C1.6.5
 RELATIVE DYNAMICS AND SHAPE-BASED METHODS FOR GUIDANCE IN THE RESTRICTED THREE-BODY PROBLEM
Sergio Cuevas del Valle, Universidad Rey Juan Carlos, Spain

IAC-22.C1.6.6
 EARTH-MOON CYCLER MISSION DESIGN FOR LUNAR LOGISTICS
Matthew Wittal, NASA, United States

IAC-22.C1.6.7
 OPTIMIZATION OF FLOWER CONSTELLATIONS APPLIED TO CISLUNAR ENVIRONMENT OBSERVATIONS
Ivan Agostinelli, Sapienza University of Rome, Italy

IAC-22.C1.6.8
 LOW-THRUST TRAJECTORY OPTIMIZATION AND AUTONOMY ANALYSIS FOR A MEDIUM-EARTH-ORBIT CONSTELLATION DEPLOYMENT
David Morante, Deimos Space SL, Spain

IAC-22.C1.6.9
 LOW-THRUST LUNAR TRAJECTORY OPTIMIZATION USING CANONICAL TRANSFORMATION
Sung Wook Yoon, Moscow Aviation Institute (National Research Institute, MAI), Russian Federation

IAC-22.C1.6.10
 A TRANSPORT NETWORK FOR IN-ORBIT RECYCLING EXPLOITING NATURAL DYNAMICS
Maria Anna Laino, University of Strathclyde, United Kingdom

C1.7. Mission Design, Operations & Optimization (2)

September 21 2022, 15:00 — S05

Co-Chair(s): Stéphanie Lizy-Destrez, Institut Supérieur de l'Aéronautique et de l'Espace (ISAE), France; Michèle Lavagna, Politecnico di Milano, Italy;
Rapporteur(s): Richard Epenoy, Centre National d'Etudes Spatiales (CNES), France;

IAC-22.C1.7.1
 MARS ORBIT INJECTION VIA AEROCAPTURE AND LOW-THRUST NONLINEAR ORBIT CONTROL
Edoardo Fornari, Sapienza University of Rome, Italy

IAC-22.C1.7.2
 REALISTIC TRANSFER TRAJECTORY DESIGN OF MMX BETWEEN RELATIVE RETROGRADE ORBITS AROUND PHOBOS
Nishanth Pushparaj, University of Nottingham, United Kingdom

IAC-22.C1.7.3
 BINARY ASTEROID LANDING TRAJECTORY DESIGN FROM A SELF-STABILIZED TERMINATOR ORBIT CONSIDERING PARAMETRIC UNCERTAINTIES.
Iosto Fodde, University of Strathclyde, The Netherlands

IAC-22.C1.7.4
 A HYBRID MULTIPLE-SHOOTING APPROACH FOR COVARIANCE CONTROL OF INTERPLANETARY MISSIONS WITH NAVIGATION ERRORS
Nicola Marmo, Sapienza University of Rome, Italy

IAC-22.C1.7.5
 PROPELLANT-FREE STATION KEEPING DESIGN OF A SOLAR SAIL AROUND THE SUN-EARTH COLLINEAR EQUILIBRIUM POINTS
Duan Xun, University of Barcelona, Spain

IAC-22.C1.7.6
 MISSION DESIGN AND RESULT OF ARTIFICIAL OBJECTS ORBITING AND OBSERVATION FOR GRAVITATIONAL ENVIRONMENT ESTIMATION OF SMALL BODIES
Kent Yoshikawa, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.C1.7.7
 MISSION OPPORTUNITIES TO SEDNA AND EXTREME TRANS-NEPTUNIAN OBJECTS
Vladislav Zubko, Space Research Institute (IKI), Russian Academy of Sciences (RAS), Russian Federation

IAC-22.C1.7.8
 A GEOMETRICAL APPROACH TO THE DESIGN OF MULTI-GRAVITY ASSIST TRAJECTORIES
Muhammad Ansyar Rafi Putra, Indonesia

IAC-22.C1.7.9
 DETERMINISTIC AND STOCHASTIC EXPLORATION OF LONG ASTEROID FLY-BY SEQUENCES EXPLOITING TREE-GRAPH AND OPTIMAL SUBSTRUCTURE PROPERTIES
Joan Pau Sanchez Cuartielles, ISAE-Supaero University of Toulouse, France

IAC-22.C1.7.10
 ORBIT-ATTITUDE INTEGRATED CONTROL ON SMALL-AMPLITUDE PERIODIC ORBIT AROUND SUN-EARTH L2 IN TRANSFORMER MISSION
Toshihiro Chujo, Tokyo Institute of Technology, Japan

C1.8. Orbital Dynamics (1)

September 22 2022, 10:15 — S05

Co-Chair(s): Laureano Cangahuala, Jet Propulsion Laboratory, United States; Yuichi Tsuda, Japan Aerospace Exploration Agency (JAXA), ISAS, Japan;
Rapporteur(s): Elena Fantino, Khalifa University of Science and Technology (KUST), United Arab Emirates;

IAC-22.C1.8.1
 GENERATIVE GLOBAL SEARCH FOR CRITICAL POINTS IN ASTRODYNAMICS
Massimiliano Vasile, University of Strathclyde, United Kingdom

IAC-22.C1.8.2
 PRELIMINARY ANALYSIS OF SMALL-BODY GRAVITY FIELD ESTIMATION USING PHYSICS-INFORMED NEURAL NETWORKS AND KALMAN FILTERS
John Martin, Colorado Center for Astrodynamics Research, University of Colorado, United States

IAC-22.C1.8.3
 ECCENTRIC ANOMALY SYNCHRONISM AND REGULARISED DYNAMICS FOR CONTINUUM INTERPLANETARY ORBITAL UNCERTAINTY PROPAGATION
Alessandro Masat, Politecnico di Milano, Italy

IAC-22.C1.8.4
 TRANSFERS BETWEEN JUPITER-GANYMEDE AND JUPITER-EUROPA RESONANT TORI IN A CONCENTRIC CIRCULAR RESTRICTED 4-BODY MODEL
Bhanu Kumar, Georgia Institute of Technology, United States

IAC-22.C1.8.5
 TRANSFERS TO RESONANT QUASI-PERIODIC NEAR-RECTILINEAR HALO ORBITS IN THE EARTH-MOON-SUN ELLIPTIC-CIRCULAR PROBLEM
Daniel Villegas Pinto, Observatoire de Paris, France

IAC-22.C1.8.6
 USING DIFFERENTIAL ALGEBRA TO COMPUTE LAGRANGIAN COHERENT STRUCTURES FOR MISSION DESIGN AND ANALYSIS
Jack Tyler, University of Southampton, United Kingdom

IAC-22.C1.8.7
 A DIFFERENTIAL ALGEBRA-BASED CONTINUATION METHOD FOR AUTOMATIC IDENTIFICATION AND PARAMETRIZATION OF FAMILIES OF PERIODIC ORBITS IN THE CR3BP
Thomas Caleb, ISAE-Supaero University of Toulouse, France

IAC-22.C1.8.8
 DESIGN OF SATELLITES TOURS USING PERIAPSIS POINCARÉ MAP IN MULTIBODY DYNAMICS OF JOVIAN SYSTEM
Kanta Ikeda, Kyushu University, Japan

IAC-22.C1.8.9
 LEVERAGING WEAK-STABILITY BOUNDARIES FOR LIBRATION POINTS ESCAPES AND DISPOSAL
Enrico Bassissi, Politecnico di Milano, Italy

IAC-22.C1.8.10
 REDUCING THE NUMERICAL ERROR OF ELEMENT-BASED FORMULATIONS FOR THE EVALUATION OF GRAVITY FIELDS
Hodei Urrutxua, Universidad Rey Juan Carlos, Spain

C1.9. Orbital Dynamics (2)

September 22 2022, 13:45 — S05

Co-Chair(s): David C. Folta, National Aeronautics and Space Administration (NASA), Goddard Space Flight Center, United States; Othon Winter, UNESP - São Paulo State University, Brazil;
Rapporteur(s): Josep J. Masdemont, Universitat Politècnica de Catalunya (UPC), Spain;

IAC-22.C1.9.1
 DYNAMICAL RESHAPING STATION-KEEPING APPROACH FOR NEAR RECTILINEAR HALO ORBITS USING SOLAR RADIATION PRESSURE
Chen Gao, Northwestern Polytechnical University; National Key Laboratory of Aerospace Flight Dynamics, China

IAC-22.C1.9.2
 BOUNDING NONLINEAR STRETCHING ABOUT SPACECRAFT TRAJECTORIES USING TENSOR EIGENPAIRS
Erica Jensen, University of Colorado Boulder, United States

IAC-22.C1.9.3
 A SURVEY OF HETEROCLINIC CONNECTIONS IN THE EARTH-MOON SYSTEM
Damennick Henry, University of Colorado Boulder, United States

IAC-22.C1.9.4
 PROBABILITY OF SPACECRAFT'S 1:1 RESONANCE CAPTURE AROUND AN ASTEROID WITH THE ADIABATIC INVARIANT THEORY
Wail Boumchita, University of Strathclyde, United Kingdom

IAC-22.C1.9.5
 GLOBAL ANALYSIS OF ECLIPSE AVOIDANCE FOR LONG-TERM QUASI-DRO ORBIT
Ruilong Li, National Key Laboratory of Aerospace Flight Dynamics, Northwestern Polytechnical University, Xi'an, China

IAC-22.C1.9.6
 COUPLED ROTO-TRANSLATIONAL MOTION OF THE HELIOGYRO APPLIED TO EARTH-MARS CYCLERS
Guido Monechi, Delft University of Technology (TU Delft), The Netherlands

IAC-22.C1.9.8
 ANALYSIS OF BALLISTIC ESCAPE OPPORTUNITIES VIA MULTIPLE LUNAR SWINGBYS FOR FAST AND FLEXIBLE MISSIONS
Joan Pau Sanchez Cuartielles, ISAE-Supaero University of Toulouse, France

IAC-22.C1.9.9
 ECHO I CASE STUDY OF SRP EFFECT ON ORBITAL MOTION
Catherine Massé, McGill University, Canada

IAC-22.C1.9.10
 AN ALGORITHM TO ENGINEER AUTONOMOUS BALLISTIC CAPTURE AT MARS
Gianmario Merisio, Politecnico di Milano, Italy

C2. IAF MATERIALS AND STRUCTURES SYMPOSIUM

Coordinator(s): Jochen Albus, ArianeGroup, Germany; Alwin Eisenmann, IABG Industrieanlagen - Betriebsgesellschaft mbH, Germany;

C2.1. Space Structures I - Development and Verification (Space Vehicles and Components)

September 18 2022, 15:15 — W06

Co-Chair(s): Alwin Eisenmann, IABG Industrieanlagen - Betriebsgesellschaft mbH, Germany; Andreas Rittweger, DLR (German Aerospace Center), Germany;
Rapporteur(s): Jochen Albus, ArianeGroup, Germany; Markus Geiss, OHB System AG, Germany;

IAC-22.C2.1.1
 STRUCTURAL DIAGNOSIS USING AN EMBEDDED NON DESTRUCTIVE TESTING ULTRASONIC SOLUTION
Simon Clement, France

IAC-22.C2.1.2
 INNOVATIVE PASSIVE SYSTEM FOR RESIDUAL PRESSURE REDUCTION OF THE ARIANE 5 FAIRING AT SEPARATION FOR JAMES WEBB SPACE TELESCOPE (JWST)
Jerome Bonhomme, Beyond Gravity, Switzerland

IAC-22.C2.1.3
 ARIANE 6 ARCHITECTURE AND FUTURE EVOLUTIONS FROM A STRUCTURES AND MATERIALS POINT OF VIEW
Jochen Albus, ArianeGroup, Germany

IAC-22.C2.1.4
 STRUCTURAL FAILURE DETECTION IN VIBRATION TESTING USING MACHINE LEARNING AND DEEP LEARNING
Victor Mukungunugwa, Laboratory of Spacecraft Environment Interaction Engineering, Kyushu Institute of Technology, Japan

IAC-22.C2.1.5
 BAYESIAN MACHINE LEARNING FOR FASTER DESIGN OF COMPOSITE STRUCTURES
Roberta Cumbo, Leonardo Spa, Italy

IAC-22.C2.1.6
 JOINING LAPPED LOW-MELT POLYARYLETHETERKETONE CARBON FIBER REINFORCED THERMOPLASTIC LAMINATE VIA FRICTION STIR WELDING
Lucas Wilkins, Vanderbilt University, United States

IAC-22.C2.1.7
 INVESTIGATION OF FRICTION STIR WELDING FOR LUNAR APPLICATIONS
Connor Strawn, Vanderbilt University, United States

IAC-22.C2.1.8
 SEAMLESS AND MULTI-DIMENSIONAL DOMES FOR LARGE LIQUID CRYOGENIC TANK
Arnaud Blanckaert, Aubert & Duval, France

IAC-22.C2.1.9
 FINITE ELEMENT SIMULATIONS OF THE WHEELS OF THE RASHID LUNAR ROVER
Mariam Alhammadi, Khalifa University of Science and Technology (KUST), United Arab Emirates

IAC-22.C2.1.10
 ESTIMATION OF VIBRATION ENVIRONMENT AND STRUCTURAL ASSESSMENT FOR AN EXPERIMENTAL SEMICRYO ROCKET ENGINE
Vivek S, Indian Space Research Organization (ISRO), Liquid Propulsion Systems Centre (LPSC), India

IAC-22.C2.1.12
 METALLIC VS INFLATABLE PRIMARY STRUCTURE: A COMPREHENSIVE TRADE FOR A MARS TRANSIT HABITAT
Matthew Ziglar, Boeing Defense Space & Security, United States

C2.2. Space Structures II - Development and Verification (Deployable and Dimensionally Stable Structures)

September 19 2022, 10:15 — W06

Co-Chair(s): Paolo Gasbarri, University of Rome "La Sapienza", Italy; Oliver Kunz, Beyond Gravity, Switzerland;
Rapporteur(s): Aicke Patzelt, MT Aerospace AG, Germany; Thomas Sinn, DcubeD (Deployables Cubed GmbH), Germany;

IAC-22.C2.2.1
 MANUFACTURING A DEPLOYABLE SEMI-RIGID BI-MATRIX CARBON FIBRE COMPOSITE SOLAR ARRAY FOR SMALL AND NANOSATELLITES
Ambre Raharijaona, DcubeD (Deployables Cubed GmbH), Germany

IAC-22.C2.2.2
 VIRTUAL TESTING OF FOLDING AND DEPLOYMENT OF COMPOSITE ULTRATHIN TAPE SPRING HINGES VIA UNIFIED 2D SHELL MODELS
Riccardo Augello, Politecnico di Torino, Italy

IAC-22.C2.2.3
 FEASIBILITY STUDY ON A TWISTED WRAP-RIB REFLECTOR.
Hiroaki Tanaka, National Defense Academy, Japan

IAC-22.C2.2.4
 DEVELOPMENT OF A DEPLOYABLE SYNTHETIC APERTURE RADAR ANTENNA FOR A NANOSATELLITE CONCEPTUAL DESIGN.
Annalisa Tresoldi, University of Auckland, New Zealand

IAC-22.C2.2.5
STRUCTURAL DESIGN OF BOOMS FOR THE SOLAR SAIL OF HELIANTHUS SAILCRAFT
Susanna Laurenzi, Sapienza University of Rome, Italy

IAC-22.C2.2.6
INITIAL VALIDATION OF A CLOSED LOOP FILTER AND CONTROLLER APPROACH FOR ACTIVE STABILIZATION OF THERMOMECHANICAL DISTORTIONS
Florian Möller, Institut für Raumfahrttechnik Universität der Bundeswehr München, Germany

IAC-22.C2.2.7
DESIGN AND TESTING OF TPA-1 CUBESAT PAYLOADS: DEPLOYABLE BOOM, IMAGERS AND DRAGSAIL
Jason Shore, University of Auckland, New Zealand

IAC-22.C2.2.8
SHAPE CHANGE ANALYSIS OF MODULAR TENSEGRITY STRUCTURES FOR PARABOLIC REFLECTORS
Kaila Roffman, Pennsylvania State University, United States

IAC-22.C2.2.9
MODELISATION OF THERMALLY INDUCED JITTER IN A SLENDER STRUCTURE
Kathiravan Thangavel, Royal Melbourne Institute of Technology (RMIT), Australia

IAC-22.C2.2.10
A VIRTUAL MANUFACTURING TOOL FOR PROCESS-INDUCED DEFORMATIONS ANALYSIS IN THIN COMPOSITE STRUCTURES
Enrico Zappino, Politecnico di Torino, Italy

IAC-22.C2.2.11
DEVELOPMENT AND MICROGRAVITY TESTING OF ORIGAMI-INSPIRED STRUCTURES FOR FUTURE SPACE APPLICATIONS
Augustin Gallois, ISAE - Institut Supérieur de l'Aéronautique et de l'Espace, France

IAC-22.C2.2.12
PARAMETRISATION AND PRACTICAL IMPLEMENTATION OF DEPLOYABLE OPTICAL SYSTEMS
Akash Yalagach, University of Auckland, New Zealand

C2.3. Space Structures - Dynamics and Microdynamics

September 19 2022, 15:00 — W06

Co-Chair(s): Harijono Djojodihardjo, Indonesia; Élcio Jeronimo de Oliveira, Institute for Aeronautics and Space (IAE), Brazil;
Rapporteur(s): Ijar Da Fonseca, ITA-DCTA, Brazil; Paolo Gasbarri, University of Rome "La Sapienza", Italy;

IAC-22.C2.3.1
DESIGN AND PERFORMANCE TEST OF HEXAPOD MICRO-VIBRATION ISOLATOR FOR HIGH TORQUE CMG
Bawoul Chung, Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of

IAC-22.C2.3.2
REACTION WHEEL ASSEMBLY EXPERIMENTAL IMPACT DYNAMICS CHARACTERISATION
Thomas Hughes, University of Auckland, New Zealand

IAC-22.C2.3.4
FEM MODELLING OF REACTION WHEEL MICROVIBRATION
Mattia Marcello Longato, University of Auckland, New Zealand

IAC-22.C2.3.5
IDENTIFICATION METHOD FOR GRAVITY CAUSED EFFECTS DURING THE CHARACTERIZATION OF MICRO-VIBRATION SOURCES
Matias Bestard Körner, German Aerospace Center (DLR), Germany

IAC-22.C2.3.6
STUDY THE EFFECT OF A REAL LAUNCH ENVIRONMENT TESTING THROUGH TRI-AXIS AND SINGLE-AXIS VIBRATION TESTING
Narendra Nath, The University of Auckland, New Zealand

IAC-22.C2.3.7
IMPROVING THE CONTROL DESIGN OF THE KNATTE PLATFORM WITH FLEXIBLE PANELS
Christoffer Johansson, Luleå University of Technology, Sweden

IAC-22.C2.3.8
DYNAMIC STABILITY OF FLEXIBLE LIGHTSAILS FOR INTERSTELLAR EXPLORATION
Michael Kelzenberg, California Institute of Technology, United States

IAC-22.C2.3.9
EVALUATION OF SLIDING AMOUNT AT BACKLASH JOINTS AND ITS EFFECTS ON NONLINEARITY DURING FREE VIBRATION OF EXTENSIBLE TRUSS
Saori Tanaka, Meijo University, Japan

IAC-22.C2.3.10 (non-confirmed)
LONGITUDINAL-LATERAL-TORSIONAL-SLOSH INTEGRATED MODELING TECHNIQUE FOR LIQUID-PROPELLANT LAUNCH VEHICLE
CHU Fuyun, LandSpace Technology Corporation Ltd., China

IAC-22.C2.3.11
TIME DELAY ESTIMATION BASED NEURAL NETWORK CONTROL OF A FREE-FLOATING SPACE MANIPULATOR WITH BOUNDED CONTROL TORQUES
Xiaoyan Yu, Fuzhou University, China

IAC-22.C2.3.12
ENHANCING THE ISOLATION PERFORMANCE OF HEXAPOD PLATFORMS VIA ALTERNATIVE LINK JOINTS AND ELECTROMAGNETIC SHUNT DAMPERS
Vladimir Yotov, University of Auckland, New Zealand

C2.4. Advanced Materials and Structures for High Temperature Applications

September 20 2022, 10:15 — W06

Co-Chair(s): David E. Glass, National Aeronautics and Space Administration (NASA), United States; Thierry Pichon, ArianeGroup, France;
Rapporteur(s): Zijun Hu, China Academy of Launch Vehicle Technology (CALT), China;

IAC-22.C2.4.1
KEYNOTE: PAOLO SANTINI'S MEMORIAL LECTURE - ACTIVE DAMPING, VIBRATION ISOLATION AND SHAPE CONTROL OF SPACE STRUCTURES
André Preumont, University of Brussels, Belgium

IAC-22.C2.4.2
A NOVEL THERMAL PROTECTION SYSTEM VIA OPPOSING JET ARRAYS FOR REUSABLE REENTRY VEHICLES
Xiaoyan Li, CASC, China

IAC-22.C2.4.3
IN-SITU EMISSIVITY ASSESSMENT OF GRADE 5 TITANIUM IN HIGH-ENTHALPY FLOWS FOR CATALYSIS INVESTIGATIONS
Clemens Felix Kaiser, University of Stuttgart, Germany

IAC-22.C2.4.4
INNOVATIVE SUPERALLOY POWDER DESIGNED FOR ADDITIVE MANUFACTURING AND FOR HIGH TEMPERATURE USE UP TO 900°C
Solange Vivès, Aubert & Duval, France

IAC-22.C2.4.6
THERMO STRUCTURAL ANALYSIS AND TEST RESULTS OF SOLID ROCKET MOTOR SUBMERGED NOZZLE THROAT WITH 4-D CARBON-CARBON (C-C) AND GRAPHITE MATERIAL
Paul Murugan J, Vikram Sarabhai Space Centre, ISRO, Thiruvananthapuram, India

IAC-22.C2.4.7
PERFORMANCE ENHANCEMENT OF COOLER MICRO-VIBRATION ISOLATION SYSTEM BY IMPLEMENTING THERMAL DESIGN WITH GRAPHITE SHEET
Hye-In Kim, Chosun University, Korea, Republic of

IAC-22.C2.4.8
DESIGN OF THERMAL PROTECTION BASED ON CARBON AEROGEL COMPOSITE WITH OPTIMAL STRUCTURE
Margarita Salosina, Moscow Aviation Institute (National Research University), Russian Federation

IAC-22.C2.4.9
DEVELOPMENT OF THE ANALYSIS METHODS FOR SOLAR PROBE THERMAL PROTECTION
Alena V. Morzhukhina, Moscow Aviation Institute (National Research University, MAI), Russian Federation

IAC-22.C2.4.10
ANISOTROPIC HEAT-SHIELDING MATERIALS BASED ON GLASS CARBON AND PYROLYTIC GRAPHITE: EVALUATION OF EFFECTIVENESS IN CASE OF A RE-ENTRY MODULE OF A LUNAR PROBE
Victor Leonov, Bauman Moscow State Technical University, Russian Federation

IAC-22.C2.4.11
IMPROVEMENTS IN PI AEROGELS FOR FLEXIBLE THERMAL PROTECTION SYSTEM - HYPERSONIC INFLATABLE AERODYNAMIC DECELERATOR (HIAD)
Tushar Agarwal, Sardar Vallabhbhai National Institute of Technology Surat, India

IAC-22.C2.4.12
SPACE RIDER: THERMAL PROTECTION SYSTEM AND CONTROL SURFACES DESIGN, DEVELOPMENT AND QUALIFICATION STATUS
Giuseppe Rufolo, CIRA Italian Aerospace Research Centre, Italy

C2.5. Advancements in Materials Applications and Rapid Prototyping

September 20 2022, 15:00 — W06

Co-Chair(s): Giuliano Marino, CIRA Italian Aerospace Research Centre, Italy; Behnam Ashrafi, National Research Council, Canada;

Rapporteur(s): James Tucker, Southern Research Institute, United States; Raymond Clinton, NASA, United States;

IAC-22.C2.5.1
SANDWICH STRUCTURES WITH TPMS GRADED-CELLS CORE ARCHITECTURE
Pedro Alves, University of Brasilia, Brazil

IAC-22.C2.5.2
ADVANCED LEAST WEIGHT DESIGN OPTIMIZATION OF ADDITIVE MANUFACTURED SPACE ROVER STEERING BRACKETS
Leonardo Maria Festa, Politecnico di Torino, Italy

IAC-22.C2.5.3
LEVERAGING NOVEL PEEK ADDITIVE MANUFACTURING TECHNIQUES FOR A VIABLE MICRO LUNAR ROVER STRUCTURE
Marc Vanderbanck, University of British Columbia, Canada

IAC-22.C2.5.4
ADVANCEMENT OF EXTREME ENVIRONMENT ADDITIVELY MANUFACTURED ALLOYS FOR NEXT GENERATION SPACE PROPULSION APPLICATIONS
Paul Gradl, National Aeronautics and Space Administration (NASA), United States

IAC-22.C2.5.5
USE OF VOLUMETRIC ADDITIVE MANUFACTURING (VAM), AS AN IN-SPACE MANUFACTURING (ISM) TECHNOLOGY.
Taylor Waddell, University of California, Berkeley, United States

IAC-22.C2.5.6
NASA'S MOON-TO-MARS PLANETARY AUTONOMOUS CONSTRUCTION TECHNOLOGY PROJECT: OVERVIEW AND STATUS
Raymond G. Clinton, NASA Marshall, United States

IAC-22.C2.5.7
CHARACTERIZATION OF THE METHODS TO ACHIEVE A HIGH QUALITY ON THE RAPID PROTOTYPING OF 3D PRINTED SPACE SUITS: CASE OF STUDY NDX3 SPACE SUIT.
Hernan David Mateus Jimenez, University of North Dakota, United States

IAC-22.C2.5.8
SETTING UP A LUNAR DUST 3D SOLAR PRINTER IN COLLABORATION WITH ECAM STRASBOURG IMPROVEMENTS OF THE 3D SOLAR PRINTER AND ITS CAPABILITIES IN COMPARISON WITH OTHER ADDITIVE MANUFACTURING TECHNOLOGIES
Martina Dimoska, International Space University (ISU), France

IAC-22.C2.5.9
INTEGRATED TWIN-MIRROR MADE BY ADDITIVE MANUFACTURING
Marco Mulser, OHB System AG, Germany

IAC-22.C2.5.10
METAL ADDITIVE LAYER MANUFACTURING OF NANO-SATELLITE PRIMARY MECHANICAL STRUCTURE
Muhammad Shadab Khan, ENSAM, France

IAC-22.C2.5.11
ENDLESS PHOTOPOLYMER TUBE EXTRUSION FOR ON-ORBIT MANUFACTURING OF SATELLITE BOOMS
Michael Kringer, Munich University of Applied Sciences, Germany

C2.6. Space Environmental Effects and Spacecraft Protection

September 21 2022, 10:15 — W06

Co-Chair(s): Antonio Del Vecchio, CIRA Italian Aerospace Research Centre, Italy; Anatolii Lohvynenko, Yuzhnoye State Design Office, Ukraine;

Rapporteur(s): Kyeum-rae Cho, Pusan National University, Korea, Republic of;

IAC-22.C2.6.1
POURABLE AND DESTROYABLE COSMIC RAYS RADIATION SHIELD FOR SPACECRAFT
Jarred Novak, Wichita State University, United States

IAC-22.C2.6.2
DISCRETE CIRCUITS FOR LOW-BUDGET RADIATION TOLERANT SYSTEMS
Kyle J. Newman, Carnegie Mellon University, United States

IAC-22.C2.6.3
THERMAL PROTECTION AND GAMMA RAY SHIELDING ON A 60KG LUNAR ROVER
Farah Youssef, N/A, United Arab Emirates

IAC-22.C2.6.4
LEO ATOMIC OXYGEN INTERACTION EXPERIMENTS AT THE ANU NATIONAL SPACE TEST FACILITY
Joice Mathew, Australian National University (ANU), Australia

IAC-22.C2.6.5
TESTING THE NVIDIA JETSON XAVIER NX MODULE FOR THE SONATE-2 NANO SATELLITE MISSION
Tobias Herbst, Julius Maximilians Universität Würzburg, Germany

IAC-22.C2.6.6
LUNAR REGOLITH REPULSION MECHANISM FOR ROVER RADIATORS USING THE STANDING WAVE ELECTRIC CURTAIN METHOD
Oumar Touré, Polytechnique Montreal, Canada

IAC-22.C2.6.7
INVESTIGATING THE DURABILITY OF ALUMINUM OXIDE COATINGS FOR LUNAR DUST MITIGATION
Perla Latorre-Suarez, University of Central Florida (UCF), United States

IAC-22.C2.6.8
PROTECTION OF SATELLITE BY OWN MAGNETIC FIELD.
Abhishek Singh Gehlot, India

IAC-22.C2.6.9
PREDICT AND THERMAL ANALYSIS OF STUDENT CUBESAT 1U
João Victor Moreira, University of Brasilia, Brazil

IAC-22.C2.6.10
ORBITAL PARAMETERS AND THEIR EFFECTS ON HEAT LOADS OF A SATELLITE
Sanjay R, R V College of Engineering, Bengaluru, India

IAC-22.C2.6.11
TEMPERATURE DISTRIBUTION OF CUBESATS USING FINITE ELEMENT METHOD
Ashraf Khater, National Space Science Agency (NSSA), Bahrain

IAC-22.C2.6.12
INVESTIGATIONS OF THE COUPLED HEAT SOURCE AND HEAT SINK EFFECT ON COMBUSTIBLE SURFACES IN SPACE PROPULSION: IMPLICATION AND APPLICATIONS
Sarah Dias, SRM Institute of Science and Technology, India

C2.7. Space Vehicles – Mechanical/Robotic/Thermal/Fluidic Systems

September 21 2022, 15:00 — W06

Co-Chair(s): Brij Agrawal, Naval Postgraduate School, United States; Oleg Alifanov, MAI, Russian Federation;

Rapporteur(s): Guoliang Mao, Beijing Institute of Aerodynamics, China; Federica Angeletti, University of Rome "La Sapienza", Italy;

IAC-22.C2.7.1
MULTI-ENGINES CRYOGENIC STAGE LOW-COST STRUCTURES AND FLUID COMPONENTS FOR SMALL SATELLITES LAUNCH SERVICES
Antoine Fourcade, France

IAC-22.C2.7.2
EXPERIMENTAL VALIDATION OF A SOLID STATE MAGNETOCALORIC COOLER IN A SPACE ENVIRONMENT
Markus Huwald, Technische Universität Braunschweig, Institute of Space Systems, Germany

IAC-22.C2.7.3
ANALYSIS OF EFFECTIVE THERMAL CONTROL DESIGNS FOR SMALL SATELLITES
Anvesha Yadav, R.V.College of Engineering, India

IAC-22.C2.7.4
POGO CHARACTERISTICS AND EXPERIMENTAL ANALYSIS OF THE FIRST CHINESE LIQUID OXYGEN-METHANE LAUNCHER "ZQ-2"
Wenbin Cao, LandSpace Technology Corporation Ltd., China

IAC-22.C2.7.5
THERMAL BALANCE AND THERMAL VACUUM TEST OF THE CBERS-4A SATELLITE PERFORMED AT INPE, BRAZIL.
Marcio Bueno dos Santos, Instituto Nacional de Pesquisas Espaciais (INPE), Brazil

IAC-22.C2.7.6
EFFECTIVENESS OF A BELLY FLAP IN MARTIAN ATMOSPHERE
Rajesh Yadav, University of Petroleum and Energy Studies, India

IAC-22.C2.7.7
TEMPERATURE DISTRIBUTION ALONG A COMPOSITE AND METALLIC SHELL IN CRYOGENIC ENVIRONMENT
Prashumn Prashumn, Indian Space Research Organization (ISRO), Liquid Propulsion Systems Centre (LPSC), India

IAC-22.C2.7.8
INFLUENCE OF HYDROGEN AND OXYGEN SELF-PRESSURIZING TEMPERATURE ON HEAT TRANSFER OF PROPELLANT TANK
Liqiang Ai, China Academy of Launch Vehicle Technology (CALT), China

IAC-22.C2.7.9
DESIGNING THE FIRST THREE-SECTION ARM ON A CUBESAT
Juliette Lacasse, Université de Sherbrooke, Canada

IAC-22.C2.7.10
STRUCTURAL DESIGN OF A CUBESAT TYPE NANOSATELLITE FOR ACADEMIC PURPOSES.
Edwin Cruz Martínez, Mexico

IAC-22.C2.7.11
ADDITIVELY MANUFACTURED HIGH-POWER-DENSITY COLD PLATES
Jana Catuche, United States

IAC-22.C2.7.12 (non-confirmed)
THE FABRICATION AND APPLICATION OF WATER SUBLIMATOR HEAT DISSIPATION SYSTEM IN CHANG'E 5 LUNAR PROBE
Yuying WANG, Beijing Institute of Spacecraft System Engineering, China Academy of Space Technology, China

C2.8. Specialized Technologies, Including Nanotechnology

September 22 2022, 10:15 — W06

Co-Chair(s): Mario Marchetti, Associazione Italiana di Aeronautica e Astronautica (AIDAA), Italy; Pierre Rochus, CSL (Centre Spatial de Liège), Belgium;

Rapporteur(s): Bangcheng Ai, China Aerospace Science and Industry Corporation, China;

IAC-22.C2.8.1
A NOVEL APPROACH FOR PAYLOAD DESIGN TO STREAMLINE DEEP SPACE MISSIONS : MOLECULAR NANOSCIENCE
Anushree Maligehalli Shadaksharaiah, Ramaiah Institute of Technology, India

IAC-22.C2.8.2
DESIGN OF AN INNOVATIVE MAGNETIC-NANOFLUID HEAT PIPE FOR SPACE APPLICATIONS
Haider Ali Khan, Khalifa University of Science and Technology (KUST), United Arab Emirates

IAC-22.C2.8.3
INFLUENCE OF BEAM VELOCITY / INCIDENT ANGLE AT MATERIALS SURFACE OF HYPERHERMAL AO ON NANO-SCALE SHAPE FORMATION ESTIMATED BY MOLECULAR DYNAMICS
Miki Nishimoto, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.C2.8.5
NEW ADVANCED COATING FOR TITANIUM AND CARBON/ CARBON SPACE ENVIRONMENT PROTECTIVE STRUCTURES FOR CUBESATS, SUBMITTED TO ATOMIC OXYGEN EXPOSURE
Andrea Delfini, Sapienza University of Rome, Italy

IAC-22.C2.8.6
A NOVEL PCM HEAT SWITCH FOR FUTURE SPACECRAFT MISSIONS
Jakub Mašek, Brno University of Technology, Czech Republic

IAC-22.C2.8.7
MECHANICAL DEVELOPMENT, PRODUCTION AND TESTING OF A MINIATURIZED HIGH FIDELITY ACCELEROMETER FOR A CUBESAT
Ángel M. Zarate-Villazon, Universidad Panamericana de Ciudad de México, Mexico

IAC-22.C2.8.8
MEETING THE LATEST CHALLENGES OF HOLD-DOWN AND RELEASE MECHANISMS (HDRM): COMBINING FLIGHT HERITAGE AND INNOVATION INTO AN INTEGRATED APPROACH
Sébastien Perez, PYROALLIANCE, France

IAC-22.C2.8.9
METHODOLOGY FOR CONDUCTING COMPLEX STUDIES OF THE DYNAMICS OF SPACECRAFT MOTION DURING DESCENT IN THE PLANET'S ATMOSPHERE
Vsevolod Koryanov, Bauman Moscow State Technical University, Russian Federation

IAC-22.C2.8.10
ESTIMATION OF A CRAIG-BAMPTON EQUIVALENT MODEL USING A HYBRID PARTICLE SWARM OPTIMIZATION FOR DCLA PURPOSES
Corinna Cerini, University of Auckland, New Zealand

IAC-22.C2.8.11
POLYMERS FOR IN-SPACE/ON-PLANET MANUFACTURING AND RECYCLING
Anna Dauriskikh, Sonaca Space GmbH, Germany

C2.9. Smart Materials and Adaptive Structures

September 22 2022, 13:45 — W06

Co-Chair(s): Pavel Trivailo, RMIT University (Royal Melbourne Institute of Technology), Australia; Hiroshi Furuya, Tokyo Institute of Technology, Japan;

Rapporteur(s): Paolo Gaudenzi, Sapienza University of Rome, Italy; Élcio Jeronimo de Oliveira, INNOSPACE Co. Ltd., Brazil;

IAC-22.C2.9.1
APPLICATION OF SHAPE MEMORY ALLOY IN HYPERSONIC VEHICLES WITH SCRAMJET TECHNOLOGY
Alana Rocha, Instituto Tecnológico de Aeronáutica (ITA), Brazil

IAC-22.C2.9.2
INTEGRATED ATTITUDE AND SHAPE CONTROL FOR ORIGAMISATS WITH VARIABLE SURFACE REFLECTIVITY
Bonar Robb, University of Glasgow, United Kingdom

IAC-22.C2.9.3
EXPERIMENTS OF A ROBUST CONTROLLER FOR ACTIVE VIBRATION REDUCTION OF SPACE STRUCTURES WITH LINEAR AND PATCH PZT DEVICES
Paolo Iannelli, Sapienza University of Rome, Italy

IAC-22.C2.9.4
SHAPE CHANGING ORIGAMI STRUCTURES FOR ADAPTIVE SPACE STRUCTURE APPLICATIONS
Maria Sakovsky, Stanford University, United States

IAC-22.C2.9.5
SMART OPTICAL MATERIAL, ALUMINUM DOPED-ZINC OXIDE INVESTIGATED BY MODIFIED VASE FOR SPACE EXPLORATION
John Patrick Harris, Norfolk State University, United States

IAC-22.C2.9.6
SELF-HEALING POLYMERS FOR SPACE: A STUDY ON AUTONOMOUS REPAIR PERFORMANCE AND RESPONSE TO SPACE RADIATION
Laura Pernigoni, Politecnico di Milano, Italy

IAC-22.C2.9.7
ADAPTIVE DENSITY MINIMAL SURFACES: A NEW METHOD FOR THE DESIGN OF HIGH-PERFORMANCE MULTI-FUNCTIONAL 3D-PRINTED SPACE COMPONENTS.
Christian Waldvogel, Switzerland

IAC-22.C2.9.8
SMALL-ELF TELESCOPE - STRUCTURAL APPLICATION OF TENSEGRITY AND OTHER TECHNIQUES FOR LARGE, LIGHT-WEIGHT TELESCOPES
Ye Zhou, Dynamic Intelligent Structures Ltd., Canada

IAC-22.C2.9.9
RELATIONSHIP BETWEEN STOWAGE CONDITIONS AND SELF-DEPLOYMENT PROPERTIES FOR SHAPE MEMORY POLYMER CONVEX SHELL
Atsuhiko Senba, Meijo University, Japan

IAC-22.C2.9.10
EXPERIMENTAL INVESTIGATIONS: DYNAMIC ANALYSIS OF 150-MEMBER SPHERICAL TENSEGRITY TO IDENTIFY ITS CHARACTERISTICS FOR SPACE APPLICATION
Kanjuro MAKIHARA, Tohoku University, Japan

IAC-22.C2.9.11
THE BINGHAM LANDER: NATURE-BASED INFLUENCES ON MONOCOQUE SPACECRAFT DESIGNS
Shayne Beegadur, Conceptual Exploration Research, United Kingdom

C3. IAF SPACE POWER SYMPOSIUM

Coordinator(s): John C. Mankins, ARTEMIS Innovation Management Solutions, LLC, United States; Koji Tanaka, Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency, Japan;

C3.1. Solar Power Satellite

September 19 2022, 10:15 — W02

Co-Chair(s): John C. Mankins, ARTEMIS Innovation Management Solutions, LLC, United States; Ming Li, China Academy of Space Technology (CAST), China;

Rapporteur(s): Leopold Summerer, European Space Agency (ESA), The Netherlands; Koji Tanaka, Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency, Japan;

IAC-22.C3.1.1
SPACE-BASED SOLAR POWER PLANTS - OUTCOME OF A THOROUGH COST BENEFIT ANALYSIS IN THE LIGHT OF ACHIEVING THE NET-ZERO CO2 TARGET BY 2050
Leopold Summerer, European Space Agency (ESA), The Netherlands

IAC-22.C3.1.2 (non-confirmed)
AN UPDATED CONCEPT DESIGN ON MR-SPS
Xinbin Hou, CAST, China

IAC-22.C3.1.3
THE UK SPACE ENERGY INITIATIVE – TOWARDS A PRACTICAL SPACE BASED POWER SYSTEM FOR THE NET ZERO ERA
Craig Underwood, Surrey Space Centre, University of Surrey, United Kingdom

IAC-22.C3.1.4
TO STUDY THE PROSPECTS OF LAUNCHING SEVERAL SOLAR POWER SATELLITE FOR POWER GENERATION IN SPACE
Atrayee Basu, India

IAC-22.C3.1.5
PROPOSAL OF THE FIRST KOREAN PILOT SYSTEM FOR SPACE BASED SOLAR POWER(SBSP)
Joon Min Choi, Korea Aerospace Research Institute (KARI), Korea, Republic of

IAC-22.C3.1.6 (non-confirmed)
ESTABLISHING A NATIONAL STRATEGY FOR SPACE SOLAR POWER
Steve Wolfe, United States

IAC-22.C3.1.7
MEETING NET-ZERO TARGETS USING BLENDED FINANCING AND SPACE BASED SOLAR POWER
Kevin Barry, LightBridge Strategic Consulting, United States

IAC-22.C3.1.8
FORMING AN INTERNATIONAL SPACE SOLAR POWER PROGRAM
John C. Mankins, ARTEMIS Innovation Management Solutions, LLC, United States

IAC-22.C3.1.9
SPS-ALPHA: EVOLVING MARKETS, CAPABILITIES AND CONCEPTS OF OPERATIONS FOR MODULAR & PRACTICAL SPACE SOLAR POWER (SSP)
John C. Mankins, ARTEMIS Innovation Management Solutions, LLC, United States

IAC-22.C3.1.10
A BRIEF REVIEW AND RECOMMENDATIONS FOR THE DEVELOPMENT OF SPACE SOLAR POWER SATELLITES
Shubham Gosavi, India

IAC-22.C3.1.11
RELIABLE DESIGN AND VERIFICATION FOR SPACE SOLAR POWER APPLICATION
Dazheng Li, China Academy of Space Technology, China

IAC-22.C3.1.12
SOLAR POWER SATELLITES – IMPLICATIONS OF ROTARY JOINTS
Alex Ellery, Carleton University, Space Exploration and Engineering Group, Canada

IAC-22.C3.1.13
HIGH ORBITING CENTRAL SOLAR POWER STATION FOR WIRELESS POWER TRANSMISSION
Roshan Prince, ASTROPHYSICIST, India

C3.2. Wireless Power Transmission Technologies and Application

September 19 2022, 15:00 — W02

Co-Chair(s): Nobuyuki Kaya, Kobe University, Japan; Ming Li, China Academy of Space Technology (CAST), China;

Rapporteur(s): Massimiliano Vasile, University of Strathclyde, United Kingdom; Haroon B. Oqab, Space Canada Corporation, Canada;

IAC-22.C3.2.1
TOWARDS THE COMMERCIAL DEVELOPMENT OF ORBITING REFLECTORS: A TECHNOLOGY DEMONSTRATION ROADMAP
Andrea Viale, University of Glasgow, United Kingdom

IAC-22.C3.2.2
REMOTE POWER SERVICES: FREQUENCY AGNOSTIC SOLUTIONS FOR THE TRANSMISSION OF POWER AND PROVISION OF ANCILLARY SERVICES
Gary Barnhard, XISP-Inc, United States

IAC-22.C3.2.4
THE OUTLINE AND THE CURRENT STATUS OF THE POWER TRANSMISSION SYSTEM DEVELOPMENT PROJECT FOR THE REALIZATION OF THE SSPS
Kenji Sasaki, Japan Space Systems, Japan

IAC-22.C3.2.5
SPACE STATION FREEDOM REDUX: A PROPOSAL TO REARCHITECT THE INTERNATIONAL SPACE STATION TO SERVE AS A SPACE SOLAR POWER TECHNOLOGY DEVELOPMENT, DEMONSTRATION, AND DEPLOYMENT PLATFORM
Gary Barnhard, XISP-Inc, United States

IAC-22.C3.2.6
SPACE BASED SOLAR POWER SYSTEM: SOLAR POWER COLLECTION IN LEO AND TRANSMISSION VIA ELECTROMAGNETIC WAVES
Harshit Goel, University of Petroleum and Energy Studies, India

IAC-22.C3.2.7
LASER-MICROWAVE ENERGY TRANSMISSION: A HYBRID SBSP SOLUTION FOR SUSTAINABLE ANTARCTIC APPLICATION
Umberto Cammarata, Sapienza University of Rome, Italy

IAC-22.C3.2.8
LEO SATELLITE SWARM FOR SUSTAINABLE UTILITY OF EXISTING GROUND-BASED SOLAR INFRASTRUCTURES: ENERGY, ECONOMICS AND MISSION DESIGN VALIDATION
Chesler Thomas, University Bourgogne Franche-Comté, France

IAC-22.C3.2.9
REAL-TIME TARGET TRACKING ENERGY DELIVERY OF ACTIVE ARRAY WIRELESS POWER TRANSFER SYSTEM
Sang-Hwa Yi, Korea Electrotechnology Research Institute (KERI), Korea, Republic of

IAC-22.C3.2.10
USING PHOTOELECTRIC EFFECT ON HIGH TEMPERATURE SUPERCONDUCTORS/PHOTOELECTRIC MATERIALS FOR WIRELESS TRANSMISSION OF POWER WITH VARIABLE FREQUENCY RANGE.
Abhishek Singh, National Space Society (USA) -Mumbai chapter, India

IAC-22.C3.2.11
INTERNATIONAL SPACE SOLAR POWER STUDENT COMPETITION PAPER NO. 1
Anna Mauro, ORIS – Orbital Recharge in Space, Italy

IAC-22.C3.2.12
INTERNATIONAL SPACE SOLAR POWER STUDENT COMPETITION PAPER NO. 2
Ricardo Pereira, Instituto de Telecomunicações (Portugal), Portugal

IAC-22.C3.2.13
INTERNATIONAL SPACE SOLAR POWER STUDENT COMPETITION PAPER NO. 3
Yusuke Kishida, Hosei University, Japan

C3.3. Advanced Space Power Technologies

September 21 2022, 10:15 — W07

Co-Chair(s): Matthew Perren, Airbus Defence & Space, United Kingdom; Gary Barnhard, XISP-Inc, United States;

Rapporteur(s): Lee Mason, National Aeronautics and Space Administration (NASA), Glenn Research Center, United States; Koji Tanaka, Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency, Japan;

IAC-22.C3.3.1
HIGH TEMPERATURE SUPERCONDUCTORS: ENABLING TECHNOLOGY FOR NEXT GENERATION SPACE SYSTEMS
Adam Baker, Rocket Engineering Ltd., United Kingdom

IAC-22.C3.3.2 (non-confirmed)
LOSS ASSESSMENT FOR SOLAR PANEL PERFORMANCE IN LEO
Nassima Khorchef, Agence Spatiale Algérienne (ASAL), Algeria

IAC-22.C3.3.3
REGENERATIVE FUEL CELL SYSTEMS FOR ENERGY STORAGE ON THE MOON
CEDRIC DUPONT, Air Liquide, France

IAC-22.C3.3.4
APPLICATION OF HIGHLY EFFICIENT AND FLEXIBLE METAL HALIDE PEROVSKITE SOLAR CELLS FOR LOW INTENSITY CUBESAT MISSIONS
PV PRANAV, R V College of Engineering, Bengaluru, India

IAC-22.C3.3.5
DEVELOPMENT OF CUBESAT BATTERY-PACK DESIGNED FOR SPACE APPLICATION AND INTEGRATED IN PEDAGO-SAT MISSION
Aissa BOUTTE, Agence Spatiale Algérienne (ASAL), Algeria

IAC-22.C3.3.6
DEVELOPMENT AND QUALIFICATION OF A SCALABLE COTS-BASED LI-ION BATTERY RESOURCE MANAGER FOR SATELLITES IN LOW EARTH ORBIT
Marius Eilenberger, DLR (German Aerospace Center), Germany

IAC-22.C3.3.7
MORE POWER FOR SMALL SATELLITES: AN OVERVIEW OF A ONE-SQUARE-METER 100W DEPLOYABLE SOLAR ARRAY STORABLE IN A 1U FORM FACTOR
Antonio Pedivellano, Dcubed (Deployables Cubed GmbH), Germany

IAC-22.C3.3.8
SIX YEARS OF SPACEFLIGHT RESULTS FROM THE ALSAT-1N THIN-FILM SOLAR CELL (TFSC) EXPERIMENT
Craig Underwood, Surrey Space Centre, University of Surrey, United Kingdom

IAC-22.C3.3.9
EFFECT OF ANTI-REFLECTIVE COATING ON SOLAR CELLS
Chaitanya Kasambe, Dhruva Space, India

IAC-22.C3.3.10
DESIGN AND DEVELOPMENT OF A SCALABLE, MODULAR AND EFFICIENT MAXIMUM POWER POINT TRACKING STAGE FOR A CUBESAT EPS
Egor Tamarin, AAC Hyperion, The Netherlands

IAC-22.C3.3.11
DESIGN AND IMPLEMENTATION OF AN ADVANCED POWER SUPPLY SYSTEM FOR 10KW PAYLOAD COMMUNICATION SATELLITE
Yu Wentao, China Academy of Space Technology (CAST), China

IAC-22.C3.3.12
RESULTS OF BIRDS-4 SATELLITE ON-ORBIT POWER PERFORMANCE FOR ENHANCING 1U SATELLITE POWER SYSTEM RELIABILITY
Hari Ram Shrestha, LaSEINE, Kyushu Institute of Technology, Japan

IAC-22.C3.3.13
SYNTHESIS AND CHARACTERIZATION OF PECTIN FROM FOOD WASTE FOR ELECTROLYTE GELATION AND CO2 REDUCTION
Nathan Wilson, Texas Tech University, United States

C3.4. Space Power System for Ambitious Missions

September 22 2022, 13:45 — W02

Co-Chair(s): Massimiliano Vasile, University of Strathclyde, United Kingdom; Shoichiro Mihara, Japan Space Systems, Japan;
Rapporteur(s): Xinbin Hou, CAST, China; Koji Tanaka, Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency, Japan;

IAC-22.C3.4.1
POWER REQUIREMENTS AND TECHNOLOGIES FOR GRAM-SCALE INTERSTELLAR SPACECRAFT
Mason Peck, Cornell University, United States

IAC-22.C3.4.2
RESEARCH & DEVELOPMENT OF NEW CONCEPT OF ENERGY SUPPLY SYSTEM APPLIED TO MARS(ADVANCED IN RENEWABLE ENERGY)
Riyabrata Mondal, TU Bergakademie Freiberg (TUBAF), Germany

IAC-22.C3.4.3
PYRITE FES2 SOLAR CELLS FABRICATION FOR LUNAR BASE ENERGY PRODUCTION
Katriin Kristmann, Tallinn University of Technology, Estonia

IAC-22.C3.4.4
DEVELOPMENT OF LOW COST LIGHT WEIGHT SMALL SAR SATELLITE, STRIX SERIES
Koji Tanaka, Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency, Japan

IAC-22.C3.4.5
MODULAR DESIGN OF A SPACE MW-LEVEL POWER SYSTEM\ USING A MOLTEN SALT REACTOR
Nicolas Rey-Tornero, Commissariat à l'énergie atomique et aux énergies alternatives (CEA), France

IAC-22.C3.4.6
LUNAR SOLAR-THERMAL ENERGY STORAGE: IN-SITU RESOURCE UTILIZATION FOR ENERGY STORAGE
Jessie Ringle, United States

IAC-22.C3.4.7
MAIN SYSTEM ELECTROLYSIS AND PURIFICATION (MSEP) FOR FOR A 60KG LUNAR ROVER(MSEP60): EFFICIENT-POWER GENERATION ON A LUNAR-FITTED FUEL CELL
Farah Youssef, N/A, United Arab Emirates

IAC-22.C3.4.8
RELIABLE AVIONICS POWER SYSTEM FOR COMMERCIAL AUTONOMOUS SCIENCE (CAS) MICRO ROVERS
Saksham Khurana, Carnegie Mellon University, United States

IAC-22.C3.4.9
MATURING WIRELESS POWER TRANSMISSION TECHNOLOGY FOR SPACE: MILITARY, CIVILIAN, COMMERCIAL AND INTERNATIONAL ASPECTS
Yaofeng Chan, Singapore Institute of Management, Singapore, Republic of

IAC-22.C3.4.10
SOLAR-POWERED ENERGY GENERATION IN SPACE FOR MOON AND MARS
Anumadhubala Rajakumari, ASTROPHYSICIST, India

IAC-22.C3.4.11
THE NEW CONCEPT OF SOLAR ENERGY SUPPLY SYSTEM APPLIED TO MARS
Riyabrata Mondal, TU Bergakademie Freiberg (TUBAF), Germany

IAC-22.C3.4.13
"THE BEGINNING ENERGY PLAN"
Sebastian Alba Martinez, Instituto Politécnico Nacional, Mexico

C4. IAF SPACE PROPULSION SYMPOSIUM

Coordinator(s): Angelo Cervone, Delft University of Technology (TU Delft), The Netherlands; Elena Toson, Space Generation Advisory Council (SGAC), Italy; Riheng Zheng, Beihang University, China; Christophe Bonhomme, Centre National d'Etudes Spatiales (CNES), France;

C4.1. Liquid Propulsion (1)

September 18 2022, 15:15 — W08

Co-Chair(s): Christophe Bonhomme, Centre National d'Etudes Spatiales (CNES), France; Markus Jaeger, [unlisted], Germany;
Rapporteur(s): Ozan Kara, Space Generation Advisory Council (SGAC), Turkey; Jerome Breteau, European Space Agency (ESA), France;

IAC-22.C4.1.1
ARIANE 6 UPPER LIQUID PROPULSIVE MODULE QUALIFICATION
Sven Dietershagen, ArianeGroup, Germany

IAC-22.C4.1.2
LIQUID THROTTLEABLE ENGINE UTILIZING HIGH-TEST PEROXIDE - GREEN STORABLE PROPULSION SOLUTION FOR FUTURE SPACE TRANSPORTATION
Dawid Cieslinski, Łukasiewicz Research Network – Institute of Aviation, Poland

IAC-22.C4.1.3
LIQUID UPPER STAGE DEMONSTRATOR ENGINE (LUMEN): COMPONENT TEST RESULTS AND PROJECT PROGRESS
Tobias Traudt, DLR (German Aerospace Center), Germany

IAC-22.C4.1.4
BOREAS LIQUID PROPULSION ROCKET ENGINE PLATFORM: RECENT ADVANCEMENT IN MODELLING AND TESTING ACTIVITIES
Marco Galeotta, Centre National d'Etudes Spatiales (CNES), France

IAC-22.C4.1.5
PROGRESS ON LOX-LNG PROPULSION TECHNOLOGY AT ISRO
Devakumar Thammisetty, Indian Space Research Organization (ISRO), Liquid Propulsion Systems Centre (LPSC), India

IAC-22.C4.1.6
EXPERIMENTAL RESEARCH ON ATOMIZATION PERFORMANCE OF LIQUID-CENTERED DOUBLE-PHASE PINTLE INJECTOR FOR LRE
Pu Shi, Science and Technology on Combustion, Internal Flow and Thermal-structure Laboratory, Northwestern Polytechnical University, China

IAC-22.C4.1.7
PROMETHEUS: PRECURSOR OF NEW LOW-COST ROCKET ENGINE FAMILY
Pamela SIMONTACCHI, ArianeGroup SAS, France

IAC-22.C4.1.8
NUMERICAL INVESTIGATION OF COMBUSTION EQUILIBRIUM IN THRUST CHAMBERS OF LIQUID ROCKET ENGINES
Nijat Abdulla, National Aviation Academy - Azerbaijan, Azerbaijan

IAC-22.C4.1.9
FROM TECHNOLOGY DEMONSTRATION TO A 5 KN SPACE PROPELLANT ENGINE FAMILY - SPE-BERTA
Jan Alting, ArianeGroup, Germany

IAC-22.C4.1.10
DEVELOPMENT OF AN ADDITIVE MANUFACTURING LIQUID METHANE AND OXYGEN STAR1 ENGINE FOR SIRIUS1 FIRST STAGE
Riccardo Esposito, Sirius Space Services, France

C4.2. Liquid Propulsion (2)

September 20 2022, 10:15 — W08

Co-Chair(s): Angelo Cervone, Delft University of Technology (TU Delft), The Netherlands; Annafederica Urbano, ISAE - Institut Supérieur de l'Aéronautique et de l'Espace, France;

Rapporteur(s): Christian Bach, Dresden University of Technology (DUT) / Technische Universität Dresden, Germany; Martin Velander, GKN Aerospace Engine Systems, Sweden;

IAC-22.C4.2.1
CHARACTERIZATION OF RESIDUAL INCONEL PARTICLES IN ADDITIVELY MANUFACTURED ROCKET ENGINES
Charlie Whitesell, Viterbi School of Engineering, USC, United States

IAC-22.C4.2.2
INTEGRAL CHANNEL NOZZLES AND HEAT EXCHANGERS USING ADDITIVE MANUFACTURING DIRECTED ENERGY DEPOSITION NASA HR-1 ALLOY
Paul Gradl, National Aeronautics and Space Administration (NASA), United States

IAC-22.C4.2.3
SUMMARY OF INITIAL FEASIBILITY STUDIES ON THE USE OF LASER POWDER BED FUSION IN NOZZLE EXTENSION APPLICATIONS
Christo Dordlofva, GKN Aerospace Engine Systems, Sweden

IAC-22.C4.2.4
COMBUSTION PERFORMANCE ENHANCEMENT OF A HYDROGEN PEROXIDE BI-PROPELLANT THRUSTER USING THE FLUIDIC OSCILLATOR KEROSENE INJECTOR
Sangwoo Jung, Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of

IAC-22.C4.2.5
TESTING OF A SMALL HTP MONOPROPELLANT THRUSTER FOR SPACE APPLICATIONS
Dror Nissan, CISAS – "G. Colombo" Center of Studies and Activities for Space, University of Padova, Israel

IAC-22.C4.2.6
AN EFFICIENT NUMERICAL APPROACH FOR THERMAL CHARACTERIZATION IN LIQUID ROCKET ENGINES
Arianna Remiddi, Sapienza University of Rome, Italy

IAC-22.C4.2.7
SURROGATE MODELS BASED ON HIGH FIDELITY NUMERICAL SIMULATIONS FOR ROCKET ENGINES INJECTOR DESIGN
Jose Felix Zapata Usandivaras, ISAE-Supaero University of Toulouse, France

IAC-22.C4.2.9
EXPERIMENTAL VERIFICATION OF FLUTTER LIMITS FOR A MISTUNED SUPERSONIC TURBINE BLISK
Clas Andersson, GKN Aerospace Engine Systems, Sweden

IAC-22.C4.2.10 (non-confirmed)
METHANE-OXYGEN SPACE ROCKETS TEST BENCH H-IMP ITALIAN FACILITY NON-STATIONARY PERFORMANCES NUMERICAL SIMULATION
Federico De Filippis, CIRA Italian Aerospace Research Centre, Italy

C4.3. Solid and Hybrid Propulsion (1)

September 19 2022, 10:15 — W08

Co-Chair(s): Stéphane Henry, ArianeGroup, France; Mario Kobald, Hylmpulse Technologies GmbH, Germany;
Rapporteur(s): Toru Shimada, Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency, Japan; Jean-Claude Traineau, Office National d'Etudes et de Recherches Aéronautiques (ONERA), France;

IAC-22.C4.3.1
KEYNOTE: P120C SOLID ROCKET MOTOR: DEVELOPMENT AND QUALIFICATION OF A COMMON PROPULSIVE SRM FOR ARIANE 6 AND VEGA C
Dario Scoccimarro, European Space Agency (ESA), France

IAC-22.C4.3.2
ZEFIRO 40: DEVELOPMENT AND QUALIFICATION OF VEGA C 2ND STAGE SOLID ROCKET MOTOR
Dario Scoccimarro, European Space Agency (ESA), France

IAC-22.C4.3.3
ANALYSIS OF PRESSURE OSCILLATIONS WITHIN VEGA LAUNCHERS FIRST STAGE SRMS
Marco Grossi, Sapienza University of Rome, Italy

IAC-22.C4.3.4
SYNTHESIS OF THE DEVELOPMENT OF THE P120C SRM NOZZLE FOR ARIANE 6 AND VEGA-C AND WAY FORWARD FOR P120C+ NEEDS
Philippe Cloutet, ArianeGroup, France

IAC-22.C4.3.5
STUDENT ACTIVITIES IN MANUFACTURING AND LAUNCHING ADVANCED SMALL-SCALE SOLID-PROPELLANT ROCKETS
Mario Tindaro Migliorino, Sapienza University of Rome, Italy

IAC-22.C4.3.6
RAVEN: TEST BENCH AND TEST PLAN DEVELOPMENT
Jessica McKenna, Luleå Technical University, Sweden

IAC-22.C4.3.7
A NEW SYSTEM DESIGN TOOL FOR A HYBRID ROCKET ENGINE APPLICATION
Elena Quero Granada, ONERA - The French Aerospace Lab, France

IAC-22.C4.3.8
DEVELOPMENT OF A STUDENT-DESIGNED SUPERCHARGED HYBRID ROCKET ENGINE TEST STAND
Brendan Griffin, Faculty of Engineering, Carleton University, Canada

IAC-22.C4.3.9
CHARACTERIZATION OF HYBRID ROCKET PARAFFIN-BASED FUELS
Artur Bertoldi, University of Brasilia, Brazil

IAC-22.C4.3.10
EFFECT OF MIXING DEVICES ON COMBUSTION EFFICIENCY IN PARAFFIN/N₂O BASED HYBRID ROCKET MOTORS
Ozan Kara, Space Generation Advisory Council (SGAC), Turkey

C4.4. Solid and Hybrid Propulsion (2)

September 20 2022, 10:15 — W05

Co-Chair(s): Didier Boury, ArianeGroup SAS, France; Adam Okninski, Łukasiewicz Research Network – Institute of Aviation, Poland;

Rapporteur(s): Christophe Bonhomme, Centre National d'Etudes Spatiales (CNES), France; Arif Karabeyoglu, Koc University, Turkey;

IAC-22.C4.4.1
PRESSURE OSCILLATION IN P120C SRM: WHAT HAD TO BE PROVED
Severine Larrieu, ArianeGroup, France

IAC-22.C4.4.2
THE THREE-DIMENSIONAL COMBUSTION FLAME OF MICRON ALUMINUM PARTICLES BASE ON COMPUTED TOMOGRAPHY OF CHEMILUMINESCENCE (CTC)
Bingning JIN, Northwestern Polytechnical University, China

IAC-22.C4.4.3
STUDY OF THE INFLUENCE OF THE ELECTRIC FIELD ON THE INCIDENTAL IGNITION OF ALUMINIZED COMPOUND SOLID PROPELLANT VIA ELECTROSTATIC DISCHARGE
Rene Gonçalves, Aeronautic Institute of Technology (ITA), Brazil

IAC-22.C4.4.4
FRAMEWORK FOR THE DESIGN OF SOLID PROPELLANTS VIA FUNCTIONALLY GRADED, ADDITIVELY MANUFACTURED NANOENERGETIC MATERIALS
Connor MacRobbie, University of Waterloo, Canada

IAC-22.C4.4.5
EXPERIMENTAL INVESTIGATION OF DIFFERENT PROPELLANTS AND EXPANDABLE GRAPHITE ADDITIVES FOR CONTROLLING ROCKET MOTOR THRUST
Gabriele Muller, TECHNION - Israel Institute of Technology, Israel

IAC-22.C4.4.6
CENTRIFUGAL CASTING OF PARAFFIN WAX: NUMERICAL ANALYSIS OF THE INFLUENCE OF CASTING TUBE ASPECT RATIO
Gladys Ngetich, Massachusetts Institute of Technology (MIT), United States

IAC-22.C4.4.7
EXPERIMENTAL INVESTIGATION AND NUMERICAL SIMULATION ON THROTTLEABLE PINTLE-CENTRIFUGAL INJECTOR FOR HYBRID ROCKET MOTOR
Tianwen Li, School of Astronautics, Beihang University, China

IAC-22.C4.4.8
STATIC AND RE-IGNITION TEST OF HYPERGOLIC HYBRID ROCKET USING HYDROGEN PEROXIDE OXIDIZER
Junyeong Jeong, Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of

IAC-22.C4.4.9
PREDICTION OF HYBRID ROCKET NOZZLE BEHAVIOUR UNDER HIGH TEMPERATURE OXYGEN RICH ENVIRONMENT
Sule Ozturk, Deltav Space Technologies, Inc., Turkey

IAC-22.C4.4.10
CRYOGENIC PUMP DESIGN AND TESTING FOR HYBRID ROCKET APPLICATIONS
Berkay Terzi, Deltav Space Technologies, Inc., Turkey

C4.5. Electric Propulsion (1)

September 19 2022, 15:00 — W08

Co-Chair(s): Garri A. Popov, Research Institute of Applied Mechanics and Electrodynamics (RIAME), MAI, Russian Federation; Mariano Andreucci, Independent consultant, Italy;
Rapporteur(s): Vincent Guyon, Safran Aircraft Engines, France; Vito Salvatore, CIRA Italian Aerospace Research Center, Capua, Italy;

IAC-22.C4.5.1
HIGH TEMPERATURE SUPERCONDUCTING MAGNET BASED ELECTRIC PROPULSION DERIVED FROM FUSION ENERGY TECHNOLOGY
Adam Baker, Rocket Engineering Ltd., United Kingdom

IAC-22.C4.5.2 (non-confirmed)
WATER ELECTROLYSIS PROPULSION DEVELOPMENT FOR SMALL-SCALE SATELLITES
Razvan Nicoara, COMOTI, Romania

IAC-22.C4.5.3
PPS[®]X00 HALL THRUSTER : A GAME CHANGER TO SECURE LEO/ MEO CONSTELLATIONS PROPULSION
Claude-Martin Brito, SAFRAN, France

IAC-22.C4.5.4
ALTERNATIVE PROPELLANTS FOR LOW-POWER PULSED PLASMA THRUSTER
Daria Fedorova, Bauman Moscow State Technical University, Russian Federation

IAC-22.C4.5.5
LAB6 HOLLOW CATHODE WITH WIDE RANGE CURRENT OPERATION
Stanislav Tolok, Flight Control LLC, Ukraine

IAC-22.C4.5.6
WATER ION THRUSTER FOR CUBESAT: LABORATORY MODEL SYSTEM EVALUATION
Ryo Minematsu, University of Tokyo, Japan

IAC-22.C4.5.7
COMPARATIVE EXPERIMENTAL ANALYSIS OF PERSPECTIVE MPPT PROPELLANTS EVAPORATION BY UV-VUV RADIATION
Evgenii Chebykin, Bauman Moscow State Technical University, Russian Federation

IAC-22.C4.5.8
OPERATIONAL REALITIES OF ELECTRICALLY-PROPELLED SPACECRAFT
Nathan Griffith, LeoLabs, United States

IAC-22.C4.5.10
DYNAMIC MASS FLOW RATE MODEL FOR PPS5000 HALL THRUSTER UNIT
Christophe KOPPEL, KopooS Consulting Ind, France

IAC-22.C4.5.11
STATE OF THE ART REVIEW IN SUPERCONDUCTOR-BASED APPLIED-FIELD MAGNETOPLASMADYNAMIC THRUSTER TECHNOLOGY
Marcus Collier-Wright, Neutron Star Systems UG, Germany

IAC-22.C4.5.12
STATUS OF THE QUAD CONFINEMENT THRUSTER: CONCEPT, LIMITS, AND POSSIBLE TECHNOLOGY ADVANCEMENT
Fabrizio Tracchegiani, University of Pisa, Italy

IAC-22.C4.5.13
DESIGN AND SIMULATION OF CONTROL SYSTEM FOR AN ALL-ELECTRIC PROPULSION CUBESAT-"SPACE BUTTERFLY"
Peng Zheng, College of Aerospace Science and Engineering, National University of Defense Technology, China

IAC-22.C4.5.14
LIFETIME TEST OF CLUSTERED IFM NANO THRUSTER WITH ELECTROSTATIC FOCUS MODULE
Bernhard Seifert, FOTEC Forschungs- und Technologietransfer GmbH, Austria

IAC-22.C4.5.15
DEVELOPMENT AND QUALIFICATION OF A 12-KW HALL THRUSTER FOR DEEP-SPACE MISSIONS
Richard Hofer, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States

C4.6. Electric Propulsion (2)

September 20 2022, 15:00 — W08

Co-Chair(s): Alexander Lovtsov, SSC Keldysh Research Centre, Russian Federation; Markus Jaeger, [unlisted], Germany;
Rapporteur(s): Angelo Cervone, Delft University of Technology (TU Delft), The Netherlands; Simon Feast, British Interplanetary Society, United Kingdom;

IAC-22.C4.6.1
KEYNOTE: EVOLUTIONARY TRENDS IN HALL THRUSTER TECHNOLOGY
Mariano Andreucci, Independent consultant, Italy

IAC-22.C4.6.2
CATHODE THERMAL ENVIRONMENT SIMULATOR FOR EXPERIMENTAL CHARACTERIZATION OF HOLLOW CATHODE INSERTS
Vanessa Vial, SAFRAN, France

IAC-22.C4.6.3
COMPUTATIONAL ANALYSIS AND PERFORMANCE EVALUATION OF ILIS THRUSTER WITH EXPERIMENTAL RESULTS
Kailashnath Bharathan, SASTRA University, India

IAC-22.C4.6.4
DEVELOPMENT OF NEXT GENERATION ACTIVE SPACECRAFT POTENTIAL CONTROL (ASPOC-NG) INSTRUMENT FOR SCIENCE MISSIONS
Johanna Fries, FOTEC Forschungs- und Technologietransfer GmbH, Austria

IAC-22.C4.6.5
EFFECTS OF MAGNETIC NOZZLE GEOMETRY ON ION AND ELECTRON PROPERTIES
Alfio Vinci, ICARE-CNRS, France

IAC-22.C4.6.6
EXPERIMENTAL ASSESSMENT OF A MEMS SURFACE DBD PLASMA ACTUATOR FOR ACTIVE FLOW CONTROL IN AIR-BREATHING SPACE VEHICLES
Donato Fontanarosa, Università del Salento, Italy

IAC-22.C4.6.7
EXPERIMENTAL VALIDATION OF THE USE OF ADDITIVE MANUFACTURING AND METAHEURISTIC INVERSE DESIGN TO DEVELOP AN ELECTRODELESS PLASMA THRUSTER
Alexander Ryan, The University of Sydney, Australia

IAC-22.C4.6.8
LASER-INDUCED FLUORESCENCE MEASUREMENTS FOR THE CHARACTERIZATION OF THE CAPACITIVELY COUPLED RF-PLASMA THRUSTER C-STAR
Colum Walter, Universität der Bundeswehr München, Germany

IAC-22.C4.6.9
MULTISCALE MODELLING OF ALTERNATIVE PROPELLANTS IN MAGNETICALLY ENHANCED PLASMA THRUSTERS
Shaun Andrews, Alma Mater Studiorum - University of Bologna, Italy

IAC-22.C4.6.10
PLASMA DIAGNOSTICS AND THRUST PERFORMANCES OF THE HALO THRUSTER WITH PERMANENT MAGNETS
Silvia Masillo, Surrey Space Centre, University of Surrey, United Kingdom

IAC-22.C4.6.11
ADVANCES IN THE DEVELOPMENT OF A LOW MASS LOW POWER HIGH-FLOW REGULATION VALVE FOR SATELLITE ELECTRIC PROPULSION
Pierre Cordesse, Air Liquide, France

C4.7. Hypersonic Air-breathing and Combined Cycle Propulsion, and Hypersonic Vehicle

September 21 2022, 10:15 — W08

Co-Chair(s): Toru Shimada, Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency, Japan; Jean-Claude Traineau, Office National d'Etudes et de Recherches Aéronautiques (ONERA), France;

Rapporteur(s): Didier Boury, ArianeGroup SAS, France; Martin Velandér, GKN Aerospace Engine Systems, Sweden;

IAC-22.C4.7.1
DESIGN OF A HIGHLY REUSABLE AIR TURBO-ROCKET ENGINE
Ferran Roig Tió, Destinus, Switzerland

IAC-22.C4.7.2
PRELIMINARY DESIGN PROCEDURE OF GUN LAUNCHED SOLID FUEL RAMJET PROPULSION SYSTEM
Seungho Lee, Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of

IAC-22.C4.7.3
CONCEPTUAL DESIGN PREDICTION OF PROPULSIVE PERFORMANCES AND POLLUTANT EMISSIONS FOR HYBRID AIR-BREATHING/ROCKET ENGINES: A STUDY ON SABRE
Giovanni Grimaldi, Politecnico di Torino, Italy

IAC-22.C4.7.4
CONCEPT DESIGN OF A COMBINED CYCLE HYDROLOX ENGINE FOR COMMERCIAL SUBORBITAL SPACEFLIGHT APPLICATIONS
Mattia Bertolini, Politecnico di Milano, Italy

IAC-22.C4.7.5
MULTI-OBJECTIVE DESIGN OPTIMIZATION OF FUEL INJECTION WITH FLEXIBLE GEOMETRY VIA SURROGATE-BASED EVOLUTIONARY ALGORITHMS USING HIGHLY PARALLEL GPU ARCHITECTURE
Mehmet AKSAY, Kyushu University, Japan

IAC-22.C4.7.6
NUMERICAL ANALYSIS OF ROCKET STAGED COMBUSTION WITH AIR-STAGED AND FUEL-STAGED SUPPLIES FOR HIGH-COMBUSTION PERFORMANCE AND LOW-POLLUTANT EMISSIONS
ILYES GHEDIATTI, Beijing University of Aeronautics and Astronautics (BUAA), China

IAC-22.C4.7.7
RESEARCH ON THE EFFECT OF ASYMMETRIC AIR INTAKE ON THE MIXING AND COMBUSTION OF SOLID RAMJET
Jiming CHENG, Science and Technology on Combustion, Internal Flow and Thermal-structure Laboratory, Northwestern Polytechnical University, China

IAC-22.C4.7.8
LES INVESTIGATION OF A CAVITY-BASED AXSYMMERIC SCRAMJET
Naresh Relangi, Scuola di Ingegneria Aerospaziale "La Sapienza", Italy

IAC-22.C4.7.9
OPTIMIZED INLET DESIGN FOR HYPERSONIC FLIGHTS
Paras Adlakhia, University of Petroleum and Energy Studies, India

IAC-22.C4.7.10 (non-confirmed)
ASSESSMENT OF SHOCK/BOUNDARY-LAYER INTERACTIONS IN HYPERSONIC INTAKE
Mrinal Kaushik, Indian Institute of Technology Kharagpur, India

C4.8-B4.5A. Joint Session between IAA and IAF for Small Satellite Propulsion Systems

September 21 2022, 15:00 — W08

Co-Chair(s): Arnau Pons Lorente, Space Generation Advisory Council (SGAC), United States; Jeff Emdee, The Aerospace Corporation, United States;

Rapporteur(s): Elena Toson, T4i, Italy; Elizabeth Jens, Jet Propulsion Laboratory - California Institute of Technology, United States;

IAC-22.C4.8-B4.5A.1
DEVELOPMENT STATUS OF MONO-PROPULSION SYSTEM FOR ACTIVE DEBRIS REMOVAL
Asato Wada, ASTROSCALE JAPAN Inc., Japan

IAC-22.C4.8-B4.5A.2
DEVELOPMENT STATUS OF MONO-PROPULSION SYSTEM FOR ACTIVE DEBRIS REMOVAL
Asato Wada, ASTROSCALE JAPAN Inc., Japan

IAC-22.C4.8-B4.5A.3
END-OF-LIFE DISPOSAL OF SUB-3U CUBESAT WITH A PRINTED THIN-FILM VACUUM ARC THRUSTER
Kash Saddul, University of Southampton, United Kingdom

IAC-22.C4.8-B4.5A.4
OPTIMIZED VAPORIZATION IN LIQUID-FED MICRORESISTOJETS USING PULSED HEATING
Donato Fontanarosa, Università del Salento, Italy

IAC-22.C4.8-B4.5A.5
A STUDY ON SOLAR SAILING FOR LOW-POWER ORBIT-ATTITUDE CONTROL OF SMALL SATELLITES IN LEO
Maximilien Berthet, University of Tokyo, Japan

IAC-22.C4.8-B4.5A.6
A COMPACT AND HIGH THRUST-TO-POWER MICROPROPULSION SYSTEM USING ULTRASONIC VIBRATING MESH TECHNOLOGY FOR POCKETQUBE APPLICATIONS
Roopitha Kaimal, University of Nottingham, China, China

IAC-22.C4.8-B4.5A.7
ENVIRONMENTAL TEST CAMPAIGN OF A 12U CUBESAT TEST PLATFORM EQUIPPED WITH AN AMBIPOLAR PLASMA THRUSTER
Fabrizio Stesina, Politecnico di Torino, Italy

IAC-22.C4.8-B4.5A.8
DEVELOPMENT AND TESTING OF AN ENGINEERING MODEL OF A HYDROGEN PEROXIDE BASED 1N PROPULSION UNIT.
Marco Santi, T4i, Italy

IAC-22.C4.8-B4.5A.9
EXPERIMENTAL CHARACTERIZATION OF A HYDROGEN PEROXIDE-BASED THRUSTER FOR SMALL SATELLITES
Sergio Cassese, University of Naples "Federico II", Italy

IAC-22.C4.8-B4.5A.11
SPACE MOBILITY OPTIMIZATION AND CONCURRENT ENGINEERING FOR MODULAR MICRO-PROPULSION SYSTEMS WITH 360 BY IENAI SPACE
Giuseppe Di Pasquale, ienai SPACE, Spain

IAC-22.C4.8-B4.5A.12
LEAK TESTING PROCEDURE FOR STUDENT-DESIGNED NANOSATELLITE PROPULSION/FEED SYSTEMS
Rishin Aggarwal, Missouri University of Science and Technology (Missouri S&T), United States

IAC-22.C4.8-B4.5A.13
FLIGHT RESULTS OF THE PETRUS PULSED PLASMA THRUSTER ON THE 3U CUBESAT GREENCUBE
Felix Schäfer, Institute of Space Systems, Universität Stuttgart, Germany

C4.9. New Missions Enabled by New Propulsion Technology and Systems

September 22 2022, 10:15 — W08

Co-Chair(s): Vito Salvatore, CIRA Italian Aerospace Research Center, Capua, Italy; Elena Toson, T4i, Italy;

Rapporteur(s): Sabrina Corpino, Politecnico di Torino, Italy; Arnau Pons Lorente, Space Generation Advisory Council (SGAC), Spain;

IAC-22.C4.9.1
PLATFORM AND SYSTEM DESIGN STUDY OF A VLEO SATELLITE PLATFORM USING THE IRS RF HELICON-BASED PLASMA THRUSTER
Georg Herdrich, Institute of Space Systems, University of Stuttgart, Germany

IAC-22.C4.9.2
DESIGN OF HOVERING SOUNDING ROCKET USING GEL PROPULSION TECHNOLOGY
Nihal Hebbar, R V College of Engineering, Bengaluru, India

IAC-22.C4.9.3
A NEW PARADIGM FOR ENABLING PLANETARY CLASS MISSIONS ON NASA MIDEX BUDGETS
William Kosmann, The Astronautics Company, L.P., United States

IAC-22.C4.9.4
SOLAR SAIL-BASED DEEP SPACE TRANSFERS USING V-INFINITY LEVERAGING MANEUVERS
Christian Bianchi, University of Pisa, Italy

IAC-22.C4.9.5
NUCLEAR POWERED AIR-BREATHING ELECTRIC THRUSTERS PROPULSION SYSTEM DEVELOPED FOR SPACE EXPLORATION VEHICLES
Shubham Das, R V College of Engineering, Bengaluru, India

IAC-22.C4.9.6
PROPULSION WITH A SOLAR SAIL ATTACHED TO A SUPERCONDUCTING CURRENT LOOP
Roman Ya. Kezerashvili, New York City College of Technology, The City University of New York, United States

IAC-22.C4.9.7
HIGH-INCLINATION SOLAR ORBITER ENABLED BY SAIL-AUGMENTED ELECTRIC PROPULSION
Daniel Miller, Massachusetts Institute of Technology (MIT), United States

IAC-22.C4.9.8
IANUS: AN OVERVIEW ON THE DEVELOPMENT AND TESTING OF MILANI MISSION PROPULSION SYSTEM
Riccardo Mantellato, T4i, Italy

IAC-22.C4.9.9
ENABLING INTERPLANETARY EXPLORATION FOR CUBESATS WITH A FULLY CHEMICAL PROPULSION SYSTEM
Antonio Giordano, Delft University of Technology (TU Delft), The Netherlands, Italy

IAC-22.C4.9.10
OPTIMIZATION OF INTERPLANETARY TRAJECTORY FOR DIRECT FUSION DRIVE SPACECRAFT
Giancarlo Genta, Politecnico di Torino, Italy

IAC-22.C4.9.11
LASER BEAM BRIGHTNESS AND FOCAL LENGTH VARIATIONS AS KEY PARAMETERS IN ACHIEVING LOW IGNITION ENERGY OVER INCREASING DISTANCES WITH LOW IGNITION TIMES AND HIGH COMBUSTION TEMPERATURES
ILYES GHEDIATTI, Beijing University of Aeronautics and Astronautics (BUAA), China

C4.10-C3.5. Joint Session on Advanced and Nuclear Power and Propulsion Systems

September 22 2022, 13:45 — W08

Co-Chair(s): Jerome Breteau, European Space Agency (ESA), France; Leopold Summerer, ESA - European Space Agency, The Netherlands; Christian Bach, Technical University Dresden, Germany;

Rapporteur(s): Simon Feast, British Interplanetary Society, United Kingdom; Alexander Lovtsov, Keldysh Research Center, Russian Federation;

IAC-22.C4.10-C3.5.1
EXPERIMENTAL PERFORMANCE EVALUATION OF THE PHOTOVOLTAIC-BARE-TETHER PROPULSION CONCEPT UNDER SPACE CONDITIONS FOR DEORBIT APPLICATIONS
Leo Peiffer, Dresden University of Technology (DUT) / Technische Universität Dresden, Germany

IAC-22.C4.10-C3.5.2
EARLY PROGRESS TOWARD THE FEASIBILITY OF THE CENTRIFUGAL NUCLEAR THERMAL ROCKET
Dale Thomas, University of Alabama in Huntsville, United States

IAC-22.C4.10-C3.5.3
EXPERIMENTALLY BACKED MODEL OF BUBBLY FLOW IN A CNTF REACTOR
Mitchell Schroll, Propulsion Research Center, University of Alabama in Huntsville, United States

IAC-22.C4.10-C3.5.4
EXPLORING THE FEASIBILITY OF A POWER-GENERATING PULSED NUCLEAR MAGNETIC NOZZLE
Nathan Schilling, University of Alabama in Huntsville, United States

IAC-22.C4.10-C3.5.5
ANALYSIS OF SMALL MODULAR NUCLEAR REACTOR CONSTRUCTION ON THE MOON
Diana Nikitaeva, University of Alabama in Huntsville, United States

IAC-22.C4.10-C3.5.6
NUCLEAR FUSION POWERED TITAN AIRCRAFT
Michael Paluszek, Princeton Satellite Systems, United States

IAC-22.C4.10-C3.5.7
NUCLEAR THERMAL PROPULSION FOR EARTH ORBIT AND INTERPLANETARY MISSIONS: CHALLENGES AND ISSUES
Elia Puccinelli, University of Pisa, Italy

IAC-22.C4.10-C3.5.8
RELIABILITY ASSESSMENT OF NUCLEAR THERMAL ENGINE CONFIGURATION AND HEALTH MONITORING SYSTEM
Samantha Rawlins, University of Alabama in Huntsville, United States

IAC-22.C4.10-C3.5.9
SAFETY STUDIES FOR THE ESA RADIOISOTOPE POWER SYSTEMS
Alessandra Barco, University of Leicester, United Kingdom

IAC-22.C4.10-C3.5.10
UTILIZATION OF NUCLEAR POWER FOR MOON MISSIONS: NUCLEAR POWER GENERATION USING HELIUM COOLED REACTOR FOR SUSTAINABLE MOON HABITATS
Ugur Drguven, UN CSSTEAP, United Kingdom

D1. IAF SPACE SYSTEMS SYMPOSIUM

Coordinator(s): Reinhold Bertrand, European Space Agency (ESA), Germany; Jill Prince, National Aeronautics and Space Administration (NASA), United States; Tibor S. Balint, Jet Propulsion Laboratory, United States;

D1.1. Innovative and Visionary Space Systems

September 18 2022, 15:15 — W03

Co-Chair(s): Tibor Balint, Jet Propulsion Laboratory, United States; Peter Dieleman, Netherlands Aerospace Centre (NLR), The Netherlands;

Rapporteur(s): Camillo Richiello, CIRA Italian Aerospace Research Centre, Italy;

IAC-22.D1.1.1
MOON DIVER: EXPLORING A PIT'S EXPOSED STRATA TO UNDERSTAND LUNAR VOLCANISM
Issa Nesnas, Jet Propulsion Laboratory - California Institute of Technology, United States

IAC-22.D1.1.2
TOOLBOX DESIGN TO DEMONSTRATE APPLICATION-SPECIFIC CONFIGURABLE SPACE ROBOTS USING MODULAR COMPONENTS
Roland U. Sonsalla, DFKI GmbH, Robotics Innovation Center, Germany

IAC-22.D1.1.3
ZOOMING IN ON PHOTON RINGS OF SUPERMASSIVE BLACK HOLES WITH SPACEBORNE SUB-MILLIMETRE INTERFEROMETERS
Ben Hudson, KISPE Space Systems Limited, United Kingdom

IAC-22.D1.1.4
PRELIMINARY STUDY ON SYSTEM AND MISSION SEQUENCE DESIGN FOR TRANSFORMER MISSION
Yuki Kubo, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.D1.1.5
FUTURE SPACE SYSTEMS AND THE ROLE OF HUMAN-CENTRED DESIGN IN DECISION-MAKING AND TRUST
Anna Wojdecka, Royal College of Art, United Kingdom

IAC-22.D1.1.6
SPACECRAFT ATTITUDE CONTROL USING INERTIAL MORPHING
Suraj James Aranha, RMIT University (Royal Melbourne Institute of Technology), Australia

IAC-22.D1.1.7
TOWARDS UTILIZATION OF AUTOROTATION IN INTERPLANETARY EXPLORATION ON THE EXAMPLE OF VENUS
Clemens Riegler, Julius Maximilians Universität Würzburg, Germany

IAC-22.D1.1.9
IOSHEX - COMMERCIAL IN-ORBIT SERVICING HYBRID SYSTEM FOR LEO
Marco Guerzoni, Italy

IAC-22.D1.1.11
AN INNOVATIVE AND INTERDISCIPLINARY APPROACH TO A SELF-SUSTAINABLE LUNAR VILLAGE.
Denis Acker, University of Stuttgart, Germany

D1.2. Space Systems Architectures

September 19 2022, 10:15 — W03

Co-Chair(s): Matteo Emanuelli, Airbus Defence and Space, Germany; Thierry Floriant, Centre National d'Etudes Spatiales (CNES), France;

Rapporteur(s): Eberhard Gill, Delft University of Technology, The Netherlands;

IAC-22.D1.2.1
DATA-DRIVEN FDI FOCUSING ON THE ATTITUDE DYNAMICS OF SPACECRAFT
Hiroto Tamura, Nagoya University, Japan

IAC-22.D1.2.2
SATELLITE DATA OVER POWER BUS
Yijun Huang, The University of Sydney, Australia

IAC-22.D1.2.3
FEASIBILITY STUDY AND DEVELOPMENT STATUS OF TRANSFORMABLE SPACECRAFT
Yoshiki Sugawara, Aoyama Gakuin University, Japan

IAC-22.D1.2.4
DESIGN FOR ISAM: MISSION ARCHITECTURES FOR SUSTAINABLE EXPLORATION AND DEVELOPMENT
Simon Patané, Made In Space, Inc., United States

IAC-22.D1.2.5
OASIS INTEGRATED ARCHITECTURE FOR EXPLORATION AND UTILIZATION OF THE SOLAR SYSTEM
Chrishma Singh-Derewa, United States

IAC-22.D1.2.6
ASSURED ACCESS TO SPACE CAPABILITIES: INCREASING RESILIENCY IN AUTONOMOUS SMALL SATELLITE CONSTELLATIONS.
Crystal Forrester, Defence Science and Technology Group (DST Group), Australia

IAC-22.D1.2.7
HYBRID SYMBOLIC-NEURAL APPROACHES TO ARTIFICIAL INTELLIGENCE IN SPACE
Alex Ellery, Carleton University, Space Exploration and Engineering Group, Canada

IAC-22.D1.2.8
A HIGH-PERFORMANCE MASS MEMORY UNIT FOR NEXT GENERATION SATELLITE SYSTEMS
Jochen Rust, DSI Aerospace Technologie GmbH, Germany

IAC-22.D1.2.9
ORIGAMI-INSPIRED SELF-DEPLOYABLE REFLECTARRAY ANTENNA
Aloisia Russo, Oxford Space Systems, United Kingdom

IAC-22.D1.2.10
ARCHITECTURE STUDY FOR IN-ORBIT LONG TERM CRYOGENIC STORAGE TO SUPPORT SPACE EXPLORATION
Ludovica Formisani, Delft University of Technology (TU Delft), The Netherlands

IAC-22.D1.2.11
VERY LOW EARTH ORBIT CONSTELLATIONS FOR EARTH OBSERVATION
Nicholas H. Crisp, The University of Manchester, United Kingdom

IAC-22.D1.2.12
SPACE-AS-A-SERVICE: A FRAMEWORK AND TAXONOMY OF -AS-A-SERVICE CONCEPTS FOR SPACE
Andreas Makoto Hein, University of Luxembourg, Luxembourg

IAC-22.D1.2.13
DESIGN OF A SHUTTLE AND DEPOT ARCHITECTURE FOR RELIABLE AND COST-EFFECTIVE REFUELING OPERATIONS IN ALL ORBITS
Connor Geiman, Orbit Fab, United States

D1.3. Technologies to Enable Space Systems

September 19 2022, 15:00 — W03

Co-Chair(s): Steven Arnold, The John Hopkins University Applied Physics Laboratory, United States; Xavier Roser, Thales Alenia Space France, France;

Rapporteur(s): Yoshihisa Arikawa, Japan Aerospace Exploration Agency (JAXA), Japan;

IAC-22.D1.3.1
THERMAL ANALYSIS OF LUNAR SURFACE HABITATS BASED ON GEOGRAPHIC PLACEMENT
Ryan Demny, Auburn University, United States

IAC-22.D1.3.2
AN ANALYSIS OF PHASE CHANGE MATERIAL FOR THERMAL MANAGEMENT IN LUNAR PERMANENTLY SHADED REGIONS
Travis Wavrunek, Michigan Technological University, United States

IAC-22.D1.3.3
IN-SPACE MANUFACTURING OF EXTERNAL SATELLITE STRUCTURES: A REVIEW OF EXISTING CONCEPTS AND DISCUSSION OF THEIR FEASIBILITY
Michael Kringer, Munich University of Applied Sciences, Germany

IAC-22.D1.3.4
MAGLEV BASED 3-DOF EXPERIMENTAL PLATFORM FOR AUTONOMOUS SPACECRAFT RENDEZVOUS AND DOCKING
Nitika Jaggi, Indian Institute of Technology Kanpur, India

IAC-22.D1.3.5
KAMNET – A DEEP LEARNING APPROACH TO OPTICAL NAVIGATION FOR A DAWN-DUSK EARTH OBSERVATION MISSION
Alfredo Escalante, European Space Agency (ESA/ESAC), Spain

IAC-22.D1.3.6
DIGITAL TWIN AND ARTIFICIAL INTELLIGENCE ENABLING INNOVATIVE SPACECRAFT DESIGN, DEVELOPMENT, AND FLIGHT
Sapna Rao, Lockheed Martin (Space Systems Company), United States

IAC-22.D1.3.7
A SYSTEM ENGINEERING APPROACH TO THE AUTOMATED DESIGN OF THE LOW-ORBIT ADDITION TO THE GLONASS SYSTEM AND OTHER GNSS
Nikolai Leonidov, Russian Federation

IAC-22.D1.3.8
PARAFOIL MPC GUIDANCE AND PATH FOLLOWING CONTROL FOR D&L PHASE OF REUSABLE SPACE VEHICLES
Andrei Filip Cajoocar, Elecnor Deimos, Romania

IAC-22.D1.3.9
MISSION CONTROL'S EDGEAI ACCELERATOR TOOLCHAIN – A HARDWARE AGNOSTIC TOOL FOR DEPLOYING DEEP LEARNING MODELS ON LOW-POWERED EDGE PROCESSORS
Rohaam Ahmed, Mission Control Space Services Inc., Canada

IAC-22.D1.3.10
ETHILE: A THRUSTER-IN-THE-LOOP FACILITY TO ENABLE AUTONOMOUS GUIDANCE AND CONTROL OF AUTONOMOUS INTERPLANETARY CUBESATS
Alessandro Marselli, Politecnico di Milano, Italy

IAC-22.D1.3.11
ON-BOARD SMART AVIONICS FOR ON-ORBIT SERVICEABLE SPACECRAFT
Lianxiang Jiang, China Academy of Space Technology (CAST), China

IAC-22.D1.3.12
INDUSTRIALIZING DESIGN & PRODUCTION OF SATELLITES AND LAUNCHERS: HOW SUPPLIERS CAN MAKE A DIFFERENCE
Cristina Lorenzetti, RUAG Space, Switzerland

D1.4A. Space Systems Engineering - Methods, Processes and Tools (1)

September 21 2022, 10:15 — W03

Co-Chair(s): Dapeng Wang, Beihang University, China; Peter Dieleman, Netherlands Aerospace Centre (NLR), The Netherlands;

Rapporteur(s): Hui Du, China Academy of Space Technology (CAST), China;

IAC-22.D1.4A.1
CONCURRENT ENGINEERING FOR GROUND SEGMENT AND OPERATIONS CONCEPTUAL DESIGN – USE CASES, METHODS AND TOOLS ON THE WAY TO DIGITALISATION
Jennifer Hoffmann, TU Darmstadt, Germany

IAC-22.D1.4A.2
THE SMALL-SAT-EGSE: A COST-EFFECTIVE SMALLSAT DEVELOPMENT AND VERIFICATION PLATFORM
Kilian Höflinger, Thyra Aerospace, Germany

IAC-22.D1.4A.3
PLANET QUALIFICATION LAB : LEVERAGING MODULARITY AND AUTOMATION TO MASS PRODUCE SATELLITES
Arthur Descamps, Planet Labs Inc., United States

IAC-22.D1.4A.4
CUBESAT THERMAL MANAGEMENT SYSTEM DESIGN SUPPORTED BY MULTIOBJECTIVE DESIGN OPTIMIZATION
Daniele Calvi, Politecnico di Torino, Italy

IAC-22.D1.4A.5
INNOVATIVE METHODOLOGY FOR THE PRELIMINARY DESIGN APPROACH FOR LOW EARTH ORBIT CONSTELLATIONS
Federica Conti, Sapienza University of Rome, Italy

IAC-22.D1.4A.6
AI ASSISTANT SUPPORTING SPACE SYSTEMS CONCEPTUAL DESIGN
Jan-Peter Ceglarek, TU Darmstadt, Germany

IAC-22.D1.4A.7
A VIRTUAL SYSTEMS ENGINEERING ADVISOR TO IDENTIFY REQUIREMENTS GAPS: APPLICATION TO A TTC TRANSPONDER
Alejandro Salado, University of Arizona, United States

IAC-22.D1.4A.8
COST EFFECTIVE APPROACH FOR A RELIABLE SEE ROBUST DESIGN
Silvia Diaz, SENER, Spain

IAC-22.D1.4A.9
COST ESTIMATION METHODOLOGY AND TOOL FOR FUTURE REUSABLE ACCESS TO SPACE SYSTEMS
Roberta Fusaro, Politecnico di Torino, Italy

IAC-22.D1.4A.10
A ROS/GAZEBO-BASED FRAMEWORK FOR SIMULATION AND CONTROL OF ON-ORBIT ROBOTIC SYSTEMS
Jose L. Ramon Carretero, University of Alicante, Spain

IAC-22.D1.4A.11
IDENTIFYING RISK FACTORS IN SPACE MISSIONS: AN AI-BASED APPROACH
Sofia Kleisarchaki, France

IAC-22.D1.4A.12
IDREAM: A MULTIDISCIPLINARY METHODOLOGY AND INTEGRATED TOOLSET FOR FLIGHT VEHICLE ENGINEERING
Roberta Fusaro, Politecnico di Torino, Italy

D1.4B. Space Systems Engineering - Methods, Processes and Tools (2)

September 21 2022, 15:00 — W03

Co-Chair(s): Geilson Loureiro, Instituto Nacional de Pesquisas Espaciais (INPE), Brazil; Norbert Frischauf, TU Graz, Austria;
Rapporteur(s): Jon Holladay, National Aeronautics and Space Administration (NASA), United States;

IAC-22.D1.4B.1
COMPREHENSIVE AND COMPARATIVE STUDY OF MBSE APPLIED TO SPACE SYSTEMS ENGINEERING
Marcos Eduardo Rojas Ramirez, Institut Supérieur de l'Aéronautique et de l'Espace (ISAE), France

IAC-22.D1.4B.2
DEVELOPMENT OF A WORKFLOW IMPLEMENTATION TO CONDUCT AUTOMATED THERMAL ANALYSES OF SPACECRAFT FROM AN MBSE SYSTEM MODEL
Henning Heibrok, German Aerospace Center (DLR), Germany

IAC-22.D1.4B.3
MODEL-BASED MISSION PLANNING: REDUCING MISSION PLANNING COSTS BY GENERATING MISSION-UNIQUE ARCHITECTURE AND PROCESS FRAMEWORKS
Michael Halvorson, University of Alabama in Huntsville, United States

IAC-22.D1.4B.5
APPLICATION OF A TAILORED MISSION ANALYSIS FRAMEWORK WITHIN A EXTRACURRICULAR CUBESAT PROJECT
Nina Bang Kieu Viet, NTNU, Norway

IAC-22.D1.4B.6
A MARKOWITZ-INSPIRED APPROACH TO OPTIMIZING SPACE TECHNOLOGY PORTFOLIO INVESTMENTS
Julia Milton, Massachusetts Institute of Technology (MIT), United States

IAC-22.D1.4B.7
INTEGRATED SPACECRAFT DESIGN: DEMONSTRATION OF A PROTOTYPE PROCESS AND PLATFORM FOR SATELLITE DESIGN APPLICATION
Loveneesh Rana, University of Luxembourg, Luxembourg

IAC-22.D1.4B.8
SPACE PRODUCT DEVELOPMENT PROCESS: INTEGRATING A SUSTAINABILITY PERSPECTIVE IN DESIGN AND PRODUCTION OF SPACECRAFT
Bernd M. Weiss, Luleå University of Technology, Sweden

IAC-22.D1.4B.9 (non-confirmed)
SOLAR ARRAYS WORK DURING DYNAMICAL OPERATIONS: MODELING AND OPTIMIZATION PROBLEMS RELATED TO MASSIVE SPACECRAFTS FLIGHT
Ivan Samylovskiy, Lomonosov Moscow State University, Russian Federation

IAC-22.D1.4B.10
PFAT - POST-FLIGHT ANALYSIS TOOLKIT
Marcello Sciarra, Deimos Space SLU, Spain

IAC-22.D1.4B.11
COMMERCIAL SUBORBITAL VEHICLE - SYSTEM DESIGN AND MISSION OPTIMIZATION USING CONCEPTUAL MULTI-DISCIPLINARY OPTIMIZATION (CMDO) FRAMEWORK
Shrirup Nambiar, Politecnico di Torino, Italy

IAC-22.D1.4B.12
PRONT-AIT: FRAMEWORK FOR ASSESSING THE READINESS OF ASSEMBLY, INTEGRATION AND TESTING ORGANIZATIONS OF SPACE SYSTEMS
Isomar Lima da Silva, National Institute for Space Research - INPE, Brazil

D1.5. Lessons Learned in Space Systems: Achievements, Challenges, Best Practices, Standards.

September 22 2022, 10:15 — W03

Co-Chair(s): Yoshihisa Arikawa, Japan Aerospace Exploration Agency (JAXA), Japan; Igor V. Belokonov, Samara National Research University (Samara University), Russian Federation;
Rapporteur(s): Giuseppe Guidotti, Deimos Space SLU, Spain;

IAC-22.D1.5.1
MISSION ASSURANCE HANDBOOK FOR UNIVERSITY-BASED LEAN SATELLITES
MENGU CHO, Kyushu Institute of Technology, Japan

IAC-22.D1.5.2
PROJECT LIFE-CYCLE AND WORKFLOW IN A UNIVERSITY CUBESAT PROJECT
Simen Berg, Norwegian University of Science and Technology, Norway

IAC-22.D1.5.3
ESTABLISHING A PROTOCOL FOR THE X-CHANGE OF EXPERIENCE AND LEARNING BETWEEN SPACE ENTITIES – SHARING WHAT WE DO TOGETHER AND WHAT WE HAVE IN COMMON – AN ESA / CNES CASE STUDY
Andrew Herd, ESA, The Netherlands

IAC-22.D1.5.4
SYSTEM ENGINEERING CHALLENGES INVOLVED IN CONFIGURING A SMALL SATELLITE BUS FOR ADVANCED TECHNOLOGY DEMONSTRATION
Srividhya G, Indian Space Research Organization (ISRO), India

IAC-22.D1.5.5
SETTING THE RECORD STRAIGHT: THE GALILEO PROBE MISSION WAS A SUCCESS!
David Atkinson, Caltech/JPL, United States

IAC-22.D1.5.6
CHECKLIST OF USING COTS DEVICES FOR DISTRIBUTED ONBOARD SYSTEM DESIGN
Ting Peng, University Würzburg, Germany

IAC-22.D1.5.7
SOLAR ORBITER AOCs FINE POINTING MODE IMPROVEMENT IN FLIGHT : CHALLENGES AND ACHIEVEMENTS
Ilario Cantello, European Space Agency (ESA-ESTEC), The Netherlands

IAC-22.D1.5.8
A SPACE CONVERSATIONAL AGENT FOR RETRIEVING LESSONS-LEARNED AND EXPERT TRAINING
Dimitar Mihaylov, University of Strathclyde, United Kingdom

IAC-22.D1.5.9
TESTING OF SMALL SATELLITE OPERATION AND SOFTWARE WITH TARGET HARDWARE AND REHEARSALS
Dennis Langer, Norwegian University of Science and Technology, Norway

IAC-22.D1.5.10
LABSAT - THE FIRST POLISH SATELLITE TO PROVIDE BIOLOGICAL RESEARCH ON THE LEO
Adrianna Graja, Wrocław University of Science and Technology, Poland

IAC-22.D1.5.11
BEST PRACTICES ON ADOPTING OPEN-SOURCE AND COMMERCIAL LOW-COST DEVICES IN SMALL SATELLITES MISSIONS
Riccardo Di Roberto, G.A.U.S.S. Srl, Italy

IAC-22.D1.5.12
ANALYSIS OF SPACE ENGINEERING PROCESS OVERHEAD FOR DESIGN CHANGES AND IMPLICATIONS FOR A NEW SATELLITE BUS CONCEPT
Jan-Christian Meyer, Berlin Space Technologies GmbH, Germany

D1.6. Cooperative and Robotic Space Systems

September 22 2022, 13:45 — W03

Co-Chair(s): Klaus Schilling, Zentrum für Telematik, Germany; Otfried G. Liepack, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States;
Rapporteur(s): Steven Arnold, The John Hopkins University Applied Physics Laboratory, United States; Audrey Berquand, European Space Agency (ESA), The Netherlands;

IAC-22.D1.6.1
ON-ORBIT DEMONSTRATION OF SPACECRAFT HOPPING MANEUVERS USING THE NASA ASTROBEE FREE-FLYERS
Jennifer Hudson, Naval Postgraduate School, United States

IAC-22.D1.6.2
DYNAMIC MOTION PLANNING OF FPV CAMERA FREE-FLYERS FOR AUTONOMOUS CREW TRACKING AND COLLISION AVOIDANCE
Taisei Nishishita, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.D1.6.3
PATH GENERATION AND CONTROL OF HUMANOID ROBOTS DURING EXTRAVEHICULAR ACTIVITIES
Jose L. Ramon Carretero, University of Alicante, Spain

IAC-22.D1.6.4
TRAILBLAZER, THE FIRST COMMERCIAL SATELLITE REFUELING MISSION
Connor Geiman, Orbit Fab, United States

IAC-22.D1.6.5
NON-PARAMETRIC MODELING FOR STATE ESTIMATION FILTERING AND CONTROL OF AGGREGATE SPACECRAFT SYSTEMS
William Parker, Massachusetts Institute of Technology (MIT), United States

IAC-22.D1.6.6
DESIGN AND INTEGRATION OF A MULTI-ARM INSTALLATION ROBOT DEMONSTRATOR FOR ORBITAL LARGE ASSEMBLY
Mathieu Deremetz, Space Applications Services, Belgium

IAC-22.D1.6.7
IN-ORBIT DEMONSTRATION OF ISMA ROBOTIC CAPABILITIES TO PAVE THE WAY FOR A NEW GENERATION OF SPACE SYSTEMS
Sebastian Bartsch, Airbus Defence and Space - Space Systems, Germany

IAC-22.D1.6.8
MULTI-LINK ROBOTIC MANIPULATOR GUIDANCE VIA MACHINE LEARNING ALGORITHMS FOR MARS EXCAVATORS
Andrea Carbone, Scuola di Ingegneria Aerospaziale "La Sapienza", Italy

IAC-22.D1.6.9
ANALYSIS OF A ZIPLINER ROBOTIC SYSTEM TO ASSIST ASTRONAUTS ON LUNAR AND MARTIAN TERRAINS
Vishnuraj Kadagadakai, Ramaiah Institute of Technology, India

IAC-22.D1.6.10
MOTION PLANNING FOR RELOCATABLE ROBOTS PERFORMING ON-ORBIT LOCOMOTION AND MANIPULATION TASKS
Maximo A. Roa, DLR (German Aerospace Center), Germany

D2. IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM

Coordinator(s): Yuguang Yang, China Aerospace Science & Industry Corporation (CASIC), China; Markus Jaeger, [unlisted], Germany; Randolph Kendall, The Aerospace Corporation, United States;

D2.1. Launch Vehicles in Service or in Development

September 18 2022, 15:15 — S06

Co-Chair(s): Danilo Sakay, Brazilian Space Agency (AEB), Brazil; Yorichika Mihara, Mitsubishi Heavy Industries, Ltd., Japan;
Rapporteur(s): Martin Sippel, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;

IAC-22.D2.1.1
ARIANE 5 LAUNCH SYSTEM ADAPTATION FOR JWST MISSION PREPARATION
Hélène REQUISTON-COSTANTINI, ArianeGroup SAS, France

IAC-22.D2.1.2
ARIANE 6 LAUNCH SYSTEM DEVELOPMENT UPDATE
Mathieu CHAIZE, ArianeGroup SAS, France

IAC-22.D2.1.3
RESEARCH ON THE DEVELOPMENT OF TEST AND LAUNCH CONTROL SYSTEM IN CHINESE NEXT GENERATION LAUNCH VEHICLE
Ziyu Wang, Beijing Institute of Aerospace Systems Engineering, China Aerospace Science and Technology Corporation (CASC), China

IAC-22.D2.1.4
THE LATEST H3 DEVELOPMENT STATUS AND NEXT-GEN INNOVATIVE LAUNCH CONCEPT
Yorichika Mihara, Mitsubishi Heavy Industries, Ltd., Japan

IAC-22.D2.1.5
EVOLUTION AND DEVELOPMENT OF THE VEGA LAUNCHER FAMILY AND LESSONS LEARNED
Giampaolo Cecchetti, AVIO S.p.A., Italy

IAC-22.D2.1.6
ARIANE 6 - DEVELOPMENT AND QUALIFICATION OF LARGE STRUCTURES & TANKS
Aicke Patzelt, MT Aerospace AG, Germany

IAC-22.D2.1.7
ESA TECHNOLOGY STRATEGY TO SUPPORT THE SPACE TRANSPORTATION SECTOR IN EUROPE
Alain Conde Reis, European Space Agency (ESA), France

IAC-22.D2.1.8
RECENT TECHNICAL AND PROGRAMMATIC LESSONS LEARNED IN THE, DEVELOPMENT, ACQUISITION, AND RECURRING LAUNCH OPERATIONS
Akhil Gujral, The Aerospace Corporation, United States

IAC-22.D2.1.9
THE OVERALL SCHEME OF SOLID LAUNCH VEHICLES SUITABLE FOR LAND AND SEA LAUNCH AND ITS LIFT CAPACITY ANALYSIS
Zhang Wen, China Academy of Launch Vehicle Technology (CALT), China

IAC-22.D2.1.10
A STUDY ON THE AERODYNAMIC INTERFERENCE AND THE IMPROVEMENT OF PROTUBERANCES OF THE FIRST CHINESE COMMERCIAL LIQUID LAUNCHER "ZQ-2"
Geng Hao, LandSpace Technology Corporation Ltd., China

D2.2. Launch Services, Missions, Operations, and Facilities

September 19 2022, 15:00 — S06

Co-Chair(s): Francesco Santoro, Altec S.p.A., Italy; Vincent Taponier, Centre National d'Etudes Spatiales (CNES), France;
Rapporteur(s): Jeremy Pinier, National Aeronautics and Space Administration (NASA), Langley Research Center, United States;

IAC-22.D2.2.1
ARIANE 6 LAUNCHER – LAUNCH BASE COMBINED TESTS
Olivier Bugnet, Centre National d'Etudes Spatiales (CNES), France

IAC-22.D2.2.2
ENERGY TRANSITION PROGRAM AT THE EUROPEAN SPACE PORT
Didier Cauquil, Centre National d'Etudes Spatiales (CNES), French Guiana

IAC-22.D2.2.3
DESIGN AND EXPERIMENTAL TESTING OF A MICROLAUNCHERS EJECT SYSTEM OPERATED FROM NAVAL PLATFORM
Paolo Teofilatto, Sapienza University of Rome, Italy

IAC-22.D2.2.4
ESA SPACE RIDER SYSTEM: MULTI-PURPOSE SERVICE FOR COMMERCIAL APPLICATIONS
Fabio Caramelli, European Space Agency (ESA), Italy

IAC-22.D2.2.5
RESEARCH ON DEVELOPMENT STRATEGY OF CHINA SPACE LAUNCH SERVICE AND SUPPORT TECHNOLOGY
Litian Xiao, Beijing Special Engineering Design and Research Institute (BSEDI), China

IAC-22.D2.2.6
ENVIRONMENTALLY FRIENDLY PRODUCTION AND OPERATION OF SPACE TRANSPORTATION SYSTEMS
Josef Wiedemann, MT Aerospace AG, Germany

IAC-22.D2.2.7
PRICE ELASTICITY OF LAUNCH SERVICES
Christopher Kunstader, United States

IAC-22.D2.2.8
FEASIBILITY STUDY TO AVOID LAUNCH COLLISION WITH ORBITAL OBJECTS BY MODIFYING FLIGHT TRAJECTORY OF LAUNCH VEHICLE
Yuji Takaki, Mitsubishi Heavy Industries, Ltd., Japan

IAC-22.D2.2.9
NEXT GENERATION AUTONOMOUS FLIGHT TERMINATION SYSTEM (AFTS) FOR LAUNCHERS
Mariano Sánchez-Nogales, SENER, Spain

IAC-22.D2.2.10
PARAMETRIC LIFE CYCLE ASSESSMENT OF A SPACE LAUNCH SERVICE BASED ON A LOX/BIOMETHANE SEMI-REUSABLE LAUNCHER
Lois Miraux, MINES ParisTech, France

D2.3. Upper Stages, Space Transfer, Entry & Landing Systems

September 19 2022, 10:15 — S06

Co-Chair(s): Oliver Kunz, Beyond Gravity, Switzerland; Bryan Smith, NASA Glenn Research Center, United States;
Rapporteur(s): Oleg Ventskovsky, Yuzhnoye SDO European Representation in Brussels, Ukraine;

IAC-22.D2.3.1
SPACE RIDER MISSION ENGINEERING: CURRENT STATUS IN SUPPORT OF CRITICAL DESIGN REVIEW ASSESSMENT
Irene Pontijas Fuentes, Deimos Space S.L., Spain

IAC-22.D2.3.2
THE SPACE RIDER REENTRY MODULE GNC DESIGN AND DEVELOPMENT UNTIL FLIGHT QUALIFICATION
Jorge Cardín, SENER, Spain

IAC-22.D2.3.3
INTEGRATION OF GUIDANCE SYSTEM WITH MODEL REFERENCE ADAPTIVE CONTROL FOR A RE-ENTRY SPACEPLANE
Raja Munusamy, Hindustan University, India

IAC-22.D2.3.4
HYPER VELOCITY DEMONSTRATION MISSION TO PREPARE EUROPE FOR SAMPLE RETURN AND FUTURE EXPLORATIONS (HEARTED)
Jerôme Bertrand, ArianeGroup SAS, France

IAC-22.D2.3.5
A MAGNETOHYDRODYNAMIC ENHANCED ENTRY SYSTEM FOR SPACE TRANSPORTATION (MEESST)
Manuel La Rosa Betancourt, Neutron Star Systems UG, Germany

IAC-22.D2.3.6
ASSESSMENT OF PROPULSION SYSTEM ARCHITECTURES FOR GREEN KICK-STAGES
Alberto Sarritzu, University of Pisa, Italy

IAC-22.D2.3.7
PER ASTRIS AD ASTRA – HOW ARIANE'S KICK STAGE PROPELS EUROPE INTO FUTURE IN-ORBIT APPLICATIONS
Tina Buechner da Costa, European Space Agency (ESA), France

IAC-22.D2.3.8
PHOEBUS AN ARIANEGROUP & MT-A COOPERATION FOR PREPARATION OF AN OPTIMIZED LIGHTWEIGHT LOW COST FUTURE UPPER STAGE
Diana Gaulke, ArianeGroup, Germany

IAC-22.D2.3.9
FLYING QUALITIES AND MISSION ANALYSIS FOR THE RETURN LEG OF MESO'S LAUNCHER FIRST STAGE
Giovanni Medici, Deimos Space SLU, Spain

IAC-22.D2.3.10
PROJECT BOOMERANG: INNOVATIVE ARCHITECTURE OF A LIGHTWEIGHT AND MODULAR RECOVERY SYSTEM FOR LAUNCHER UPPER STAGE.
Frédéric FLORY, Federation Open Space Makers, France

D2.4. Future Space Transportation Systems

September 20 2022, 10:15 — S06

Co-Chair(s): José Gavira Izquierdo, European Space Agency (ESA), The Netherlands; Nicolas Bérend, ONERA - The French Aerospace Lab, France;
Rapporteur(s): Emmanuelle David, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland;

IAC-22.D2.4.1
FAMILY OF LAUNCHERS APPROACH VS. "BIG-SIZE-FITS-ALL"
Martin Sippel, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

IAC-22.D2.4.2
MEDIUM- TO LONG-TERM STRATEGY FOR THE RESEARCH FIELD OF SPACE TRANSPORTATION SYSTEM IN ISAS/JAXA
Shinichiro Tokudome, Japan Aerospace Exploration Agency (JAXA), ISAS, Japan

IAC-22.D2.4.3
HYPERSONIC CAPABILITIES AND RESEARCH ACTIVITY IN THE UK & EUROPE - A REVIEW
Malcolm Claus, Kingston University, United Kingdom

IAC-22.D2.4.4
ANALYSIS ON PROPULSION TECHNOLOGICAL DEVELOPMENT SYNERGY AND APPLICATIONS FOR FUTURE BRAZILIAN LAUNCH VEHICLES
Danilo Sakay, Brazilian Space Agency (AEB), Brazil

IAC-22.D2.4.5
CARGO AND CREW TRANSPORTATION TO LEO AND BEYOND
Marie-Christine Bernelin, Dassault Aviation, France

IAC-22.D2.4.6
A STUDY ON METHODS TO OVERCOME GEOPOLITICAL CONDITIONS FOR THE DEVELOPMENT OF KOREAN TWO-STAGE REUSABLE LAUNCH VEHICLE
Daeban Seo, Korea Aerospace Research Institute (KARI), Korea, Republic of

IAC-22.D2.4.7
FEASIBLE OPTIONS FOR POINT-TO-POINT PASSENGER TRANSPORT WITH ROCKET PROPELLED REUSABLE LAUNCH VEHICLES
Steffen Callsen, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Institute of Space Systems, Germany

IAC-22.D2.4.8
AERODYNAMIC INTERFERENCE AND SEPARATION ANALYSES OF A TWO-STAGE SPACEPLANE FOR SMALL SATELLITE LAUNCH
Tsuyoshi Otsuki, Tokyo University of Science, Japan

IAC-22.D2.4.9
INTERPLANETARY TRANSFER NETWORK DESIGN AND TECHNOLOGY ROADMAP FOR A SUSTAINABLE OFF-WORLD HUMAN COMMUNITY
Koldo Zuniga, Cranfield University, United Kingdom

IAC-22.D2.4.10
ORBITAL ACCELERATOR: ENERGY SAVING INFRASTRUCTURE FOR INTERPLANETARY SPACE TRAVEL
David Gschliesser, Austrian Space Forum, Austria

D2.5. Technologies for Future Space Transportation Systems

September 20 2022, 15:00 — S06

Co-Chair(s): Mathieu CHAIZE, ArianeGroup SAS, France; Lin Shen, China Academy of Launch Vehicle Technology (CALT), China;
Rapporteur(s): Andrea Esposito, Northrop Grumman Corporation, Italy; Andrea Jaime, Isar Aerospace, Germany;

IAC-22.D2.5.1
SPACECASE : DEVELOPMENT OF A COMMERCIAL TEST PLATFORM FOR REENTRY EXPERIMENTS.
Jerôme Bertrand, ArianeGroup SAS, France

IAC-22.D2.5.2
DEVELOPMENT STATUS AND FLIGHT DEMONSTRATION PLAN OF EXPERIMENTAL WINGED ROCKET WIRES#015 AT TOKYO UNIVERSITY OF SCIENCE
Koichi Yonemoto, Tokyo University of Science, Japan

IAC-22.D2.5.3
DEVELOPMENT OF A SUPERCRITICAL HELIUM CRYOGENIC STORAGE FOR ARIANE 6 LAUNCHER
BIANCHI SEBASTIEN, Air Liquide, France

IAC-22.D2.5.4
EXPERIMENTAL INVESTIGATION OF A CONTINUOUSLY CONTROLLED PRESSURIZATION SYSTEM FOR REUSABLE LAUNCH VEHICLES
Huazhao Zhang, China Academy of Launch Vehicle Technology (CALT), China

IAC-22.D2.5.5
A NOVEL H2O2 AND PRESSURANT GAS TRANSFER TECHNOLOGY FOR REFUELLING IN LOW AND ZERO GRAVITY ENVIRONMENTS
Eoghan Gilleran, Delft University of Technology (TU Delft), The Netherlands

IAC-22.D2.5.6
CFD ANALYSIS OF INTERACTION EFFECTS BETWEEN VEHICLES IN FORMATION FLIGHT FOR IN-AIR CAPTURING OF REUSABLE LAUNCHERS
Yakut Cansev Kucukosman, von Karman Institute for Fluid Dynamics, Belgium

IAC-22.D2.5.7
RETALT: DEVELOPMENT OF KEY FLIGHT DYNAMICS AND GNC TECHNOLOGIES FOR REUSABLE LAUNCHERS
Gabriele De Zaiacomo, Deimos Space S.L., Spain

IAC-22.D2.5.8
ALTERNATIVE PYROTECHNIC COMPOSITION FOR REUSABLE PYROMECHANISMS
Gaël Le Breton, PYROALLIANCE, France

IAC-22.D2.5.9
NOVEL LOW-SHOCK SEPARATION SYSTEMS FOR PAYLOAD FAIRINGS
Jakob Faber, Beyond Gravity, Switzerland

IAC-22.D2.5.10
A NEW CONCEPT OF COMPACT END-TO-END PYROCHAINS INITIATOR SOLUTION INTEGRATING SAFE & ARM
Marina Guy-Chevanne, PYROALLIANCE, France

IAC-22.D2.5.11
NUMERICAL MODELLING VERIFICATION FOR RE-ENTRY VEHICLES USING ENHANCED MHD SIMULATION TOOLS
Vatsalya Sharma, KU Leuven, Belgium

D2.6. Future Space Transportation Systems Verification and In-Flight Experimentation

September 21 2022, 10:15 — S06

Co-Chair(s): David E. Glass, National Aeronautics and Space Administration (NASA), United States; Christie Maddock, University of Strathclyde, United Kingdom;
Rapporteur(s): Tetsuo Hiraiwa, Japan Aerospace Exploration Agency (JAXA), Japan; Aaron Weaver, National Aeronautics and Space Administration (NASA), United States; Nicole Viola, Politecnico di Torino, Italy;

IAC-22.D2.6.1
CALLISTO: A PROTOTYPE PAVING THE WAY FOR REUSABLE LAUNCH VEHICLES IN EUROPE AND JAPAN
Etienne Dumont, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

IAC-22.D2.6.2 (non-confirmed)
DESIGN AND DEVELOPMENT OF A SYSTEM DROP TEST FOR THE VALIDATION OF SPACE RIDER DESCENT AND LANDING MISSION PHASE
Giuseppe Rufolo, CIRA Italian Aerospace Research Centre, Italy

IAC-22.D2.6.3
SPADS: DESIGN AND IN-FLIGHT DEMONSTRATION OF A PRECISION LANDING PARAFOIL SYSTEM
Jorge Cardin, SENER, Spain

IAC-22.D2.6.4
THE REUSABILITY FLIGHT EXPERIMENT – REFEX: AGILE AIV PROCESSES FOR PROTOTYPE FLIGHT EXPERIMENTS
Peter Rickmers, German Aerospace Center (DLR), Bremen, Germany

IAC-22.D2.6.5
THEMIS DEMONSTRATION PROGRAMME
Charles Bertorello, ArianeGroup SAS, France

IAC-22.D2.6.6
FINAL DESIGN SUMMARY AND HIGH-ALTITUDE TEST FLIGHT PLAN OF A REUSABLE SUBORBITAL PERUN ROCKET.
Marek Lubieniecki, SpaceForest, Poland

IAC-22.D2.6.7
OBJECTIVES AND ACHIEVEMENTS OF THE HYPERSONIC FLIGHT EXPERIMENT STORT
Ali Gülhan, DLR (German Aerospace Center), Germany

IAC-22.D2.6.8
DEVELOPMENT OF ADVANCED RE-ENTRY SYSTEMS BASED ON INFLATABLE HEAT SHIELDS IN THE EFESTO PROJECT: PRELIMINARY IOD MISSION AND SYSTEM DEFINITION
Giuseppe Guidotti, Deimos Space SLU, Spain

IAC-22.D2.6.10
PROVIDING AFFORDABLE SPACE EXPLORATION WITH NYX, A MODULAR AND REUSABLE ORBITAL VEHICLE - THE EXPLORATION COMPANY
Jon Reijneveld, France

D2.7. Small Launchers: Concepts and Operations

September 21 2022, 15:00 — S06

Co-Chair(s): Harry A. Cikanek, National Oceanic and Atmospheric Administration (NOAA), United States; Ulf Palmnäs, Swedish Space Corporation (SSC), Sweden;
Rapporteur(s): Florian Ruhhammer, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;

IAC-22.D2.7.1
SMALLSATS BY THE NUMBERS 2022: GROWING SMALLSAT ACTIVITY AND ITS IMPLICATIONS FOR THE SMALL LAUNCH MARKET
Carissa Christensen, Bryce Space and Technology, United States

IAC-22.D2.7.2
HYIMPULSE – HYBRID PROPULSION BASED SMALL LAUNCHER - UPDATES
Goutham Karthikeyan, Hylmpulse Technologies GmbH, Germany

IAC-22.D2.7.3
HYPR SPACE: A NEW GENERATION OF MICROLAUNCHERS BASED ON INNOVATIVE HYBRID ROCKET ENGINES.
Alexandre Mangeot, Hybrid Propulsion for Space (HyPr Space), France

IAC-22.D2.7.5
MIURA NEXT ON THE PAD
Pablo Gallego Sanmiguel, PLD Space, United States

IAC-22.D2.7.6
COMPARISON OF WIND TUNNEL TEST RESULTS OF SUBORBITAL SPACEPLANE FUJIN WITH CFD ANALYSIS
Arash Piran, SPACE WALKER Inc., Japan

IAC-22.D2.7.7
DEVELOPMENT, MANUFACTURING AND TESTING OF SMALL LAUNCHER STRUCTURES FROM PORTUGAL
Andre Guerra, Ceia - Centro De Engenharia, Portugal

IAC-22.D2.7.8
A COMPARATIVE ANALYSIS OF RECOVERY MODES FOR REUSABLE LAUNCH VEHICLES (RLVS) WITH AN OVERVIEW OF OPTIMAL TECHNOLOGIES SUPPORTING REUSABILITY OF A SMALL SATELLITE LAUNCHER
Raj Panchal, Cranfield University, UK, United Kingdom

IAC-22.D2.7.9
APPLICATION OF MULTIDISCIPLINARY DESIGN OPTIMIZATION TO THE DEVELOPMENT OF AN UNMANNED SUBORBITAL SPACEPLANE BY INDUSTRY-GOVERNMENT-ACADEMIA COLLABORATION
Takahiro Fujikawa, Tokyo University of Science, Japan

IAC-22.D2.7.10
STRUCTURAL ANALYSIS FOR A NANOLAUNCHER'S BODY WITH AN AEROSPIKE NOZZLE
Irving Enrique Gomez Fernandez, Mexico

D2.9-D6.2. Emerging Space Ventures, including Space Logistics and Space Safety for Sustainability

September 22 2022, 13:45 — S06

Co-Chair(s): Aline Decadi, European Space Agency (ESA), France; Charles E. Cockrell Jr., National Aeronautics and Space Administration (NASA), United States;
Rapporteur(s): Michele Cristina Silva Melo, Brazilian Space

Agency (AEB), Brazil;

IAC-22.D2.9-D6.2.1
TECH POLICY INSIGHTS: A SYSTEM DYNAMICS MODEL-BASED ASSESSMENT OF THE GROWING NEWSPACE ECOSYSTEM
Daniel Erkel, Massachusetts Institute of Technology (MIT), United States

IAC-22.D2.9-D6.2.2
DEVELOPMENT OF A LAUNCH VEHICLE SUSTAINABILITY RATING
Mathieu Udriot, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland

IAC-22.D2.9-D6.2.3
ROADMAP TOWARD A GREENER KICK-STAGE PROPULSION SYSTEM
Lily Blondel-Canepari, Università di Pisa (Unipi), Italy

IAC-22.D2.9-D6.2.4
THE FIRST REUSABLE SATELLITE TRANSPORTATION SYSTEM
Mike Vergalla, United States

IAC-22.D2.9-D6.2.5
THE DEVELOPMENT OF A REFUELLING TUG FOR SERVICING GEO SATELLITES
Kathleen Blyth, Absolut System, France

IAC-22.D2.9-D6.2.6
COMMERCIAL SOUNDING ROCKET MARKET 2022
Alan Webb, Commercial Space Technologies Ltd., United Kingdom

IAC-22.D2.9-D6.2.7
SPACEPORT PROPOSAL FOR PERU: IMPACT AND ECONOMIC IMPORTANCE
Victor Romero-Alva, Image Processing Research Laboratory (INTI-Lab), Universidad de Ciencias y Humanidades - UCH, Peru

IAC-22.D2.9-D6.2.8
SPACE TRAFFIC MANAGEMENT; IMPROVEMENTS AND PROPOSALS FOR THE SUSTAINABILITY OF SPACE TOURISM FLIGHTS.
Abner Plata, Instituto Tecnológico de Durango (ITD), Mexico

IAC-22.D2.9-D6.2.9
EUROPEAN NEWSPACE VERTICAL ORBITAL LAUNCHER: ACHIEVEMENTS OF THE H2020 ENVOL PROJECT
Gianluca Liggieri, Nammo Raufoss, Norway

IAC-22.D2.9-D6.2.10
STANDARDIZED RECOVERY AND REUSE SOLUTION FOR ALL LAUNCH VEHICLES LAUNCHED FROM FRENCH GUIANA
Antoine Fourcade, France

D3. 20th IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT

Coordinator(s): John C. Mankins, ARTEMIS Innovation Management Solutions, LLC, United States; Alain Pradier, European Space Agency (ESA), The Netherlands;

D3.1. Strategies & Architectures as the Framework for Future Building Blocks in Space Exploration and Development

September 20 2022, 10:15 — E06B

Co-Chair(s): John C. Mankins, ARTEMIS Innovation Management Solutions, LLC, United States; Maria Antonietta Perino, Thales Alenia Space Italia, Italy;
Rapporteur(s): Anouck Girard, University of Michigan, United States;

IAC-22.D3.1.1
THE GATEWAY AS A BUILDING BLOCK FOR SPACE EXPLORATION AND DEVELOPMENT
Emma Lehnhardt, NASA, United States

IAC-22.D3.1.2
THE SPACE SUPERHIGHWAY: SPACE INFRASTRUCTURE FOR THE 21ST CENTURY
Deborah Tomek, National Aeronautics and Space Administration (NASA), United States

IAC-22.D3.1.3
MINING IN ASTEROID BELT AND UTILIZATION OF IN-SITU RESOURCES FOR EXPLORATION OF OUTER PLANETS
Bhavayashree Janardhana, Technische Universität Berlin, Germany

IAC-22.D3.1.4
CONCEPTS OF SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT IN THE CONTEXT OF HUMAN SPACE EXPLORATION
Volker Maiwald, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

IAC-22.D3.1.5
LUNAR COMMERCE PORTFOLIO: CHARACTERISING THE STRUCTURE, ACTORS, AND REVENUE POTENTIAL OF THE EMERGING LUNAR ECONOMY
Gidon Gautel, Moon Village Association (MVA), United Kingdom

IAC-22.D3.1.6
OASIS 2045: CASE STUDY OF THE FIRST HUMAN LUNAR SETTLEMENT - PROGRESS REPORT FOR 2022
John C. Mankins, ARTEMIS Innovation Management Solutions, LLC, United States

IAC-22.D3.1.7
LUNAR POLAR ICE MINING CONCEPTS ASSESSED TOWARDS LONG-TERM OPERATIONAL SCENARIOS IN PERMANENTLY SHADOWED REGIONS
Alexander Huschke, Germany

IAC-22.D3.1.8
EVALUATION OF PHYSICAL AND MECHANICAL PROPERTIES OF A CONGLOMERATE THROUGH EXPERIMENTAL TESTING FOR FURTHER USE IN MOON-BASED CONSTRUCTION
Morelia Soto-Garro, Universidad de Costa Rica, Costa Rica

IAC-22.D3.1.9
CUBESAT-BASED MISSION ARCHITECTURE FOR OUTER PLANET EXPLORATION: URANUS CASE STUDY
Nicholas Florio, Space Generation Advisory Council (SGAC), United States

IAC-22.D3.1.10
EXTENSIBLE, TRANSFORMATIVE SPACECRAFT USING CUBESATS AS MODULAR BUILDING BLOCKS
Athip Thirupathi Raj, University of Arizona, United States

IAC-22.D3.1.11
ADDITIVE CONSTRUCTION AT DRAKE STATE—DEVELOPING THE FUTURE ADVANCED MANUFACTURING WORKFORCE: A COLLABORATION BETWEEN NASA MARSHALL (MSFC) AND DRAKE STATE COMMUNITY AND TECHNICAL COLLEGE THROUGH THE MINORITY EDUCATION RESEARCH EDU. PROJECT.
Marina Kingsbury, United States

IAC-22.D3.1.12
ASTRAX LUNAR CITY PROJECT 2022
Taiko Kawakami, ASTRAX, Inc., Japan

IAC-22.D3.1.13
OF SUSTAINABLE PATHWAYS AND APPROACHES: A MARS COLONIZATION ROADMAP FOR THE ASIA-PACIFIC
Harlee Quizzagan, Space Generation Advisory Council (SGAC), The Philippines

IAC-22.D3.1.14
THE MOON NEEDS AN INTERNATIONAL LUNAR RESOURCES PROSPECTING CAMPAIGN
Clive Neal, University of Notre Dame, United States

D3.2A. Systems and Infrastructures to Implement Sustainable Space Development and Settlement - Systems

September 20 2022, 15:00 — E06B

Co-Chair(s): Paivi Jukola, Aalto University, Finland; Gary Barnhard, XISP-Inc, United States; Julie Patarin-Jossec, Russian Academy of Sciences, France;
Rapporteur(s): Christopher Moore, National Aeronautics and Space Administration (NASA), United States; Junjiro Onoda, ISAS/JAXA, Japan;

IAC-22.D3.2A.1
NASA ENVISIONED FUTURE PRIORITIES PLAN FOR IN SITU RESOURCE UTILIZATION (ISRU)
Gerald Sanders, National Aeronautics and Space Administration (NASA), Johnson Space Center, United States

IAC-22.D3.2A.2
MODULAR ISRU SYSTEMS AS A BUILDING BLOCK FOR SUSTAINABLE SPACE EXPLORATION
Svenja Falker, Dresden University of Technology (DUT) / Technische Universität Dresden, Germany

IAC-22.D3.2A.3
INFRASTRUCTURE FOR THE EXPLOITATION OF THE LUNAR SURFACE: POWER AND ENERGY STORAGE
John Scott, National Aeronautics and Space Administration (NASA), United States

IAC-22.D3.2A.4
DEVELOPMENT OF A COMPREHENSIVE LUNAR MINING SIMULATOR TO STUDY DESIGN AND DECISION-MAKING UNDER UNCERTAINTY
Luka Malone, Imperial College London, United Kingdom

IAC-22.D3.2A.5
HOW MUCH SOLAR POWER CAN BE GENERATED AT THE "PEAKS OF ETERNAL LIGHT" AT THE LUNAR SOUTH POLE?
Amia Ross, Harvard University, United States

IAC-22.D3.2A.6
INFRASTRUCTURE FOR THE EXPLOITATION OF THE LUNAR SURFACE: AUTONOMOUS EXCAVATION, CONSTRUCTION, AND OUTFITTING
Mark Hilburger, NASA, United States

IAC-22.D3.2A.7
ON THE PATH TO LUNAR EDEN: ROADMAP AND DEMONSTRATOR DESIGN OF A LUNAR GREENHOUSE BASED ON AN ANTARCTIC PROTOTYPE.
Volker Maiwald, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

IAC-22.D3.2A.8
SUSTAINABLE MINING FOR CONSTRUCTION OF MARTIAN STRUCTURES
Dhanisha Sateesh, Space Generation Advisory Council (SGAC), India

IAC-22.D3.2A.9
KEY SYSTEMS AND INFRASTRUCTURE ENABLING ROUTINE TRAVEL BETWEEN THE EARTH AND THE MOON
Stanley K. Borowski, United States

IAC-22.D3.2A.10
CONCEPTUAL DESIGN OF A SUSTAINABLE SMALLSAT CONSTELLATION TO ENABLE RELIABLE LUNAR COMMUNICATION NETWORK
Ricardo Gomes, Space Generation Advisory Council (SGAC), Portugal

IAC-22.D3.2A.11
LUNAR POLAR ICE EXTRACTION TECHNIQUES ASSESSED TOWARDS POWER AND INFRASTRUCTURE REQUIREMENTS
Alexander Huschke, Germany

IAC-22.D3.2A.12
GEOLOGIC ENERGY STORAGE AS SHARED ISRU AND ECLSS INFRASTRUCTURE ELEMENT
Gordon Wasilewski, Astronika, Poland

IAC-22.D3.2A.13
SPACE DEBRIS: THE STOCK GEO MATERIAL FOR RE-UTILIZATION AND RECYCLING SPACE MISSIONS.
Fernando Vargas Rodriguez, Cranfield University, Cranfield UK, Mexico

D3.2B. Systems and Infrastructures to Implement Sustainable Space Development and Settlement - Technologies

September 22 2022, 10:15 — E06B

Co-Chair(s): Alain Pradier, European Space Agency (ESA), The Netherlands; Christopher Moore, National Aeronautics and Space Administration (NASA), United States;

Rapporteur(s): Alain Dupas, European Bank for Reconstruction and Development, France; Gary Barnhard, XISP-Inc, United States;

IAC-22.D3.2B.1
IN SPACE MANUFACTURING AND ASSEMBLY: WE ARE READY!
Christophe FIGUS, Airbus Defence and Space SAS, France

IAC-22.D3.2B.2
PLATFORM FOR AN IN SITU LUNAR SAMPLES PRE-ANALYSIS - PRELIMINARY CONCEPTS AND REQUIREMENTS FOR A FACILITY IN EUROHAB
Serge Chevreil, Institut de Recherche en Astrophysique et Planétologie (IRAP), France

IAC-22.D3.2B.3
THE "SENSIBLE" WAY TO CONSTRUCT ROBOTS FROM LUNAR RESOURCES
Alex Ellery, Carleton University, Space Exploration and Engineering Group, Canada

IAC-22.D3.2B.4
LUNAR REGOLITH BEHAVIOR IN VACUUM FOR ISRU TRANSPORTATION AND STORAGE
Jason Noe, Michigan Technological University, United States

IAC-22.D3.2B.5
AN AIRLOCK CONCEPT TO LIMIT THE BIOLOGICAL CONTAMINATION OF MARS DURING A HUMAN EXPLORATION MISSION
Christiane Heinicke, ZARM, University of Bremen, Germany

IAC-22.D3.2B.6
CMG-POWERED ARTIFICIAL GRAVITY AND MAGNETIC LOADING SYSTEM FOR LUNAR SETTLEMENTS
Tanishka Roy, University of Petroleum and Energy Studies, India

IAC-22.D3.2B.7
CONCEPTUAL DESIGN OF A LIQUID WATER STORAGE SYSTEM FOR LUNAR LIFE SUPPORT AND EXPLORATION
Tim Altorfer, ZHAW – Zurich University of Applied Sciences, Switzerland

IAC-22.D3.2B.8
ESTABLISHING DISTRIBUTED CONTROL NETWORKS IN SMART LUNAR BASES
Jiawei Qiu, University of Arizona, United States

IAC-22.D3.2B.9
ORCHESTRATING SYMBIOSIS: EVOLVING A FRAMEWORK FOR SHARED CONTROL FOR MISSION OPERATIONS CONTROL APPLICATIONS
Gary Barnhard, XISP-Inc, United States

IAC-22.D3.2B.10
ON-ORBIT SERVICING: INTERNATIONAL CONSENSUS ABOUT STANDARDIZATION OF INTERFACES
Virgile Gautier, Space Generation Advisory Council (SGAC), Germany

IAC-22.D3.2B.11
SUPER PRESSURE BALLOON DEPLOYABLE STRUCTURE FOR THE MOON
Luciana Tenorio Carrera, Department of Engineering, The University of Tokyo, Japan

IAC-22.D3.2B.12 (non-confirmed)
MOLTEN REGOLITH ELECTROLYSIS: SYSTEM DESIGN AND VACUUM COMPONENT TESTING
Laurent Sibille, Southeastern Universities Research Association (SURA), United States

IAC-22.D3.2B.13
HORIZONTAL CONSTRUCTION ON THE MOON USING REGOLITH COMPACTION
Gordon Wasilewski, Astronika, Poland

D3.3. Space Technology and System Management Practices and Tools

September 22 2022, 13:45 — E06B

Co-Chair(s): John C. Mankins, ARTEMIS Innovation Management Solutions, LLC, United States; Paivi Jukola, Aalto University, Finland;

Rapporteur(s): Maria Antonietta Perino, Thales Alenia Space Italia, Italy;

IAC-22.D3.3.1
TAKING AGILE TO SPACE: MODERNIZED PROCESSES AND ARCHITECTURES FOR AVIONICS DEVELOPMENT
Sepand Dyanatkar, University of British Columbia, Canada

IAC-22.D3.3.2
WAYS FOR MANAGING UNCERTAINTIES FOR AN AGILE SPACE PROGRAM MANAGEMENT
Sultan Al Zeidi, United Arab Emirates Space Agency, United Arab Emirates

IAC-22.D3.3.3
THE OUTER SPACE TREATY AND THE NEED FOR MINIMUM INTERNATIONAL STANDARDS REGULATING MARTIAN AND LUNAR SETTLEMENTS
George Anthony Long, United States

IAC-22.D3.3.4
MODULAR MECHATRONICS INFRASTRUCTURE FOR ROBOTIC PLANETARY EXPLORATION ASSETS IN A FIELD OPERATION SCENARIO
Andre Fonseca Prince, German Aerospace Center (DLR), Germany

IAC-22.D3.3.5
ADOPTING MODULAR OPEN SYSTEMS APPROACHES TO ENSURE INTEROPERABILITY FOR LUNAR EXPLORATION
James Mastandrea, Johns Hopkins University Applied Physics Laboratory, United States

IAC-22.D3.3.6
MINIATURE AUTONOMOUS MOBILE ROBOTS (MAMRS) FOR SPACE EXPLORATION USING SWARM INTELLIGENCE (SI) ALGORITHM.
Priyanshu Jindal, University of Petroleum and Energy Studies, India

IAC-22.D3.3.7
APPLICATIONS AND DATA REQUIREMENTS FOR DIGITAL TWIN-ENABLED DIAGNOSIS AND PROGNOSIS SYSTEM FOR SPACE HABITATS
Yu Hou, Carnegie Mellon University, United States

IAC-22.D3.3.8
THE UNITED ARAB EMIRATES NEXT 50 YEARS OF SPACE EXPLORATION
Ilias Fernini, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

IAC-22.D3.3.9
CIRCULAR ECONOMY, ITS APPLICATION IN THE AEROSPACE SECTOR
Daniela Fernanda González Chávez, Universidad Nacional Autónoma de México (UNAM), Mexico

IAC-22.D3.3.10
A MILITARY MEDICAL SUPPORT FRAMEWORK FOR THE SUSTAINMENT OF THE SPACE DOMAIN
Jacopo Frassini, NATO Centre of Excellence for Military Medicine, Italy

IAC-22.D3.3.11
CREATING GLOBAL DIGITAL TWINS TO IMPROVE AIR QUALITY AND COVID OUTCOMES
Jeanne Holm, City of Los Angeles, United States

IAC-22.D3.3.12
ABSTRACT 2, ISS INTERVIEW
Paivi Jukola, Aalto University, Finland

IAC-22.D3.3.13
ARTIFICIAL INTELLIGENCE BASED FDIR TECHNIQUES SET GROUND FOR MORE AUTONOMOUS SPACE MISSIONS – SWOT ANALYSIS
ONUR TARAKÇIOĞLU, TAI - Turkish Aerospace Industries, Inc., Turkey

D4. 20th IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE

Coordinator(s): Giuseppe Reibaldi, Moon Village Association (MVA), Austria; Yu Lu, China Academy of Launch Vehicle Technology, China, China;

D4.1. Innovative Concepts and Technologies

September 18 2022, 15:15 — E06B

Co-Chair(s): Bernadette Joy Detera, Moon Village Association (MVA), Japan; Timothy Cichan, Lockheed Martin Corporation, United States;

Rapporteur(s): Xiaowei WANG, China Academy of Launch Vehicle Technology (CALT), China;

IAC-22.D4.1.1
DISCOVERER: FINAL RESULTS AND OUTCOMES
Peter C.E. Roberts, The University of Manchester, United Kingdom

IAC-22.D4.1.2
COLMENA MICRO-ROVERS FOR LUNAR EXPLORATION: A PROOF OF CONCEPT
Gustavo Medina Tanco, Universidad Nacional Autónoma de México (UNAM), Mexico

IAC-22.D4.1.5
POTENTIAL OF LOW-TEMPERATURE PLASMA IN GAMMA-RAY SHIELDING IN THE ANTIMATTER PROPULSION SYSTEM
Prince Kumar, India

IAC-22.D4.1.6
CONTROLLING WEATHER USING A NOVEL SWARM SATELLITE NETWORK
Krishna Kumar, Ryerson University, Canada

IAC-22.D4.1.7
REUSABLE SATELLITES WITH AN ADVANCE RE-ENTRY MECHANISM
Anumadhubala Rajakumari, ASTROPHYSICIST, India

IAC-22.D4.1.8
DESIGN AND DEVELOPMENT OF MULTI-MANEUVERING SATELLITE SYSTEM FOR GAS PLANETS AND THEIR MOONS
Sumedh Deshpande, Spaceonova, India

IAC-22.D4.1.9
ANALYSIS AND OPTIMIZATION OF A NETWORK OF ORBITAL STATIONS FOR MOMENTUM EXCHANGE TRANSFERS
Juan José García Ortiz, University Carlos III of Madrid, Spain

IAC-22.D4.1.10
ASTRAX SOLAR SYSTEM ECONOMIC BLOC CONCEPT USING NFT AND METAVERSE TECHNOLOGIES
Taichi Yamazaki, ASTRAX, Inc., Japan

IAC-22.D4.1.11
ADOPTION OF DISTRIBUTED LEDGER TECHNOLOGY (DLT) IN THE SUSTAINABLE SPACE INDUSTRY: FINANCE, LEGAL, SECURITY & LOGISTICS
Marcelo Boldt, DLR (German Aerospace Center), Germany

IAC-22.D4.1.12
ADVANCEMENTS IN LASER PROPULSION FOR RELATIVISTIC LIGHTSAIL MISSIONS
Wesley Green, Breakthrough Initiatives, United States

IAC-22.D4.1.13
UTILIZING INTEGRATED SYSTEMS TO UPGRADE HUMANIDS FOR USE IN SPACE
Rohan Gharate, India

D4.2. Contribution of Moon Village to Solving Global Societal Issues

September 19 2022, 10:15 — E06B

Co-Chair(s): Giuseppe Reibaldi, Moon Village Association (MVA), Austria; Nasr Al-Sahhaf, Moon Village Association (MVA), Saudi Arabia;

Rapporteur(s): Bernadette Joy Detera, Moon Village Association (MVA), Japan;

IAC-22.D4.2.1
THE FIRST INTERNATIONAL MOON DAY AND ITS CONTRIBUTION TO PEACEFUL LUNAR EXPLORATION AND UTILISATION
Giuseppe Reibaldi, Moon Village Association (MVA), Austria

IAC-22.D4.2.2
THE PROMISES AND PERILS OF LEVERAGING BLOCKCHAIN FOR THE FUTURE OF MOON GOVERNANCE
Ioana Bratu, Vrije Universiteit Amsterdam, The Netherlands

IAC-22.D4.2.3
EMERGING SPACE COUNTRIES AND THE FUTURE OF LUNAR EXPLORATION
Ghanim Alotaibi, Kuwait

IAC-22.D4.2.4
PROPOSAL OF A CAPACITY BUILDING ROADMAP TO INTEGRATE MEXICO IN THE GLOBAL EFFORTS FOR THE MOON EXPLORATION UNDER THE FRAMEWORK OF THE MOON VILLAGE ASSOCIATION AND ITS BENEFITS FOR OTHER LATIN-AMERICAN COUNTRIES.
Juan Carlos Mariscal, Dereum Labs S.A. de C.V., Mexico

IAC-22.D4.2.5
SPACE-BASED GEOENGINEERING FROM LUNAR RESOURCES
Alex Ellery, Carleton University, Space Exploration and Engineering Group, Canada

IAC-22.D4.2.6
DEVELOPMENT OF A REAL-LIFE (ANALOG) ASTRAX LUNAR CITY CONSTRUCTION PROJECT IN JAPAN
Taichi Yamazaki, ASTRAX, Inc., Japan

IAC-22.D4.2.7
LARGE-SCALE THERMAL MINING OF LUNAR ICES: MITIGATION OF PRODUCTION DECLINE
Gordon Wasilewski, Astronika, Poland

IAC-22.D4.2.8
SERVICE OF ENTERTAINMENT ARCADE ON MARS OR THE MOON
Yoshiaki Kurihara, Malaysia

IAC-22.D4.2.9
INITIATIVE TO IMPROVE ANALOG SPACE MISSION PROJECTS.
Karla Fabiola Mayo Sánchez, Facultad de Ingeniería-UNAM, Mexico

IAC-22.D4.2.10
ESTABLISHMENT AND DEVELOPMENT OF A LUNAR COMMUNITY AND ACTIVITY SPACE BY CHILDREN FOR CHILDREN
Haruto Kurono, Japan

IAC-22.D4.2.11
AEROPONICS RICE: STAPLE ALTERNATIVE TO MOON INHABITANTS
Catherine Raisa Kimberly P. Mandigma, Space Generation Advisory Council (SGAC), The Philippines

IAC-22.D4.2.12
ONE FISH, TWO FISH, MOON FISH
Gary Hlusko, United States

IAC-22.D4.2.13
PROMOMOON INITIATIVE: CAPACITY-BUILDING ACTIVITY FOR NEW SPACE MARKET DEVELOPMENT ON LUNAR TECHNOLOGIES
Bernadette Joy Detera, Moon Village Association (MVA), Japan

D4.3. Modern Day Space Elevators Entering Development

September 19 2022, 15:00 — E06B

Co-Chair(s): Peter Swan, International Space Elevator Consortium, United States; Yoji Ishikawa, Obayashi Corporation, Japan;

Rapporteur(s): Fumihiko Inoue, Shonan Institute of Technology, Japan;

IAC-22.D4.3.1
KEYNOTE: SPACE ELEVATORS AS A TRANSFORMATIONAL LEAP FOR HUMAN MOVEMENT OFF-PLANET
Peter Swan, International Space Elevator Consortium, United States

IAC-22.D4.3.2
SPACE ELEVATORS FOR RESOURCE UTILIZATION IN THE SOLAR SYSTEM
Yoji Ishikawa, Obayashi Corporation, Japan

IAC-22.D4.3.3
DUAL SPACE ACCESS: AN EVOLUTIONARY STEP TOWARDS HUMANKIND'S MOVEMENT OFF-PLANET
Jerry Eddy, International Space Elevator Consortium (ISEC), United States

IAC-22.D4.3.4
SPACE ELEVATOR TETHER MATERIALS: AN OVERVIEW OF THE CURRENT CANDIDATES
Adrian Nixon, United Kingdom

IAC-22.D4.3.5 (non-confirmed)
EFFECTIVENESS OF UTILIZING MARINE WARRANTY SURVEY FOR OPERATIONS IN MARINE NODE OF SPACE ELEVATOR SYSTEM
Takeyuki Fukazawa, Japan

IAC-22.D4.3.6
ACTIVE CURVATURE CONTROL FOR THE MULTI-STAGE SPACE ELEVATOR
John Knapman, International Space Elevator Consortium, United Kingdom

IAC-22.D4.3.7 (non-confirmed)
DESIGN A GREEN CORRIDOR SPACE ELEVATOR FOR CARGO TRANSPORT INTO SPACE WITH RE-USABILITY CAPABILITIES.
AMIT BHOYAR, Politecnico di Torino, India

IAC-22.D4.3.8
SPACE ELEVATOR CLIMBER DYNAMICS ANALYSIS AND CLIMB FREQUENCY OPTIMISATION
Peter Robinson, International Space Elevator Consortium, United Kingdom

IAC-22.D4.3.9
SPACE ELEVATOR TRANSPORTATION SYSTEM DEVELOPMENT ENABLES MANY MISSIONS.
Michael Fitzgerald, International Space Elevator Consortium, United States

IAC-22.D4.3.10
THE STUDY OF DIRECT, PLANETARY INSERTION ORBITS FROM SPACE ELEVATORS
Gene Luevano, Arizona State University, United States

IAC-22.D4.3.11
DEVELOPMENT AND EXPERIMENTAL STUDY OF HYBRID DRIVE CLIMBER FOR SPACE ELEVATOR TO BE APPLIED IN SPACE ENVIRONMENT
Fumihiko Inoue, Shonan Institute of Technology, Japan

IAC-22.D4.3.12
CISLUNAR ORBITAL TRANSPORTATION STUDY OF SPACE ELEVATOR APEX ANCHOR RELEASES
Daniel Griffin, Royal Institute of Technology (KTH), Sweden

IAC-22.D4.3.13
STRATEGIES FOR NON-PLANAR CONFIGURATIONS OF GEOSTATIONARY TETHERED COLLECTING SOLAR POWER SATELLITE SYSTEMS
Francisco Salazar, National Institute for Space Research - INPE, Brazil

IAC-22.D4.3.14
HEXAGONAL PRISMS STRUCTURE FOR TETHER USED FOR SPACE ELEVATOR.
Abhishek Singh, National Space Society (USA) -Mumbai chapter, India

IAC-22.D4.3.15
SPACE ELEVATOR TETHER ATMOSPHERIC WIND LOADING AND A CABLE LIFT CONCEPT
Peter Robinson, International Space Elevator Consortium, United Kingdom

IAC-22.D4.3.16 (non-confirmed)
LOOPEP PARTIAL SPACE ELEVATOR WITH MULTIPLE CLIMBERS – CONCEPT STUDY
George Zhu, York University, Canada

D4.4. Strategies for Rapid Implementation of Interstellar Missions: Precursors and Beyond

September 21 2022, 10:15 — E06B

Co-Chair(s): Mae Jemison, 100 Year Starship, United States; Giancarlo Genta, Politecnico di Torino, Italy;

Rapporteur(s): Peter Swan, International Space Elevator Consortium, United States;

IAC-22.D4.4.1
10%: THE FIRST 10 YEARS OF THE 100 YEAR STARSHIP™
Jason Batt, 100 Year Starship, United States

IAC-22.D4.4.2
CASE STUDY OF A MISSION TO EPSILON ERIDANI: UNMANNED INTERSTELLAR PROBE USING GAS CORE NUCLEAR REACTORS WITH EARLY 21ST CENTURY TECHNOLOGY
Ugur Drguven, UN CSSTEAP, United Kingdom

IAC-22.D4.4.3
ADVANCED ELECTRIC PROPULSION CONCEPTS FOR FAST MISSIONS TO THE OUTER SOLAR SYSTEM AND BEYOND
Angelo Genovese, Initiative for Interstellar Studies, Germany

IAC-22.D4.4.4
STELLA: EUROPE'S CONTRIBUTION TO A NASA INTERSTELLAR PROBE
Stanislav Barabash, Swedish Institute of Space Physics, Sweden

IAC-22.D4.4.5
PERFORMANCE MAP FOR LASER-ACCELERATED SAILCRAFT MISSIONS
Kevin Parkin, Breakthrough Initiatives, United States

IAC-22.D4.4.6
TRANSFORMATIONAL RELEASE OF SCIENTIFIC PAYLOADS FROM THE APEX ANCHOR - ANY SIZE, EVERY DAY, ANYWHERE
Peter Swan, International Space Elevator Consortium, United States

IAC-22.D4.4.7
THE EFFECTS OF THE TIMELINE EXPANSE OF CURRENT TECHNOLOGY VERSUS PROJECTED TECHNOLOGY ON THE ROAD MAP TO THE STARS
Antoine Faddoul, Tony Sky Designs Group, United States

IAC-22.D4.4.8 (non-confirmed)
ESTABLISHING "GSO" FOR THE ADVANCEMENT AND RAPIDITY IN SPACE MISSION
Rohan Gharate, India

IAC-22.D4.4.9
THE PRAGMATIC INTERSTELLAR PROBE STUDY: RESULTS
Ralph L. McNutt, Jr., The Johns Hopkins University, United States

IAC-22.D4.4.10
STELLA SCIENCE FOR INTERSTELLAR PROBE
Robert F. Wimmer-Schweingruber, University of Kiel, Germany

IAC-22.D4.4.11
THE PRAGMATIC INTERSTELLAR PROBE STUDY: THE EVOLUTIONARY JOURNEY OF OUR HABITABLE ASTROSPHERE
Pontus Brandt, Johns Hopkins University Applied Physics Laboratory, United States

IAC-22.D4.4.12
AN EXPLORATORY ANALYSIS ON THE POSSIBILITY OF ANTIMATTER IN THE FUTURE SPACE PROPULSION FOR INTERSTELLAR MEDIUM.
Adwait Sidhana, University of Petroleum and Energy Studies, India

D4.5. Space Resources, the Enabler of the Earth-Moon Ecosphere

September 21 2022, 15:00 — E06B

Co-Chair(s): Roger X. Lenard, LPS, United States; Mark Sundhal, Cleveland State University, ;

Rapporteur(s): Peter Swan, International Space Elevator Consortium, United States;

IAC-22.D4.5.1
THE MOON AS AN EFFECTIVE PROPELLANT SOURCE: A COMPREHENSIVE EXERGY ANALYSIS FROM EXTRACTION TO DEPOT
Maxi Mira Gallbrecht, ESTEC, European Space Agency, Germany

IAC-22.D4.5.2
TOP 5 LESSONS FOR SPACE FROM THE SHALE REVOLUTION
Lee Steinke, CisLunar Industries, United States

IAC-22.D4.5.3
GEOMECHANICS ON THE MOON. A PROSPECTING MISSION ARCHITECTURE CONCEPT
Clairet Guerra, Colorado School of Mines, Germany

IAC-22.D4.5.4
HOW TO FINANCE A SPACE MINING OPERATION ON THE MOON AND NEAR EARTH ASTEROIDS BY ZEPHYR D. BENTON
Zephyr Benton, self, United States

IAC-22.D4.5.5
ARAMIS PROJECT - DESIGN FRAMEWORK OF AN ADVANCED REUSABLE AUTONOMOUS MOON ICE SHUTTLE ALLOWING WATER-BASED PROPELLANT IN-(GEO)ORBIT SUPPLY
Jeremy Aubert, ISAE-Supaero University of Toulouse, France

IAC-22.D4.5.6
NEURAL COMPUTATIONAL ARCHITECTURE FROM IN-SITU RESOURCES FOR PLANETARY EXPLORATION
Alex Ellery, Carleton University, Space Exploration and Engineering Group, Canada

IAC-22.D4.5.7
MISSION ANALYSIS FOR RETRIEVING NEAR-EARTH ASTEROIDS RESOURCES FROM LUNAR ORBITS
Ruida Xie, UNSW Australia, Australia

IAC-22.D4.5.8
PROPELLANT AND CAPITAL EFFICIENT TRANS-MARS INJECTIONS USING LUNAR PROPELLANT
Nicholas Bennett, University of New South Wales, Australia

IAC-22.D4.5.9
QUANTIFYING THE EMISSIONS PER KG MASS RETURNED FROM AN ASTEROID MINING MISSION
Benjamin Ritchie, The University of Sydney, Australia

IAC-22.D4.5.10
ROBOTIC MISSION DESIGN FOR PRELIMINARY MINERAL EXPLORATION IN THE PERIPHERAL LUNAR PERMANENTLY SHADOWED REGIONS
Ian Bartlett, UNSW Australia, Australia

IAC-22.D4.5.11
IN THE SEARCH FOR IMPROVEMENTS IN SPACE MINING INTERNATIONAL REGULATION: AN ANALOGY WITH OTHER REGIMES
Miraslava Kazlouskaya, Space Generation Advisory Council (SGAC), Belarus

IAC-22.D4.5.12
REVISITING THE HIGH FRONTIER: HOW SPACE RESOURCES CAN HELP REVERSE GLOBAL WARMING
Elizabeth Scott, Colorado School of Mines, United States

IAC-22.D4.5.14
ASTEROID MINING FOR NEODYMIUM AND OTHER TRIVALENT RARE EARTH METALS
Maanyash Jain, India

D5. 55th IAA SYMPOSIUM ON SAFETY, QUALITY AND KNOWLEDGE MANAGEMENT IN SPACE ACTIVITIES

Coordinator(s): Jeanne Holm, City of Los Angeles, United States; Roberta Mugellesi-Dow, European Space Agency (ESA), United Kingdom;

D5.1. Quality and Safety, a challenge for all in Space

September 19 2022, 10:15 — W01

Co-Chair(s): Manola Romero, 3AF, France; Alexander S. Filatyev, Lomonosov Moscow State University, Russian Federation;

Rapporteur(s): Kaitlyn Holm, University of Pennsylvania, United States;

IAC-22.D5.1.1
ATICA: MBSA - MODEL BASED SAFETY ANALYSIS APPROACH FOR AEROSPACE SYSTEMS
Pablo de la Cruz, Anzen Engineering, Spain

IAC-22.D5.1.2
RAMS ANALYSES INTERDEPENDENCIES WITH FDIR AND SYSTEM ENGINEERING
Silvana Radu, European Space Agency (ESA-ESTEC), The Netherlands

IAC-22.D5.1.3
MANAGING AN INTUITIVE RISK ASSESSMENT TOOL FOR FUTURE SPACE MISSIONS: THE RISK CUBE CONCEPT
Antonio Del Mastro, Mars Planet, Italy

IAC-22.D5.1.5
UTILIZING AN ENVIRONMENT SIMULATION TO HELP SMALL SATELLITE SOFTWARE DEVELOPMENT TEAMS AT THE EXAMPLE OF SALSAT
Philipp Wüstenberg, TU Berlin, Germany

IAC-22.D5.1.6 (non-confirmed)
ACHIEVING HIGH RELIABILITY WITH HIGH CONFIDENCE FOR DEEP SPACE SYSTEMS
Harry Jones, NASA Ames Research Center, United States

IAC-22.D5.1.7
STARSHIP LOX USE FOR RADIATION MITIGATION (SLURM)
Natausha Chohan, Nexus Aurora, United States

IAC-22.D5.1.8
ORGANISATIONAL DEVELOPMENT FOR A HIGH-RISK ENVIRONMENT: THE CASE OF A GEOSTATIONARY SPACE STATION
Matjaz Vidmar, The University of Edinburgh, United Kingdom

IAC-22.D5.1.9
DEVELOPING A CORPORATE RESPONSIBILITY AND SUSTAINABILITY POLICY FOR THE EUROPEAN UNION SPACE PROGRAMME AGENCY
Christina Giannopapa, European Union Agency for the Space Programme (EUSPA), Czech Republic

IAC-22.D5.1.10
A SUPPLY CHAIN COLLABORATION-BASED MODEL FOR THE REFORMED SPACE SECTOR ECONOMY IN INDIA
Anshika Sahu, Indian Space Research Organization (ISRO), Liquid Propulsion Systems Centre (LPSC), India

D5.2. Knowledge management in the digital transformation

September 20 2022, 10:15 — W01

Co-Chair(s): Roberta Mugellesi-Dow, European Space Agency (ESA), United Kingdom; Patrick Hambloch, The Planetary Society, Germany;

Rapporteur(s): Daniel Galarreta, Centre National d'Etudes Spatiales (CNES), France; Jeanne Holm, City of Los Angeles, United States;

IAC-22.D5.2.1
KM FOR INNOVATION: DESIGNING INNOVATIVE CONCEPTS FROM DATA
Daniel Galarreta, Centre National d'Etudes Spatiales (CNES), France

IAC-22.D5.2.2
SPACE INFORMATION SHARING ECOSYSTEMS: DIGITAL KNOWLEDGE MANAGEMENT IN OPERATIONAL AWARENESS
Harvey Reed, The MITRE Corporation, United States

IAC-22.D5.2.3
FROM INFORMATION TO KNOWLEDGE AND BACK AGAIN: HOW NASA LIBRARIES AND KNOWLEDGE MANAGEMENT WORK TOGETHER FOR THE ADVANCEMENT OF SPACE SCIENCE
Caroline Coward, NASA Jet Propulsion Laboratory, United States

IAC-22.D5.2.4
INCORPORATING KNOWLEDGE MANAGEMENT PRACTICES IN THE INTERDISCIPLINARY COLLABORATION BETWEEN THE SPACE INDUSTRY AND ARCHAEOLOGY
Kaitlyn Holm, University of Pennsylvania, United States

IAC-22.D5.2.5
AIDA – ANTENNAS DIAGNOSTICS ENHANCEMENT BY COMBINED USE OF AI AND EXPERTS' KNOWLEDGE
Chiara Brighenti, S.A.T.E., Italy

IAC-22.D5.2.6
CONNECTING GLOBAL SPACE EXPERTS TO DEVELOPING SPACE PROGRAMS AND COUNTRIES
Jeanne Holm, City of Los Angeles, United States

IAC-22.D5.2.7
ARTIFICIAL INTELLIGENCE DATA AUGMENTATION FOR THE BENEFIT OF CITIZEN'S HEALTH
Marie Laure Gouzy, MEDES - IMPS, France

IAC-22.D5.2.8
ASTROSQUAD: BUILDING BLOCKS FOR THE DEVELOPMENT OF AN ASTRONAUTICS & SPACE QUESTION-ANSWERING DATASET TO BENCHMARK MACHINE COMPREHENSION OF TEXT
Patrick Fleith, Solenix GmbH, Germany

IAC-22.D5.2.9
APPLICABILITY OF KNOWLEDGE MARKET MODEL
Roberta Mugellesi-Dow, European Space Agency (ESA), United Kingdom

IAC-22.D5.2.10
DIGITAL COLLABORATIVE SERVICES AND TOOLS FOR THE AERONAUTICS AND SPACE SECTOR
Birgit Suhr, DLR (German Aerospace Center), Germany

IAC-22.D5.2.11
DIGITAL HEALTH EARTH FOR COVID-19: SIMULATING PANDEMIC EMERGENCY PLAN BY OPEN DATA FROM SPACE APPLICATIONS
Federico Monaco, Università degli Studi di Parma, Italy

IAC-22.D5.2.12
LEVERAGING ON OPEN SOURCE DATA AND MACHINE LEARNING TO MODEL URBAN GROWTH
Peter Okello, Kenya Space Agency, Kenya

IAC-22.D5.2.13
AN EXAMINATION OF INCENTIVES FOR INFORMATION SHARING TO ACCOMPLISH TRANSPARENT SPACE ACTIVITIES AND RESPONSIBLE CONJUNCTION AVOIDANCE
Aiden O'Leary, Orbit Fab, United States

D5.3. Prediction, Testing, Measurement and Effects of space environment on space missions

September 21 2022, 10:15 — W01

Co-Chair(s): MENGU CHO, Kyushu Institute of Technology, Japan; Henry de Plinval, Office National d'Etudes et de Recherches Aérospatiales (ONERA), France;

Rapporteur(s): Carlos Soares, NASA Jet Propulsion Laboratory, United States; Teppei Okumura, Japan Aerospace Exploration Agency (JAXA), Japan;

IAC-22.D5.3.1
NEW INSIGHT INTO HALO CORONAL MASS EJECTIONS TO IMPROVE SPACE WEATHER FORECASTING CAPABILITIES
Ryun Young Kwon, Korea, Republic of

IAC-22.D5.3.3
A REVIEW ON PLANETARY AURORAS AND ITS CAUSE IN SOLAR SYSTEM
Akansha Raman, University of Petroleum and Energy Studies, India

IAC-22.D5.3.4
CRITICAL PLASMA ENVIRONMENT FOR DEBRIS CAPTURING OPERATION IN AURORAL OVAL
Teppei Okumura, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.D5.3.5
DUAL SATELLITE SYSTEM AND MISSION ARCHITECTURE DESIGN AND VALIDATION FOR OPERATIONAL STUDIES OF EARTH'S VAN ALLEN BELTS
Abhay Kaushik Nudurupati, University of Petroleum and Energy Studies, India

IAC-22.D5.3.6
COMPARATIVE STUDY OF RADIATION ON EUROPA ORBITER AND FLY-BY MISSIONS
Raj Khismatrao, University of Petroleum and Energy Studies, India

IAC-22.D5.3.7
VISION - A MODULAR PLATFORM FOR RADIATION ENVIRONMENT MAPPING IN LOW EARTH ORBIT
Antoine ARVEILLER, French Guiana

IAC-22.D5.3.8
ASSESSING THE SPACE ENVIRONMENT AND ITS EFFECTS ON SPACE MISSIONS WITH SPENVIS
Erwin De Donder, Belgian Institute for Space Aeronomy (BISA), Belgium

IAC-22.D5.3.9
DEVELOPMENT OF A COMPREHENSIVE PHYSICS-BASED MODEL FOR STUDY OF NASA GATEWAY LUNAR DUST CONTAMINATION
Ronald Lee, Booz Allen Hamilton, United States

IAC-22.D5.3.10
ROBUSTNESS EVALUATION OF 850NM GAAS 4 CHANNEL VCSELS FOR SPACE APPLICATIONS
Yannick Deshayes, CNRS, France

IAC-22.D5.3.11
THE SPACE RADIATION MONITORING & PROTECTION SYSTEM RADPROT
Attila Hirn, Hungary

IAC-22.D5.3.12
DETECTION OF COSMIC RADIATION INTENSITY USING THE GEIGER COUNTER AND PHOTSENSITIVE RADIATION SENSORS
Chinmai S Shivar, R V College of Engineering, Bengaluru, India

D5.4. Cybersecurity in space systems, risks and countermeasures

September 22 2022, 10:15 — W07

Co-Chair(s): Julien Airaud, Centre National d'Etudes Spatiales (CNES), France; Stefano Zatti, University of Rome "La Sapienza", Italy;

Rapporteur(s): Laurence Duquerroy, European Space Agency (ESA), The Netherlands;

IAC-22.D5.4.1
CYBER VULNERABILITIES AND RISKS OF AI TECHNOLOGIES IN SPACE APPLICATIONS
Paola Breda, Hylmpulse Technologies GmbH, Germany

IAC-22.D5.4.2
AI SYSTEMS TO ENSURE CYBER SECURITY IN SPACE
Nebile Pelin MANTI, Space Generation Advisory Council (SGAC), Turkey

IAC-22.D5.4.3
CYBERSECURITY CHALLENGES AND CONSTRAINTS ON LAUNCH AND SPACE OPERATIONS
Julien Airaud, Centre National d'Etudes Spatiales (CNES), France

IAC-22.D5.4.4
IMPROVING ICE CUBES SECURITY RESILIENCE WITH 7SHIELD
Mathieu Schmitt, Space Applications Services, Belgium

IAC-22.D5.4.5
SECURE SYSTEMS ENGINEERING FRAMEWORK FOR SPACE MISSIONS
Marcus Wallum, ESA - European Space Agency, Germany

IAC-22.D5.4.6
MANAGE THE COGNITIVE CYBERSECURITY IN SPACE : HOW TO UNDERSTAND THE DATA
Jamel Metmati, THALES Services, France

IAC-22.D5.4.7
UNDERSTANDING SPACE VULNERABILITIES: DEVELOPING TECHNICAL AND LEGAL FRAMEWORKS FOR AI AND CYBERSECURITY IN THE SPATIAL FIELD
Antonio Carlo, Tallinn University of Technology, Estonia

IAC-22.D5.4.8
THE OUTER SPACE REGIME COMPLEX: WHERE CYBERSPACE MEETS OUTER SPACE
Lauren Napier, Northumbria University, United Kingdom

IAC-22.D5.4.9
SECURE BEFORE LAUNCH: SATELLITE SECURITY GUIDELINES VULNERABILITIES CONCERNS FOR SPACE MISSIONS
Wichayada Chamnansil, Chulalongkorn University, Thailand

D6. IAF SYMPOSIUM ON COMMERCIAL SPACEFLIGHT SAFETY ISSUES

Coordinator(s): Jean-Bruno Marciacq, JBM Aerospace, Germany; Francesco Santoro, Altec S.p.A., Italy;

D6.1. Commercial Spaceflight Safety and Emerging Issues

September 19 2022, 10:15 — W07

Co-Chair(s): John Sloan, Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST), United States; Francesco Santoro, Altec S.p.A., Italy;

Rapporteur(s): Gennaro Russo, Campania Aerospace District, DAC, Italy;

IAC-22.D6.1.1
COMMERCIAL SPACE FLIGHT SAFETY AND EMERGING ISSUES
Takafumi Fukuzawa, Embry-Riddle Aeronautical University, United States

IAC-22.D6.1.2
INTEROPERABLE DATA EXCHANGE FOR SAFE AND EFFICIENT LAUNCH AND RE-ENTRY OPERATIONS IN AN INTERNATIONAL ENVIRONMENT
Sven Kaltenhaeuser, DLR, German Aerospace Center, Germany

IAC-22.D6.1.3
A NEW APPROACH TO ACCELERATING CONVERGENCE ON RANGE SAFETY ANALYSIS ISOPLETHS
Scott Schneider, Australia

IAC-22.D6.1.4
CHARTING THE COURSE: DEFINING PARAMETERS FOR COMMERCIAL SPACEFLIGHT SAFETY INVESTIGATIONS
Sara Langston, Embry-Riddle Aeronautical University, United States

IAC-22.D6.1.5
SAFETY STANDARDS FOR LAUNCH AND RE-ENTRY OPERATIONS: OVERVIEW OF CURRENT RISK MANAGEMENT POLICIES IN DIFFERENT COUNTRIES AND INDUSTRIES
Tobias Rabus, DLR (German Aerospace Center), Germany

IAC-22.D6.1.6
FROM YACHTS TO SPACECRAFT: LEGAL ASPECTS OF SPACE TOURISM VENTURES IN COMPARISON WITH THE LEGAL REGIME GOVERNING MARINE TOURISM
Niki Giannakou, National and Kapodistrian University Of Athens, Greece

IAC-22.D6.1.7
PRE-FLIGHT MEDICAL POLICY FOR SPACE FLIGHT PARTICIPANTS IN SUBORBITAL FLIGHTS
Sakurako Kuba, Embry-Riddle Aeronautical University, United States

IAC-22.D6.1.8
PHOTOGRAPHY SERVICES AND TECHNIQUES REQUIRED FOR SPACE TRAVEL
Chikako Murayama, Japan

IAC-22.D6.1.9
EXPLOSION AND FIRE RISK ASSESSMENT IN SPACE LAUNCH PAD COMPLEX
Eun Sang Jung, Pusan National University, Korea, Republic of

IAC-22.D6.1.10
THE BLUE ABYSS COMMERCIAL ASTRONAUT TRAINING CENTRE:
ENABLING SPACE FLIGHT PARTICIPANTS TO FLY SAFELY
Vladimir Pletser, Blue Abyss, United Kingdom

D6.3. Enabling safe commercial spaceflight: vehicles and spaceports

September 20 2022, 10:15 — W07

Co-Chair(s): John Sloan, Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST), United States; Francesco Santoro, Altec S.p.A., Italy;
Rapporteur(s): Gennaro Russo, Campania Aerospace District, DAC, Italy;

IAC-22.D6.3.1
SPACE PORT ISRAEL - CREATING EAST MEDITERRANEAN SPACEPORT
Alex Orlovsky, Israel

IAC-22.D6.3.2
IN THE AIR AS IN THE SEA: CONSOLIDATING RISK MANAGEMENT STRATEGIES OF MARITIME TRAFFIC AND AIRSPACE TRAFFIC DURING LAUNCH FACILITY OPERATIONS
Scott Schneider, Australia

IAC-22.D6.3.3
IMPLEMENTING SPACEPORT INNOVATIVE CAPABILITIES TO ACQUAINT AND PREPARE FUTURE SPACE TRAVELERS THROUGH ENHANCED, FULLY IMMERSIVE EXPERIENCE
Alessandra Bonavina, NEXT ONE FILM GROUP Srl, Italy

IAC-22.D6.3.4
THE DEVELOPMENT AND BENEFITS OF THE WHALERS WAY ORBITAL LAUNCH COMPLEX: A LAUNCH SITE DEDICATED TO HIGH CADENCE OPERATIONS TO HIGH INCLINATION ORBITS
Scott Schneider, Australia

IAC-22.D6.3.5
ESTABLISHING THE REQUIREMENTS FOR SAFE ROCKET LAUNCHES WITH RESPECT TO WEATHER
David Muresan, Concordia University, Canada

IAC-22.D6.3.6
MALAYSIA AS ASEAN FIRST SPACEPORT: THE PRINCIPLE OF ITS URGENCY
HAZARIAH MOHD NOH, Malaysia

IAC-22.D6.3.7
FEASIBILITY ANALYSIS OF A SPACEPORT IN MOROCCO AS A PATHWAY TO MEETING THE GROWING INTERNATIONAL DEMAND FOR SPACE ACCESS
Nabil Souhair, Alma Mater Studiorum - University of Bologna, Italy

IAC-22.D6.3.8
HYPLANE: A SINGLE STAGE SUBORBITAL AEROSPACEPLANE
Gennaro Russo, Campania Aerospace District, DAC, Italy

IAC-22.D6.3.9
NEW PERSPECTIVES FOR ROCKET LAUNCHING IN BRAZIL: THE RISE OF ALCANTARA.
Luciana Gonçalves, Aeronautic Institute of Technology (ITA), Brazil

IAC-22.D6.3.10
A SAFETY AND COMPETITIVE ANALYSIS OF ALCANTARA SPACEPORT
Rafael Lobo, University of Brasilia, Brazil

IAC-22.D6.3.11
THE LUIGI BROGLIO CENTER - REACTIVATING A SPACE LAUNCH SITE CENTER USING EXISTING AND NEW INFRASTRUCTURE
Arnold Bundotich, Kenya

E1. IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM

Coordinator(s): Jessica Culler, NASA Ames Research Center, United States; Seyed Ali Nasser, Space Generation Advisory Council (SGAC), Canada;

E1.1. Ignition - Primary Space Education

September 18 2022, 15:15 — E08B

Co-Chair(s): Kaori Sasaki, Japan Aerospace Exploration Agency (JAXA), Japan; Carol Carnett, International Space University (ISU), United States;

Rapporteur(s): Christopher Vasko, European Space Agency (ESA), The Netherlands; Matteo Emanuelli, Airbus Defence and Space, Germany;

IAC-22.E1.1.1
SPACE CLUBS FOR KENYA
Malkia Kelelue, Kenya Space Agency (KSA), Kenya

IAC-22.E1.1.2
MICROCONTROLLERS IN SPACE AND IN THE CLASSROOM - THE "CALLIOPEO" EXPERIMENT
Andreas Rienow, Ruhr-University Bochum, Germany

IAC-22.E1.1.3
USING INQUIRY-BASED LEARNING AND ROLE MODELLING AS A MOTIVATOR FOR INCREASING THE PARTICIPATION OF GIRLS IN SPACE SCIENCE
Gemma Wildermuth, Swinburne University of Technology, Australia

IAC-22.E1.1.4
INSPIRING THE NEXT GENERATION: CREATING ENGAGING AND ACCESSIBLE EDUCATIONAL CONTENT FOR YOUNG GIRLS IN STEM
Emma Belhadfa, Space Generation Advisory Council (SGAC), Canada

IAC-22.E1.1.5
LESSONS LEARNED AND PERSPECTIVES TO OPEN UP THE SPACE SECTOR TO CHILDREN BY MEANS OF HANDS-ON ACTIVITIES DEVELOPED BY STUDENTS AND YOUNG PROFESSIONALS
Clara Moriceau, Space Generation Advisory Council (SGAC), France

IAC-22.E1.1.6
FROM OVERVIEW EFFECT TO LEARNING GAINS: VIRTUAL REALITY IN SPACE EDUCATION
Max Louwerse, Spacebuzz, The Netherlands

IAC-22.E1.1.7
STARTUP: AN INNOVATIVE APPROACH TOWARDS EFFICIENT PRIMARY SPACE STEAM-BASED EDUCATION
Vatasta Koul, Space Generation Advisory Council (SGAC), India

IAC-22.E1.1.8
STARWARD STEM: INTEGRATING SPACE STATION EXPERIMENTS AND TRANSDISCIPLINARY PROJECT-BASED LEARNING IN A K12 SCHOOL DISTRICT IN NORTH CAROLINA, USA
Lauren Milord, DreamUp, PBC, United States

E1.2. Lift Off - Secondary Space Education

September 19 2022, 10:15 — E08B

Co-Chair(s): Seyed Ali Nasser, Space Generation Advisory Council (SGAC), Canada;
Rapporteur(s): Christopher Vasko, European Space Agency (ESA), The Netherlands;

IAC-22.E1.2.1
CUBES IN SPACE: CAN THE IMPLEMENTATION OF STUDENT-DESIGNED SPACE PAYLOADS INCREASE ENGAGEMENT AND CONTINUED MOTIVATION IN SCIENCE, TECHNOLOGY, ENGINEERING, THE ARTS AND MATHEMATICS (STEAM)?
Margot Fenton Solberg, Ecuadorian Civilian Space Agency (EXA), Ecuador

IAC-22.E1.2.2
AN EVALUATION OF THE IMPACT OF HANDS-ON SPACE-BASED STEM ACTIVITIES ON THE ATTITUDES OF YOUNG WOMEN IN SINGLE-SEX EDUCATION TO STEM CAREERS.
Lorcan Kelleher, Politecnico di Milano, Ireland

IAC-22.E1.2.3
FROM CONCEPT TO LAUNCH: SIGNIFICANCE AND CHALLENGES OF DIGITAL ENGINEERING IN STUDENT CUBESAT PROJECTS.
Dylan Kiesling, United States

IAC-22.E1.2.4
UNDERSTANDING ORBITAL TRANSFER TYPES WITH SECONDARY STUDENT CREATED PYTHON CODE
Alexander Castronovo, United States

IAC-22.E1.2.5
ISS-BORNE EARTH OBSERVATION SENSORS IN AUGMENTED REALITY APPLICATIONS FOR SECONDARY EDUCATION
Claudia Lindner, Ruhr-University Bochum, Germany

IAC-22.E1.2.6
BECOMING CLIMATE DETECTIVES USING SATELLITES DATA - A TAILORED SUCCESS STORY IN ITALY
Rocchina Guarini, ASI - Italian Space Agency, Italy

IAC-22.E1.2.7
INSPIRING HIGH SCHOOL TEACHERS AND STUDENTS TO STEM THROUGH SPACE
Gruszecka Kinga, Polish Space Agency (POLSA), Poland

IAC-22.E1.2.8
SPACE LEARNING, THE KEY TO SCIENTIFIC KNOWLEDGE FOR THE 21ST CENTURY LEARNER
Nonofo Mogopodi, Space Foundation, Botswana

IAC-22.E1.2.9
SCIENTIFIC STAND-UP COMEDY PERFORMANCE FOR STEM EDUCATION: FOSTERING SPACE KNOWLEDGE AND DEBUNKING STEREOTYPES IN SECONDARY SCHOOL STUDENTS IN SPAIN
Jorge Nicolas-Alvarez, Universitat Politècnica de Catalunya (UPC), Spain

IAC-22.E1.2.10
HOW TO NURTURE ELON MUSK IN THE CLASSROOM
Vered Cohen Barzilay, Out of the Box, Israel

IAC-22.E1.2.11
SENDING NEPAL'S FIRST SCHOOL STUDENTS' EXPERIMENT TO THE SPACE!
Suresh Bhattarai, Nepal Astronomical Society (NASO), Nepal

IAC-22.E1.2.12
MIT ZERO-G OUTREACH INITIATIVE: USING EXPERIMENT DESIGN AND VIRTUAL REALITY TO INSPIRE THE NEXT GENERATION OF SPACE SCIENTISTS AND ENGINEERS
Cody Paige, Massachusetts Institute of Technology (MIT), United States

IAC-22.E1.2.13
APRSF WATER ROCKET EVENT 2022: ONLINE EVENT USING NEW METHODS DURING THE PANDEMIC
Hiroko Tsuzuki, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.E1.2.14
ASTROPOINT - RAISING THE ASTRONOMICAL SPIRITS OF INNOVATION
Farah Youssef, N/A, United Arab Emirates

E1.3. On Track - Undergraduate Space Education

September 19 2022, 15:00 — E08B

Co-Chair(s): Kathryn Robison Hasani, Flinders University, Australia;
Rapporteur(s): Michal Kunes, Czech Republic; Ozan Kara, Space Generation Advisory Council (SGAC), Turkey;

IAC-22.E1.3.1
VERTICALLY INTEGRATED PROJECT BASED METHOD APPLIED TO SMALL SATELLITE TECHNOLOGY DEVELOPMENT
Katherine Fowee Gasaway, Purdue University, United States

IAC-22.E1.3.2
RESULTS AND LESSONS LEARNED FROM THE BARCELONA ZEROG CHALLENGE
Antoni Perez-Poch, Institut d'Estudis Espacials de Catalunya (IEEC), Spain

IAC-22.E1.3.3
STUDENT SPACE MISSIONS - REPORT ON OUR 2022 UNDERGRADUATE AURORAL OBSERVING CAMPAIGN
Edgar Bering, University of Houston, United States

IAC-22.E1.3.4
AERONAUTICAL EDUCATION FOR FRESHMEN
Yoshiaki Kurihara, Malaysia

IAC-22.E1.3.5
DEVELOPMENT OF A CANSAT AS PART OF THE UCH UNIVERSITY SPACE PROGRAM (INCA PROGRAM)
Victor Romero-Alva, Image Processing Research Laboratory (INTI-Lab), Universidad de Ciencias y Humanidades - UCH, Peru

IAC-22.E1.3.6
AUSTRALIA'S FIRST MULTIDISCIPLINARY UNDERGRADUATE SPACE TECHNOLOGY EDUCATION SUITE; LESSONS LEARNED FROM CREATING AN INNOVATIVE AND PROGRESSIVE CURRICULUM
Kim Ellis Hayes, Swinburne University of Technology, United States

IAC-22.E1.3.7
UNCONVENTIONAL TOOLS FOR SPACE EDUCATION IN THE PORTUGUESE ECOSYSTEM
Marta Gonçalves, Portugal Space Agency, Portugal

IAC-22.E1.3.8
DEVELOPMENT OF A CONCURRENT ENGINEERING TUTORIAL AS PART OF THE ESA_LAB@ INITIATIVE
Marlon Deutsch, TU Darmstadt, Germany

IAC-22.E1.3.9
THE DEBRISAT PROJECT - IMPACTING STUDENTS AND THE FUTURE OF SPACE EXPLORATION
Samantha Allen, University of Florida, United States

IAC-22.E1.3.10
REPLICABLE METHODOLOGY FOR THE CREATION OF ANTI-HARASSMENT POLICIES FOR INDEPENDENT AEROSPACE STUDENT GROUPS AS EXEMPLIFIED BY THE CASE OF TECSpace
María del Barco, Costa Rica Institute of Technology (ITCR), Costa Rica

IAC-22.E1.3.11
SPACE EDUCATION EVOLUTION IN NICARAGUA THROUGH A MULTILINGUAL WEBINAR SERIES ON DIFFERENT SPACE FIELDS
Saira O. Williams, Space Generation Advisory Council (SGAC), Costa Rica

IAC-22.E1.3.12
A HANDS-ON SPACE EDUCATION PROGRAM ON THE DEVELOPMENT, IMPLEMENTATION AND OPERATION OF PAYLOAD AND SENSORY COMPONENTS FOR THE NANOKHOD MICROROVER
Moritz Gewehr, IRS, University of Stuttgart, Germany

E1.4. In Orbit - Postgraduate Space Education

September 20 2022, 10:15 — E08B

Co-Chair(s): David Spencer, The Aerospace Corporation, United States;
Rapporteur(s): Carol Carnett, International Space University (ISU), United States; Remco Timmermans, International Space University (ISU), United Kingdom;

IAC-22.E1.4.1
KEYNOTE: PRACTICAL AND EFFECTIVE EDUCATION BASED ON MICRO/NANO/PICO-SATELLITES AND THEIR CONTRIBUTIONS
Shinichi Nakasuka, University of Tokyo, Japan

IAC-22.E1.4.2
ACCESS TO SPACE FROM NORWAY FOR EUROPEAN UNIVERSITIES AND STARTUPS
Jøran Grande, Andøya Space Education, Norway

IAC-22.E1.4.3
TEACHING SPACE POLICY: BEST PRACTICES FOR TRANSDISCIPLINARY ENGAGEMENT
Marie Borowitz, Center for Space Technology and Research (CSTAR), United States

IAC-22.E1.4.4
COMPUTATIONAL DESIGN AND INTERNATIONAL COOPERATION IN SPACE ARCHITECTURE EDUCATION
Valentina Sumini, Politecnico di Milano, Italy

IAC-22.E1.4.5
DEVELOPMENT AND IMPLEMENTATION OF THE ESA ACADEMY INITIATIVE – CUBESAT SUMMER SCHOOL
Samiksha Mestry, Space Applications Services N.V./S.A., Belgium

IAC-22.E1.4.6 (non-confirmed)
ENGINEERING AND MANAGEMENT OF SPACE SYSTEMS - A JOINT GERMANY-POLAND POSTGRADUATE MASTERS STUDY
Adam Dąbrowski, Poland

IAC-22.E1.4.7
GRADUATE AEROSPACE PROGRAM BY UNAM BASED ON MEXICO'S NEEDS.
Jorge Alfredo Ferrer Perez, Universidad Nacional Autónoma de México, Mexico

IAC-22.E1.4.8
INTERACTIVE LEARNING FOR IMPROVED PRESENTATION SKILLS TRAINING AT THE IAC INITIAL LESSONS LEARNED
Scott Madry, International Space University (ISU), United States

IAC-22.E1.4.9
LESSONS LEARNED FROM SGAC'S ACHIEVED MISSION DESIGN PROJECT, ADAPTING PROJECTS BASED ON CURIOSITY AND NEEDS OF THE NEXT GENERATION.
Bram de Winter, Space Generation Advisory Council (SGAC), The Netherlands

IAC-22.E1.4.10
THE FIRST POSTGRADUATION COURSE IN SPACE LAW & POLICY OF BRAZIL
Ian Grosner, Brazilian Space Agency (AEB), Brazil

IAC-22.E1.4.11
BUILDING A GLOBAL PARTNERSHIP TO ADVANCE THE NEW DEVELOPMENT OF SPACE EDUCATION AND CAPACITY BUILDING
Yuanyuan Guo, Beihang University, China

IAC-22.E1.4.12
SPACE LAW IN NORTHEAST ENGLAND: POSTGRADUATE STUDIES AT NORTHUMBRIA UNIVERSITY
Lauren Napier, Northumbria University, United Kingdom

IAC-22.E1.4.13
ANALOG INQUIRY-BASED-LEARNING PROFESSIONAL DEVELOPMENT AS PART OF MARS-ISRAEL EDUCATIONAL PROGRAM
Ayelet Ayeletw, Kibbutzim College of Education, Technology and the Arts, Israel

IAC-22.E1.4.14
LESSONS LEARNED FROM THE FIRST STUDENT-LED SAPIENZA GEA CAVE EXPLORATION ANALOG MISSION
Paolo Marzioli, Sapienza University of Rome, Italy

E1.5. Enabling the Future - Developing the Space Workforce

September 20 2022, 15:00 — E08B

Co-Chair(s): Kathleen Coderre, Lockheed Martin (Space Systems Company), United States; Olga Zhdanovich, Modis for European Space Agency, The Netherlands;

Rapporteur(s): Michal Kunes, Czech Republic;

IAC-22.E1.5.1
NATIONAL CANSAT COMPETITION AS A MEANS TO DEVELOP SPACE WORKFORCE IN AZERBAIJAN
Natavan Hasanova, Space Agency of Republic of Azerbaijan (Azercosmos), Azerbaijan

IAC-22.E1.5.2
REVISITING APPRENTICESHIP AS A TOOL FOR THE WORKFORCE AND BUSINESS DEVELOPMENT IN THE EMERGING SPACE ECOSYSTEMS
Daniel Sagath, Slovak Investment and Trade Development Agency (SARIO) - Slovak Space Office, Slovak Republic

IAC-22.E1.5.3
CHALLENGES AND PROSPECTS IN AFRICAN SPACE SECTOR, WITH FOCUS ON CAPACITY BUILDING AND TECHNOLOGY. STUDY AREA WEST AFRICA.
Desmond Fonyuy Wysesnyu, African Regional Institute for Geospatial Information Science and Technology (AFRIGIST), Nigeria

IAC-22.E1.5.4
ACADEMIA'S CONTRIBUTION BEYOND THE CLASSROOM: THE ROLE OF R&D&I, ENTREPRENEURSHIP, AND BUSINESS IN SPACE EDUCATION
Sara Dalledonne, European Space Policy Institute (ESPI), Austria

IAC-22.E1.5.5
INITIATING KNOWHOW ON SPACE TECHNOLOGIES IN MAURITIUS
Muhammad Ziyaad Soreefan, Mauritius Research and Innovation Council (MRIC), Mauritius

IAC-22.E1.5.6
NEPAL'S STRUCTURED FOUR-PHASED, T-SHAPED SPACE WORKFORCE DEVELOPMENT FUNDED THROUGH A UNIQUE PPP MODEL
Bikalpa Dhungana, Nepal Space Foundation, Nepal

IAC-22.E1.5.7
MODEL FOR CHANGE: LEVERAGING THE SPACE FELLOWSHIP MODEL IN CANADA
Hira Nadeem, Institute for Earth and Space Exploration, Western University, Canada

IAC-22.E1.5.8
COSTA RICA SPACE FORCE (CRSF)
Antony Ramirez, BioMechanics Expedition Technologies (BioMechaX), Costa Rica

IAC-22.E1.5.9
CONTRIBUTION OF STUDENT-RUN ORGANISATION FOR DEVELOPING THE SPACE WORKFORCE: IMPACT, EXPERIENCE, AND PRACTICES FROM THE GIRON SPACE ORGANISATION IN NORTHERN SWEDEN
Gabrielle Witt, Luleå University of Technology, Sweden

IAC-22.E1.5.10
SPACE WEATHER USER ENGAGEMENT ACTIVITIES, TRAINING AND WEBINARS
Olivier Lamborelle, Space Applications Services NV/SA, Belgium

IAC-22.E1.5.11
MEXICAN WOMEN IN SPACE
Luz Miranda Atilano Herrera, Universidad Popular Autónoma del Estado de Puebla, Mexico

IAC-22.E1.5.12
WOLFPACK ORBITAL LAUNCH FUNDING AND COMPETITION (WOLF-C)
William E. Mayville, BLUECUBE Aerospace, United States

IAC-22.E1.5.13
A REVIEW OF THE PERUVIAN AEROSPACE ECOSYSTEM: THE DEVELOPMENT OF PERUVIAN STUDENTS AND PROFESSIONALS INVOLVED TO THE AEROSPACE SECTOR
George Steve Fajardo Soria, Universidad Nacional de Ingeniería, Peru, Peru

E1.6. Calling Planet Earth - Space Outreach to the General Public

September 21 2022, 10:15 — E08B

Co-Chair(s): Jessica Culler, NASA Ames Research Center, United States; Nelly Ben Hayoun, SETI Institute, United Kingdom;
Rapporteur(s): Remco Timmermans, International Space University (ISU), United Kingdom; Frank Friedlaender, Lockheed Martin Space Systems Company, United States;

IAC-22.E1.6.1
ESA/HUBBLE SPACE TELESCOPE: COST-EFFECTIVE INITIATIVES FOR LARGE-SCALE ASTRONOMY OUTREACH
Bethany Downer, ESA - European Space Agency, Canada

IAC-22.E1.6.2
SOCIAL USE OF THE ISS WITH LARGE-SCALE PUBLIC PARTICIPATION
Yoichi Hasegawa, Japan

IAC-22.E1.6.3
SPACE SCIENCE AND PUBLIC ENGAGEMENT: 21ST CENTURY PERSPECTIVES AND OPPORTUNITIES
Amy Kaminski, NASA, United States

IAC-22.E1.6.4
LAUNCHING THEN THOUSANDS OF PEOPLE INTO SPACE TO DISCOVER PLANET EARTH
Max Louwerse, Spacebuzz, The Netherlands

IAC-22.E1.6.5
GUHEM AS A TOOL TO SUPPORT TURKISH NATIONAL SPACE PROGRAM
Halit Mirahmetoglu, Gokmen Space and Aviation Training Center (GUHEM), Turkey

IAC-22.E1.6.7
SHAPING THE NEW NORWEGIAN SPACE RACE AS A VOLUNTEER STUDENT ORGANIZATION
Ulrik Falk-Petersen, NTNU- Samfunnsforskning, Centre for Interdisciplinary Research in Space, Norway

IAC-22.E1.6.8
INSPIRE AFRICA: SPACE EDUCATION THROUGH ADVOCACY.
Nelly-helen Ebruka, Nigeria

IAC-22.E1.6.9
WHY THE CIVILIAN SPACE DEVELOPMENT SHALL KICK-OFF NOW
Adriano V. Autino, Space Renaissance International, Italy

IAC-22.E1.6.10
INCLUSION OF RURAL AND INDIGENOUS COMMUNITIES IN SPACE TECHNOLOGY DEVELOPMENT, THE CASE OF MORAZÁN-SATELLITE.
Javier Mejuto, National Autonomous University of Honduras (UNAH), Honduras

IAC-22.E1.6.11
SPACE FOR ALL IN CANADA: EXPANDING OUTREACH ACROSS THE NATION
Sobia Nadeem, McMaster University, Canada

IAC-22.E1.6.12
THE IMPACT OF CULTURAL DIFFERENCES AND A COUNTRY'S DEGREE OF TECHNOLOGICAL ADVANCEMENT IN THE SPACE SECTOR ON EMOTIONAL ATTITUDES TOWARD SPACE SECTOR COMMUNICATIONS USING SELECTED EXAMPLES
Lukasz Wilczynski, European Space Foundation, Poland

E1.7. New Worlds - Non-Traditional Space Education and Outreach

September 21 2022, 15:00 — E08B

Co-Chair(s): Victoria Mayorova, Bauman Moscow State Technical University, Russian Federation; Olga Zhdanovich, Modis for European Space Agency, The Netherlands;

Rapporteur(s): Carol Christian, STScI, United States; Kaori Sasaki, JAXA, Japan;

IAC-22.E1.7.1
SCIACCESS: ADVANCING DISABILITY INCLUSION IN SPACE EDUCATION
Anna Voelker, United States

IAC-22.E1.7.2
SPACELAB: A MOBILE LABORATORY PROPOSAL FOR SPACE SCIENCES AND ENGINEERING STIMULATION IN HONDURAS.
Gabriela Nicolle Muñoz Enamorado, National Autonomous University of Honduras (UNAH), Honduras

IAC-22.E1.7.3
A UNIQUE EDUCATIONAL PROGRAM USING A ROBOT IN ORBIT WITH INTERNATIONAL COOPERATION: KIBO ROBOT PROGRAMMING CHALLENGE
Yayoi Miyagawa, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.E1.7.4
FAZA EDUTAINMENT CENTER, SPACE ORIENTED AMUSEMENT PARK FOR AGELESS EDUCATION
Sajjad Ghazanfarinia, Iran

IAC-22.E1.7.5
ENABLING SPACE RESEARCH IN NON-TRADITIONAL GROUPS – THE CASE OF THE SPACE BIOFILMS SPACEFLIGHT SAMPLES STUDIED AT UNIVERSIDAD DEL VALLE DE GUATEMALA BY UNDERGRADUATE STUDENTS
Diana Pamela Flores Ayuso, University of Colorado Boulder, United States

IAC-22.E1.7.6
HANDBOOK OF STRATEGIC-DIDACTIC TEACHING OF SPACE SCIENCES TO CHILDREN WITH AUTISM SPECTRUM DISORDER
Andrea Dominguez, Instituto Tecnológico de Durango (ITD), Mexico

IAC-22.E1.7.7
MULTIPURPOSE APPROACHES FOR MAPPING AND ANALYZING METEORITES
Maryam Sharif, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

IAC-22.E1.7.8
A SPACE EDUCATION PROGRAM TO SOLVE THE SHORTAGE OF COMMERCIAL SPACE TEACHERS IN JAPANESE SCHOOLS
HIKARU OTSUKA, Japan

IAC-22.E1.7.9
SSERD: PREPARING THE YOUNGER GENERATION FOR SPACE REVOLUTION IN INDIA AND BEYOND
Nikhitha Chadde, India

IAC-22.E1.7.10
CREATING A MULTILINGUAL ASTRAX ACADEMY
Taichi Yamazaki, ASTRAX, Inc., Japan

IAC-22.E1.7.11
SPACEBUZZ: CREATING AMBASSADORS OF PLANET EARTH// MAKING SPACE EDUCATION RELEVANT AND INCLUSIVE FOR ALL CHILDREN
Matthijs Leendertse, Spacebuzz, The Netherlands

IAC-22.E1.7.12
SPACETHON: ACADEMIC BOOTCAMP METHODOLOGY TO INTEGRATE SPACE TEAM'S MISSIONS.
Fernando José Zorto Aguilera, National Autonomous University of Honduras (UNAH), Honduras

IAC-22.E1.7.13
SPACE RENAISSANCE ACADEMY – THE SPACE RENAISSANCE AMBASSADORS PROGRAMME
Adriano V. Autino, Space Renaissance International, Italy

IAC-22.E1.7.14
DESIGN THINKING APPROACH IN SPACE EDUCATION
ALON SHIKAR, DMARS - Desert Mars Analog Ramon Station, Israel

E1.8. Hands-on Space Education and Outreach

September 22 2022, 10:15 — International Student Zone

Co-Chair(s): Lyn Wigbels, American Astronautical Society (AAS), United States; Valerie Anne Casasanto, NASA Goddard/University of Maryland, Baltimore County (UMBC), United States;
Rapporteur(s): Carol Carnett, International Space University (ISU), United States; Kevin Stube, The Planetary Society, United States;

IAC-22.E1.8.1
 VIRTUAL EXHIBITION AS AN ALTERNATIVE PLATFORM IN DELIVERING SPACE EDUCATION: A CASE STUDY IN MALAYSIAN SOCIETY
FAIROS ASILLAM, Malaysia

IAC-22.E1.8.2
 SESTR - THE EFFECTIVE INSTRUMENT ON A WAY TO BETTER COMPREHENSION OF SPACE RADIATION PROPERTIES AND ITS IMPACT
Michael Holik, Institute of Experimental and Applied Physics, Czech Technical University in Prague, Czech Republic

IAC-22.E1.8.3
 THINKING INSIDE THE BOX: A HANDS-ON STUDENT ACTIVITY FOR BUILDING A CONTAMINATION CONTAINMENT GLOVEBOX TO ENCOURAGE PROBLEM SOLVING IN A COLLABORATIVE ENVIRONMENT
Elaine Seasley, NASA Headquarters, United States

IAC-22.E1.8.4
 AN ENTREPRENEURIAL VISION: CURATING FULLY-IMMERSIVE EXPERIENTIAL SIMULATION TRAININGS, VIRTUAL ASTRONAUTICS WORKSHOPS AND IN-PERSON MISSIONS "LETS GET S.T.E.A.M.E.D" VIRTUAL ASTRONAUTICS WORKSHOPS AND SIMULATION EVAS USING EXPONENTIAL T
Emmy Helen Jewell, Mars Academy USA, United States

IAC-22.E1.8.5
 SPACE EDUCATION AND OUTREACH IN MOROCCO THROUGH THE INTRODUCTION OF THE HANDS ON CUBESAT FARM EXPERIMENT "EXOLAB-MOR-1" FOR K6 TO 12 STUDENTS.
El Hassan Bouaghad, France

IAC-22.E1.8.6
 MOSQUITO IDENTIFICATION USING GLOBE HABITAT MAPPER TOOL
Faith Maina, Kenya Space Agency, Kenya

E1.9. Space Culture – Public Engagement in Space through Culture

September 22 2022, 13:45 — E08B

Co-Chair(s): Nelly Ben Hayoun, SETI Institute, United Kingdom; Athiye Jawad, India;
Rapporteur(s): Priyanka Das, Ecole Polytechnique, France; Nahum Romero, KOSMICA, Germany;

IAC-22.E1.9.1
 ADDRESSING DIVERSITY AND INCLUSION AT THE ITALIAN SPACE AGENCY
Luisa Santoro, Italian Space Agency (ASI), Italy

IAC-22.E1.9.2 (non-confirmed)
 ASTROSTAYS: CREATING LIVELIHOOD BASED OPPORTUNITIES THROUGH ASTRONOMY BASED TOURISM.
Arun Radhakrishnan, India

IAC-22.E1.9.3
 ON IMAGES OF THE UNIVERSE INFLUENCED BY MANGA AND ANIME
Chikako Murayama, Japan

IAC-22.E1.9.4
 DEVELOPING AN ANTI-COLONIAL PRACTICE: MOVING FROM CONVERSATION TO STRUCTURAL AND INSTITUTIONAL CHANGE WITHIN THE SPACE COMMUNITY
Alvin D. Harvey, Massachusetts Institute of Technology (MIT), United States

IAC-22.E1.9.5
 SPACE CULTURE AND SPACE PHILOSOPHY
Marie-Luise Heuser, Space Renaissance International, Germany

IAC-22.E1.9.6
 MENDING THE ANCIENT FEUD BETWEEN RELIGION AND SPACE
Kapule Gray, National Space Society, United States

IAC-22.E1.9.7
 HOW TO GO TO SPACE WITH DIFFERENT HAIRSTYLES
Mika Islam, Japan

IAC-22.E1.9.8
 IMAGINING LUNAR DENIZENS: COLLABORATIVE CREATION OF A SPACE FUTURE
Caitlin McShea, United States

IAC-22.E1.9.9
 INCLUSION OF INDIGENOUS PEOPLES IN AEROSPACE TECHNOLOGIES.
Alvaro Regules, Universidad Nacional Autónoma de México (UNAM), Mexico

IAC-22.E1.9.10
 THE VALUE OF HUMAN PATRIMONY: A 100% INCLUSIVE VISION
Adriano V. Autino, Space Renaissance International, Italy

IAC-22.E1.9.11
 DIVERSITY FOR A SUSTAINABLE SPACE FUTURE – OPPORTUNITIES AND CHALLENGES FOR PROMOTING DIVERSITY THROUGH MENTORSHIP IN THE SPACE SECTOR
S.W. Chiu, University of Exeter, United Kingdom

IAC-22.E1.9.12
 INGENIOUS SPACE-BASED HANDS-ON LEARNING TOOLS TO PROVIDE SPACE SYSTEM ENGINEERING KNOWLEDGE
Abdulla Hil Kafi, BRAC University, Bangladesh

IAC-22.E1.9.13 (non-confirmed)
 INSPIRING DIVERSE AUDIENCES TO EARTH AND SPACE SCIENCES THROUGH NATIVE AMERICAN CULTURE
Valerie Anne Casasanto, NASA Goddard/University of Maryland, Baltimore County (UMBC), United States

IAC-22.E1.9.14
 INTERCULTURALITY WITHIN PROJECT POLARIS
Christian Pieronne, France

IAC-22.E1.9.16
 INTERPLANETARY MARXISM AND THE 4TH INTERNATIONAL - POSADIST
Axel Straschnoy, Suomen Avaruustutkimusseura - Finnish Astronautical Society, Finland

IAC-22.E1.9.17
 LEARNING ABOUT SPACE EXPLORATION RESEARCH THROUGH CINEMA: THE NEW SPACE FILM FESTIVAL AT HARVARD & MIT
Alissa J. Haddaji, Harvard University, United States

IAC-22.E1.9.18
 POSSIBILITY OF ZERO-GRAVITY FLIGHT AND SPACE FLIGHT BY PEOPLE WITH DISABILITIES
Taichi Yamazaki, ASTRAX, Inc., Japan

IAC-22.E1.9.19
 THE ASTRONAUT ETHNOGRAPHY WEB PROJECT: INSIGHTS FROM FIRST-PERSON ACCOUNTS OF SPACE
Sanjana Sharma, Massachusetts Institute of Technology (MIT), United States

IAC-22.E1.9.20
 THE MOONSHOT PROJECT: SPACE EDUCATION THROUGH THE MEDIUM OF TABLETOP GAMING
Dorottya Milánkovich, Hungary

IAC-22.E1.9.21 (non-confirmed)
 TITLE: INDIGENOUS COMMUNITY IN THE SPACE SECTOR NAMES: KAREN ALONDRA GUERRERO BOORBOA / LUZ MIRANDA ATILANO HERRERA
KAREN ALONDRA GUERRERO BORBOA, Mexico

IAC-22.E1.9.22
 HOW TO CAPTURE THE COSMIC DIVERSITY THAT IS COMING
Yasuko Fukushima, Japan

IAC-22.E1.9.23
 'THE ASTRONAUT MENTALITY SERIES': REIMAGINING ON-SITE COMMUNITY ENGAGEMENT AND OUTREACH THROUGH ONLINE INTERACTIVE WEBINARS IN THE ERA OF COVID-19
Shawna Pandya, Canada

E2. 50th STUDENT CONFERENCE

Coordinator(s): Franco Bernelli-Zazzera, Politecnico di Milano, Italy; Marco Schmidt, University of Applied Sciences Würzburg-Schweinfurt, Germany;

E2.1. Student Conference - Part 1

September 18 2022, 15:15 — E03A

Co-Chair(s): Franco Bernelli-Zazzera, Politecnico di Milano, Italy; Emmanuel Zenou, Institut Supérieur de l'Aéronautique et de l'Espace (ISAE), France;

Rapporteur(s): Jeong-Won Lee, Korea Aerospace Research Institute (KARI), Korea, Republic of;

IAC-22.E2.1.1
 CLOWN: A NEW TOOL FOR CLOUD DETECTION WITH ALL-SKY CAMERA FOR OPTIMIZATION OF SPACE-DEBRIS SURVEYS.
Luis Gonçalves, Instituto de Telecomunicações (Portugal), Portugal

IAC-22.E2.1.2
 DESIGN AND PATH OPTIMIZATION OF A SPACECRAFT FOR SPACE DEBRIS REMOVAL BY BURNING IT INTO THE EARTH'S ATMOSPHERE
Abhijeet Abhijeet, Indian Institute of Technology, India

IAC-22.E2.1.3
 DETAILED DESIGN AND VERIFICATION OF A WAVE SPRING SELF-PRESSURIZED TANK FOR A MICRO-RESISTOJET THRUSTER
Franco Maria Marchese, Delft University of Technology (TU Delft), The Netherlands

IAC-22.E2.1.4
 DEVELOPMENT OF AN IMPROVED RANDOM POSITIONING MACHINE TO SIMULATE ORGANIC GROWTH IN MICROGRAVITY
Jorge Moreno, LEEM - Laboratory for Space and Microgravity Research, Spain

IAC-22.E2.1.5
 NUMERICALLY EFFICIENT METHODS FOR LOW-THRUST COLLISION AVOIDANCE MANEUVERS DESIGN IN GEO REGIME
Alexia Cantoni, Politecnico di Milano, Italy

IAC-22.E2.1.6
 ON-TRACK OPTIMAL RENDEZVOUS AND DOCKING OF SPACECRAFTS USING HYBRID COULOMB CONTROL
Gaurav Kumar, Indian Institute of Technology Kanpur, India

IAC-22.E2.1.7
 PERFORMANCE INVESTIGATION OF VAPORIZING LIQUID MICRO-RESISTOJETS AND LOW-PRESSURE MICRO-RESISTOJETS FOR THE LUMIO MISSION
Adriano Casablanca, Delft University of Technology, The Netherlands

IAC-22.E2.1.8
 PINOAA: AN INDEPENDENT DAILY EARTH OBSERVATION SERVICE USING A RASPBERRY-PI DATA PROCESSING PLATFORM
Diogo Silva, Instituto de Telecomunicações (Portugal), Portugal

IAC-22.E2.1.9
 SIMULATING MELTING-SOLIDIFICATION OF LUNAR REGOLITH PARTICLES USING COUPLED CFD METHODS
Brendon Cavainolo, University of Central Florida (UCF), United States

IAC-22.E2.1.10
 STARRY NIGHT, STARRY BRIGHT: THE VALUE OF DARK AND QUIET SKIES IN AN AGE OF MEGA-CONSTELLATIONS
Kayla Taylor, Embry-Riddle Aeronautical University, United States

IAC-22.E2.1.11
 THE OPTIMAL FUEL-CONSUMPTION MULTI-IMPULSE RENDEZVOUS TRAJECTORY DESIGN USING WHALE OPTIMIZATION ALGORITHM.
EUN SONG SHIM, Korea University of Science & Technology (UST), Korea, Republic of

E2.2. Student Conference - Part 2

September 19 2022, 10:15 — E03A

Co-Chair(s): Marco Schmidt, University of Applied Sciences Würzburg-Schweinfurt, Germany; Frank Friedlaender, Lockheed Martin Space Systems Company, United States;

Rapporteur(s): Emmanuel Zenou, Institut Supérieur de l'Aéronautique et de l'Espace (ISAE), France;

IAC-22.E2.2.1
 CONTROLLER DESIGN FOR LAUNCH VEHICLES BY INTEGRATING ADAPTIVE CONTROL WITH ROBUST CONTROL BASED ON MODEL PREDICTIVE CONTROL
Emi Sakaoka, The Graduate University for Advanced Studies[SOKENDAI], Japan

IAC-22.E2.2.2
 EARTH-MOON LOGISTICAL OPERATIONS UTILIZING CISELUNAR PERIODIC ORBITS
Adam Wilmer, US Air Force Institute of Technology, United States

IAC-22.E2.2.3
 FUEL-OPTIMAL FORMATIONS FOR TELESCOPE-STARSHADE OBSERVATORIES IN LUNAR SPACE
Grace Genszler, Cornell University, United States

IAC-22.E2.2.4
 HARVESTING GEOTHERMAL ENERGY ON MARS FOR FUTURE SETTLEMENT
Sanmathi Priya Abiram Lakshmi Devi, Cornell University, United States

IAC-22.E2.2.5
 RADIATION SHIELDING FOR INTERPLANETARY MISSIONS USING SUPERCONDUCTING MAGNETS
Alexandra Martha Walser, Switzerland

IAC-22.E2.2.6
 FAST CONJUNCTION ANALYSIS PIPELINE FOR SPACE SITUATIONAL AWARENESS
Sam Lane, Surrey Space Centre, University of Surrey, United Kingdom

IAC-22.E2.2.7
 ORIGAMI-INSPIRED DEPLOYABLE SPACE HABITATS
Joe Defillion, University of Bristol, United Kingdom

IAC-22.E2.2.8
 ON-ORBIT SPACECRAFT INERTIA TENSOR ESTIMATION
Atila Saadat, UTIAS Space Flight Laboratory, Canada

IAC-22.E2.2.9
 THERMAL DESIGN OF CASSTOR, A NANOSATELLITE FOR HIGH-RESOLUTION UV SPECTROPOLARIMETRY
Mina Konaka, Observatoire de Paris, France

IAC-22.E2.2.10
 TIP SHAPE, HEIGHT, AND THICKNESS INFLUENCES ON NONLINEAR ACOUSTIC DAMPING FROM BAFFLE BLADES
Joseph Day, The University of Colorado, United States

IAC-22.E2.2.11
SIZING OF A PROPELLED-HOPPING SYSTEM ON THE MOON
João Gambôa, ISAE - Institut Supérieur de l'Aéronautique et de l'Espace, France

E2.3-GTS.4. Student Team Competition

September 19 2022, 15:00 — W07

Co-Chair(s): Emmanuel Zenou, Institut Supérieur de l'Aéronautique et de l'Espace (ISAE), France; Franco Bernelli-Zazzera, Politecnico di Milano, Italy;

Rapporteur(s): Kathleen Coderre, Lockheed Martin (Space Systems Company), United States;

IAC-22.E2.3-GTS.4.1
3U CUBESAT MISSION TO ASSESS VEGETATION HYDRATION STATUS AND HYDROLOGICAL INSTABILITY RISK
Luisa Iossa, Politecnico di Torino, Italy

IAC-22.E2.3-GTS.4.2
BIODOMO PROJECT: AN AUTOMATED AEROPONIC HERMETICALLY CONTAINED SYSTEM TO GROW CROPS UNDER HARSH ENVIRONMENTAL CONDITIONS
Tania Ramírez González, Instituto Tecnológico de Costa Rica (TEC), Costa Rica

IAC-22.E2.3-GTS.4.3
BREAKING THE BARRIERS: IMPLEMENTATION OF FLIGHT SOFTWARE FOR UNIVERSITY SMALL SATELLITE MISSIONS
Nayana Tiwari, California Polytechnic State University, United States

IAC-22.E2.3-GTS.4.4
BUTCUBE – ROAD FOR CUBESAT IN-ORBIT SOLAR ECLIPSE OBSERVATION MISSION UTILIZING 1U DEMONSTRATOR
Václav Lazar, Brno University of Technology, Czech Republic

IAC-22.E2.3-GTS.4.5
DESIGN AND VALIDATION OF A LAB-SCALE METHALOX FUEL PLANT FOR IN-SITU PROPELLANT PRODUCTION ON MARS
Dagan Schoen, University of British Columbia, Canada

IAC-22.E2.3-GTS.4.6
DETAILED DESIGN OF IONSAT : A STATION-KEEPING MISSION AT ALTITUDES BELOW 300KM
Jerome Hui, Ecole Polytechnique, France

IAC-22.E2.3-GTS.4.7
INTERPRETING LRIT FROM GK2A SATELLITE: COMMUNICATION FOR EVERYONE
Jeonghwa Heo, Seoul National University, Korea, Republic of

IAC-22.E2.3-GTS.4.8
FUNDAMENTAL RESEARCH OF FERROFLUIDS
Maximilian Speier, Luleå University of Technology, Sweden

IAC-22.E2.3-GTS.4.9
INTERFEROMETRIC BASELINE ENLARGEMENT WITH PASSIVE REFLECTORS FOR GEOSYNCHRONOUS ORBIT DETERMINATION PRECISION ENHANCEMENT
Jorge Nicolas-Alvarez, Universitat Politècnica de Catalunya (UPC), Spain

IAC-22.E2.3-GTS.4.10
LOW-COST ATTITUDE DETERMINATION AND CONTROL SYSTEM OF THE STUDENT-BUILT 3U+ CUBESAT SOURCE
Nadim Maraqtan, KSat e.V., Germany

IAC-22.E2.3-GTS.4.11
MODULAR PORTABLE ECOSYSTEMS: A SUSTAINABLE AND SCALABLE FOOD PRODUCTION MODEL
Daniela Lomeli Mejía, University of Guadalajara, Mexico

IAC-22.E2.3-GTS.4.12
PRELIMINARY DESIGN OF LUNAR VEHICLE FOR ASTRONAUTS TRANSPORTATION
Timothée Simon, ISAE-Supaero University of Toulouse, France

IAC-22.E2.3-GTS.4.13
STRATHCUBE: A CUBESAT AGAINST SPACE DEBRIS
Lewis Gray, University of Strathclyde, United Kingdom

IAC-22.E2.3-GTS.4.14
STRATOS IV: DEVELOPMENT OF A STUDENT SOUNDING ROCKET CAPABLE OF LAUNCHING TO 100 KM ALTITUDE
Eoghan Gilleran, Delft University of Technology (TU Delft), The Netherlands

IAC-22.E2.3-GTS.4.15
WANKA - A MISSION TO MEASURE STRATOSPHERIC AEROSOLS CONCENTRATION USING LOW-COST COMMERCIAL SENSORS ONBOARD A HIGH-ALTITUDE BALLOON
Ramiro Gustavo Tintaya Quispe, Universidad Nacional de Ingeniería, Peru, Peru

E2.4. Educational Pico and Nano Satellites

September 20 2022, 10:15 — E03A

Co-Chair(s): Xiaozhou Yu, Dalian University of Technology (DUT), China; Franco Bernelli-Zazzera, Politecnico di Milano, Italy;

IAC-22.E2.4.1
POWER SUBSYSTEM OF KUAUHTLISAT, A TUBESAT-TYPE NANOSATELLITE, USING TRISOLX SOLAR CELLS ARRAYS
Antonio López, Universidad Nacional Autónoma de México, Mexico

IAC-22.E2.4.2
AN OVERVIEW OF THERMAL TESTS FOR CUBESATS
Stéphanie Fiore, Concordia University, Canada

IAC-22.E2.4.3
AN INTERNATIONAL HANDS-ON COOPERATIVE NANOSATELLITE PROJECT FOR STUDENTS AND YOUNG PROFESSIONALS IN EMERGING SPACE COUNTRIES
Tensae Alemayehu Ali, Space Generation Advisory Council (SGAC), Ethiopia

IAC-22.E2.4.4 (non-confirmed)
DESIGN OF A LOW-COST NET CAPTURE CUBESAT FOR SPACE DEBRIS REMOVAL
Minghe Shan, Delft University of Technology (TU Delft), The Netherlands

IAC-22.E2.4.5
DESIGN, VERIFICATION, AND VALIDATION OF THE COMMUNICATION SYSTEM OF AN UNDERGRADUATE CUBESAT MISSION
Alex Jurgutis, UTIAS Space Flight Laboratory, Canada

IAC-22.E2.4.7
HANSESAT - WIRELESS CUBESAT PAYLOAD TECHNOLOGY DEMONSTRATOR FROM GERMANY AND POLAND
Adam Dąbrowski, Poland

IAC-22.E2.4.8
IMPLEMENTATION OF A TAILORED MISSION ANALYSIS FRAMEWORK FOR THE FRAMSAT-1 CUBESAT MISSION
Jarle Steinberg, Norwegian University of Science and Technology, Norway

IAC-22.E2.4.9
K'OTO PROJECT, MEXICAN NANOSATELLITE FOR TRAINING HUMAN TALENT
Xochitl Verónica Silvestre Gutierrez, Instituto Tecnológico de Durango (ITD), Mexico

IAC-22.E2.4.10
MISSION DESIGN OF ON-ORBIT EDUCATIONAL NANOSATELLITE PLATFORM USING RADIATION HARDENED RASPBERRY PI-BASED DIGITAL VIDEO TRANSMITTER, WITH ECHO MODE.
Dhruva Anantha Datta, Indian Institute of Space Science and Technology (IIST), India

IAC-22.E2.4.11
MORAZÁN MRZ-SAT CUBESAT: THERMAL MODELING AND ANALYSIS GUIDE FOR ACADEMIC CUBESAT MISSIONS
Jefrey René Hipp Méndez, Universidad de San Carlos de Guatemala, USAC/CUNOC, Guatemala

IAC-22.E2.4.12
STRATEGIES DEVELOPED TO ESTABLISH A NANOSATELLITE THERMAL TESTING PLAN FOR THE SC-ODIN STUDENT PROJECT
Sarra Boussoukaya, Concordia University, Canada

IAC-22.E2.4.13
VALIDATION OF VISCOELASTIC MULTI-LAYERED DEPLOYABLE SOLAR PANEL MODULE FOR 6U CUBESAT OF STEP CUBE LAB-II
Jae-Seop Choi, Chosun University, Korea, Republic of

E3. 35th IAA SYMPOSIUM ON SPACE POLICY, REGULATIONS AND ECONOMICS

Coordinator(s): Jacques Masson, European Space Agency (ESA), The Netherlands; Bernhard Schmidt-Tedd, Leuphana University, Germany; Pieter Van Beekhuizen, The Netherlands;

E3.1. International cooperation in using space for sustainable development: The "Space2030" agenda

September 19 2022, 10:15 — E04B

Co-Chair(s): Isabelle Duvaux-Bechon, ESA - European Space Agency, France; Dumitru-Dorin Prunariu, Commission d'Astronautique de l'Académie Roumaine, Romania;

Rapporteur(s): Alexander Soucek, Austrian Space Forum, Austria; Peter Stubbe, DLR (German Aerospace Center), Germany;

IAC-22.E3.1.1
"SPACE2030" AGENDA: SPACE ECONOMY'S CHALLENGES AND SDGS' OPPORTUNITIES TO TACKLE PRESENT AND FUTURE GLOBAL EFFORTS
Antonio Del Mastro, Mars Planet, Italy

IAC-22.E3.1.2
MAPPING THE USE OF SPACE DATA IN DEVELOPMENT RESEARCH
Simona Richard, ESA - European Space Agency, Italy

IAC-22.E3.1.3
SPACE FOR THE SUSTAINABLE DEVELOPMENT GOALS: WHY SPACE? WHY NOW? AND WHAT NEXT?
Giulia Costella, Caribou Digital UK, United Kingdom

IAC-22.E3.1.4
SAVING OUR FUTURE ON EARTH THROUGH OUR PRESENCE IN SPACE - RECOMMENDATIONS FROM THE YOUNG GENERATIONS ON THE ROLE OF SPACE FOR CLIMATE ACTION
Sahba El-Shawa, Space Generation Advisory Council (SGAC), Jordan

IAC-22.E3.1.5
OPPORTUNITIES AND CHALLENGES FOR ACHIEVING 'SPACE2030': INSIGHTS FROM THE FIELD OF GLOBAL EARTH OBSERVATION SYSTEMS
Xiao-Shan Yap, Utrecht University, Netherlands Antilles

IAC-22.E3.1.6
SPACE FOR GREEN ECONOMY, COOPERATION AND SUSTAINABILITY
Annamaria Nassisi, Thales Alenia Space Italia, Italy

IAC-22.E3.1.7
CHINA'S APPROACH TO SPACE2030: IDEATIONAL AND POLITICAL ECONOMIC CONSTRAINTS ON NORMATIVE CONVERGENCE WITHIN THE INTERNATIONAL SOCIETY
Kun-Chin Lin, Air University, United States

IAC-22.E3.1.8
EMERGING TRENDS ON SATELLITE-BASED APPLICATIONS IN HEALTHCARE: A SYNOPTIC VIEW
Alessandro Paravano, Politecnico di Milano, Italy

IAC-22.E3.1.9
THE IMPORTANCE OF UN SDGS AND ESG ADOPTION WITHIN BUSINESS IN THE SPACE SECTOR
Sabrina Alam, Women in Aerospace Europe (WIA-E), Luxembourg

IAC-22.E3.1.10
IN SEARCH OF THE EUROPEAN WAY FOR SPACE: RECONCILING COOPERATION AND INDEPENDENCE IN THE IMPLEMENTATION OF THE SPACE AGENDA 2030
Valentin Degrange, Institute of Strategic and Defense Studies (IESD), France

E3.2. The future of space exploration and innovation

September 19 2022, 15:00 — E04B

Co-Chair(s): Marc Haese, DLR, German Aerospace Center, Germany; Nicolas Peter, International Space University (ISU), France;

Rapporteur(s): Devanshu Ganatra, International Institute of Space Law (IISL), United States;

IAC-22.E3.2.1
ALTERNATIVE FUTURES FOR CREWED SPACE COOPERATION AFTER THE INTERNATIONAL SPACE STATION
Scott Pace, Space Policy Institute, George Washington University, United States

IAC-22.E3.2.2
THE IMPACT OF CHANGING POLICIES ON NUCLEAR SPACE TECHNOLOGY
Carissa Christensen, Bryce Space and Technology, United States

IAC-22.E3.2.3
THE GLOBAL EXPERT GROUP ON SUSTAINABLE LUNAR ACTIVITIES (GEGSLA) CONTRIBUTION TO THE INTERNATIONAL LUNAR GOVERNANCE DEFINITION
Giuseppe Reibaldi, Moon Village Association (MVA), Austria

IAC-22.E3.2.4
ESA'S FUTURE MOON MISSION STUDIES
Markus Landgraf, European Space Agency (ESA), The Netherlands

IAC-22.E3.2.5
ECONOMIC AND NATIONAL COMPETITIVENESS IMPACTS OF THE ARTEMIS PROGRAM
Patrick Besha, NASA, United States

IAC-22.E3.2.6
THE FUTURE OF INTERNATIONAL COOPERATION IN SPACE
Svetla Ben-Itzhak, Air University, United States

IAC-22.E3.2.7
NEWSPACE AND SPACE EXPLORATION: A COMPARISON BETWEEN THE USA AND EUROPE APPROACH TO PROCUREMENT
Damini PANTALEON, International Space University (ISU), France

IAC-22.E3.2.8
GLOBAL LEGAL AND POLICY DEBATES PERTAINING TO LUNAR IN-SITU RESOURCE UTILISATION
Rukmini Roy, Georgia Institute of Technology, Atlanta, United States

IAC-22.E3.2.9
A FRAMEWORK FOR MARS SAMPLE RETURN: WHO GETS ACCESS AND WHAT ISSUES MUST BE ADDRESSED
Ekaterina Seltikova, Space Generation Advisory Council (SGAC), France

IAC-22.E3.2.10
WHAT'S NEW IN NEWSPACE: MAPPING AND DEFINING NEWSPACE
James Murphy, International Space University (ISU), United States

E3.3. Economic analysis of both actual and potential future benefits from space activities and applications to nations and peoples.

September 20 2022, 10:15 — E04B

Co-Chair(s): Pieter Van Beekhuizen, The Netherlands; Henry Hertzfeld, Space Policy Institute, George Washington University, United States;

Rapporteur(s): Luigi Scatteia, PricewaterhouseCoopers Advisory (PwC), France; Bhavya Lal, National Aeronautics and Space Administration (NASA), United States;

IAC-22.E3.3.1
ASSESSING THE VALUE OF THE NEXT GENERATION SPACE PROJECTS: STATE-OF-THE-ART AND NEW PERSPECTIVES
Alessandro Paravano, Politecnico di Milano, Italy

IAC-22.E3.3.2
FOSTERING A THRIVING SPACE ECOSYSTEM IN PORTUGAL
Manuel Wilhelm, Portugal Space Agency, Portugal

IAC-22.E3.3.3
NATIONAL SPACE INNOVATION SYSTEMS : THE INDIAN FRAMEWORK
Sagarika Rao Valluri, RNSIT Bangalore, India

IAC-22.E3.3.4
SPACE BASED SOLAR POWER: UPDATES TO ECONOMIC FEASIBILITY STUDIES
Nikolai Joseph, National Aeronautics and Space Administration (NASA), United States

IAC-22.E3.3.5
THE CASE FOR SOLAR POWER SATELLITES OVER TERRESTRIAL RENEWABLE ENERGY SOURCES
Alex Ellery, Carleton University, Space Exploration and Engineering Group, Canada

IAC-22.E3.3.6
OPEN SPACE : A REVIEW OF POLICY MAKING AND PRIVATIZATION OF SPACE SECTOR IN INDIA
Siddharth Joshi, R V College of Engineering, Bengaluru, India

IAC-22.E3.3.7
THE CHALLENGES OF LOW-COST SATELLITES FOR SPACE SERVICES VENTURES IN THE DEVELOPING WORLD - A FOCUS ON AFRICA
Giacomo Primo Sciortino, Italian Space Agency (ASI), Italy

IAC-22.E3.3.8
STATISTICS AND THEMATIC SATELLITE ACCOUNTS FOR MEASURING THE SPACE ECONOMY
Stéphanie Willekens, European Space Agency (ESA), France

IAC-22.E3.3.9
ECONOMY DIMENSION OF THE EXPECTED Cislunar CITY
Gennaro Russo, Campania Aerospace District, DAC, Italy

IAC-22.E3.3.10
A DATA-DRIVEN PROPOSAL FOR JOINT COLLABORATION IN SPACE EXPLORATION
Jason Cornelius, Pennsylvania State University, United States

E3.4. Assuring a Safe, Secure and Sustainable Environment for Space Activities

September 20 2022, 15:00 — E04B

Co-Chair(s): Peter Stubbe, German Aerospace Center (DLR), Germany; Jana Robinson, The Prague Security Studies Institute, Czech Republic;

Rapporteur(s): Gina Petrovici, German Aerospace Center (DLR), Germany;

IAC-22.E3.4.1
THE COST OF CONSTELLATIONS: AN ANALYTICAL APPROACH TO IMPLEMENTING SPACE TRAFFIC MANAGEMENT POLICY
Maggie Allen, Embry-Riddle Aeronautical University, United States

IAC-22.E3.4.2
JAPAN'S APPROACH TO TRANSPARENCY AND CONFIDENCE-BUILDING MEASURES ON ON-ORBIT SERVICING
Kazuto Suzuki, University of Tokyo, Japan

IAC-22.E3.4.3
SPACE LAW FOR NEW SPACE ACTORS: FOR GOVERNMENTAL OFFICIALS AND BEYOND
Scarlet O'Donnell, Lund University, Germany

IAC-22.E3.4.4
STRATEGIES IN SUPPORT OF A SAFE, SECURE AND SUSTAINABLE SPACE ENVIRONMENT
I. Pessôa-Lopes, International Space Consultant, Portugal

IAC-22.E3.4.5
SYNERGY FOR OUTER SPACE SUSTAINABILITY: ITU'S ROLE TODAY AND TOMORROW
Veronique Glaude, International Telecommunication Union (ITU), Switzerland

IAC-22.E3.4.6
THE CURRENT STATE OF INTERNATIONAL GOVERNMENTAL AND COMMERCIAL BEST PRACTICES AND NORMS OF BEHAVIOUR IN SPACE
Peter Martinez, Secure World Foundation, United States

IAC-22.E3.4.7
ROLE OF EMERGING NATIONS IN ENSURING LONG-TERM SPACE SUSTAINABILITY
Minoo Rathnasabapathy, Massachusetts Institute of Technology (MIT), United States

IAC-22.E3.4.8
THE ROLE OF THE PRIVATE SECTION IN ESTABLISHING AND SUPPORTING A SAFE, SECURE, AND SUSTAINABLE SPACE ENVIRONMENT
Jenny Franulovic, International Space University (ISU), Australia

IAC-22.E3.4.9
CORPORATE SOCIAL RESPONSIBILITY FOR SPACE: WHEN WILL IT MATTER, AND WHY?
Andrew Garza, Space Policy Institute, George Washington University, United States

IAC-22.E3.4.10
THIS IS OUR SPACE: CONTRIBUTIONS FROM THE YOUNG GENERATIONS FOR SUSTAINABLE SPACE ACTIVITIES
Morgane Lecas, Astroscale Ltd, United Kingdom

E3.6. Financial Viability and Supplier monitoring in times of economic vulnerability

September 21 2022, 15:00 — E04B

Co-Chair(s): Geraldine Naja, ESA, France; Henry Hertzfeld, Space Policy Institute, George Washington University, United States;

Rapporteur(s): Karina Miranda Sanchez, ESA, The Netherlands;

IAC-22.E3.6.1
KEYNOTE: RECALIBRATING THE SPACE SECTOR PROCUREMENT PRACTICES TO BETTER PREPARE AFTER COVID-19
Nancy C. Wolfson, American Institute of Aeronautics and Astronautics (AIAA), United States

IAC-22.E3.6.2
AN SME STORY IN ITS QUEST FOR SUSTAINABILITY WITHIN THE REDEFINITION OF THE EUROPEAN SPACE INDUSTRIAL LANDSCAPE
Hervé Cottard, Almatech SA, Switzerland

IAC-22.E3.6.3
EUROPEAN SPACE SMES FINANCIAL VIABILITY: INSIGHTS AND POLICY PERSPECTIVES
Marleen Willekens, KULeuven, Belgium

IAC-22.E3.6.4
JENA-OPTRONIK GMBH - DOMINIK KLOSE
Dominik Klose, Jena-Optronik GmbH, Germany

IAC-22.E3.6.5
ANALYSIS OF THE COMMERCIAL SATELLITE INDUSTRY: KEY INDICATORS, GLOBAL TRENDS, AND COVID-19 IMPACT
Carissa Christensen, Bryce Space and Technology, United States

IAC-22.E3.6.6
EMPLOYMENT, SUPPLY CHAIN AND SME SUPPORT IN PRIVATE-DRIVEN NATIONAL SPACE PROGRAM IN COVID-19 CRISIS
Mi-jin Yoo, Korea Aerospace Research Institute (KARI), Korea, Republic of

IAC-22.E3.6.7
HOW TO REMAIN RESILIENT DURING A WORLDWIDE HEALTH CRISIS?
Didier Manzoni, APCO Technologies, Switzerland

IAC-22.E3.6.8
MANAGING COMPLIANCE AND ETHICS RISKS BY SPACE AGENCIES IN THE CONTEXT OF NEW SPACE AND MARKET VOLATILITY
Philippe Clerc, Centre National d'Etudes Spatiales (CNES), France

E4. 56th IAA HISTORY OF ASTRONAUTICS SYMPOSIUM

Coordinator(s): A. Ingemar Skoog, Germany; Gerhard Schwehm, European Space Agency (ESA), The Netherlands; Otrid G. Liepack, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States; Sandra Haeuplik-Meusburger, TU Wien, Austria;

E4.1. Memoirs & Organisational Histories

September 20 2022, 15:00 — 733/734

Co-Chair(s): Sandra Haeuplik-Meusburger, TU Wien, Austria; Michael Ciancone, National Aeronautics and Space Administration (NASA), Johnson Space Center, United States;

Rapporteur(s): Brian Jirout, Boeing, United States; Philippe Cosyn, Belgium; Niklas Reinke, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;

IAC-22.E4.1.1
ANDREW G. HALEY'S INFLUENCE ON THE IAF, IISL, AIAA, IAA, AND THE FOUNDATIONS OF SPACE LAW AND GOVERNMENT
Nathan Johnson, The Space Court Foundation Inc., United States

IAC-22.E4.1.2
EARLY ROCKET ORGANIZATIONS: SUCCESSES AND FAILURES
Mike Pavelec, Air University, United States

IAC-22.E4.1.3
HERMANN OBERTH IN BERLIN 1929 – HIS STUDIES, EXPERIMENT AND THE UFA-ROCKET
Karlheinz Rohrwild, Hermann-Oberth-Raumfahrt Museum e.V., Germany

IAC-22.E4.1.4
"NO ONE'S FAR FROM ANYONE, ANYMORE": AUSTRALIA'S OVERSEAS TELECOMMUNICATIONS COMMISSION AND ITS ROLE IN SATELLITE COMMUNICATIONS AND SPACE EXPLORATION
Kerrie Dougherty, Australia

IAC-22.E4.1.7
POLITICS AND SPACE: NAKASONE YASUHIRO AND JAPANESE SPACE PROGRAMS
Naoko Sugita, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.E4.1.9 (non-confirmed)
A SPECIAL CASE FOR SPACE?: MARGARET THATCHER AND THE BRITISH NATIONAL SPACE CENTRE, 1984 - 1987
Douglas Millard, The Science Museum, United Kingdom

IAC-22.E4.1.10
THE LIABILITY CONVENTION AT 50
Hannes Mayer, Karl Franzens Universität Graz, Austria

IAC-22.E4.1.11
SCIENCE AND STRENGTH: THE HISTORY OF THE RELATIONSHIP BETWEEN CIVIL AND MILITARY SPACE ORGANIZATIONS IN THE UNITED STATES
Elsbeth Magilton, University of Nebraska, College of Law, United States

IAC-22.E4.1.12
A TRAVELING HUB OF INFORMATION: AN ORGANIZATIONAL HISTORY OF THE LIBRARY AT NASA JET PROPULSION LABORATORY
Caroline Coward, NASA Jet Propulsion Laboratory, United States

E4.2. Scientific and Technical Histories

September 21 2022, 10:15 — 733/734

Co-Chair(s): Vera Pinto Gomes, European Commission, Belgium; Hannes Mayer, Karl Franzens Universität Graz, Austria;

Rapporteur(s): Karlheinz Rohrwild, Hermann-Oberth-Raumfahrt Museum e.V., Germany; Piero Messina, European Space Agency (ESA), France; Randy Liebermann, United States;

IAC-22.E4.2.1
"THE FIRST 'SPACE AGE,' CA. 1850-1915---A RE-EXAMINATION OF THE EARLIEST KNOWN APPEARANCES OF SPACEFLIGHT IN POPULAR CULTURE AND SCIENCE, PART I: THE ROLE OF SCIENCE FICTION
Frank H. Winter, National Air and Space Museum, United States

IAC-22.E4.2.2
THE HITLER-VALIER CONVERSATION ON ROCKETRY
Wolfgang Both, Germany

IAC-22.E4.2.3
SCIENTIFIC DIFFUSION AT THE END OF WORLD WAR II
Mike Pavelec, Air University, United States

IAC-22.E4.2.5
THE LUNAR MODULE SIMULATOR: AN INSTRUCTOR'S ACCOUNT
Albert Jackson, Triton Systems LLC, United States

IAC-22.E4.2.7
HISTORICAL LESSONS OF THE ORION AND NERVA PROJECTS: MANAGING PUBLIC OPINION AND POLITICAL UNCERTAINTY IN SPACE PROGRAMS
Amaury Dufay, Institute of Strategic and Defense Studies (IESD), France

IAC-22.E4.2.8
ROCKETRY PROJECTS AT "ORT RAMAT-GAN" TECHNICAL HIGH SCHOOL IN ISRAEL, 1972-1973
Tal Inbar, Israel

IAC-22.E4.2.9
PRE-HISPANIC CULTURES: ANCIENT COSMOVISION AND ITS IMPACT TO NOWADAYS SPACE MISSIONS, SUCH AS MAYAN SPACE, A MEXICAN SPACE AGENCY.
Sebastián Sala Baltazar, Universidad Nacional Autónoma de México (UNAM), Mexico

IAC-22.E4.2.10
ONE SMALL STEP THAT DESERVES PRESERVATION: HUMAN TRACE FOSSILS ON THE MOON
Alice Gorman, Flinders University, Australia

IAC-22.E4.2.11
SOCIAL-CONSTRUCTIVISM AND SPACE: HOW HISTORY INFLUENCES MODERN SPACE POLICY
Raveen Sidhu, University of British Columbia, Canada

IAC-22.E4.2.12
THE ORIGINS OF THE ASTRONAUT PROGRAM IN ISRAEL 1998: BETWEEN ASTRONAUT TRAINING AND PAYLOAD DEVELOPMENT
Tal Inbar, Israel

E4.3. History of French Contribution to Astronautics

September 22 2022, 10:15 — 733/734

Co-Chair(s): Otfried G. Liepach, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States; Louis Laidet, International Academy of Astronautics (IAA), France;
Rapporteur(s): Tal Inbar, [unlisted], Israel; Kerrie Dougherty, Australia;

IAC-22.E4.3.1
FROM VERONIQUE TO ARIANE 5, THE SIGNIFICANT CONTRIBUTIONS OF FRENCH SPACE
Marion Pigassou, International Space University (ISU), France

IAC-22.E4.3.2
HAMMAGUIR AND FRANCE'S FIRST STEPS IN SPACE
Philippe Varnoteaux, Institut Français d'Histoire de l'Espace, France

IAC-22.E4.3.3
SEREB VE 121 EMERAUDE, A DIAMANT SPACE LAUNCHER PRECURSOR
Philippe Jung, Airbus SAS, France

IAC-22.E4.3.4
ONERA AT THE BEGINNING OF SPACE EXPLORATION (1950-1963)
Philippe Varnoteaux, Institut Français d'Histoire de l'Espace, France

IAC-22.E4.3.5
JACQUES BLAMONT (1926-2020): A "FOUNDING FATHER" OF THE FRENCH SPACE SECTOR
Philippe Varnoteaux, Institut Français d'Histoire de l'Espace, France

IAC-22.E4.3.6
ARABSAT, HISTORY'S SECOND INTERNATIONAL TELECOM SATELLITE ORGANIZATION
Philippe Jung, Airbus SAS, France

IAC-22.E4.3.7
DASSAULT AVIATION, DESIGNER OF SPACE PLANES
Philippe Coué, Dassault Aviation, France

IAC-22.E4.3.9
GOING SOUTH: LESSONS LEARNED FROM THE LARGEST PROJECT ENGINEERING FAILURE IN MODERN HISTORY
John Scott, National Aeronautics and Space Administration (NASA), United States

E5. 33rd IAA SYMPOSIUM ON SPACE AND SOCIETY

Coordinator(s): Geoffrey Languedoc, Canadian Aeronautics & Space Institute (CASI), Canada; Olga Bannova, University of Houston, United States;

E5.1. Space Architecture: Habitats, Habitability, and Bases

September 18 2022, 15:15 — W01

Co-Chair(s): Olga Bannova, University of Houston, United States; Anna Barbara Imhof, Liquifer Systems Group (LSG), Austria;

Rapporteur(s): Anne-Marlene Rüede, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland;

IAC-22.E5.1.1 (non-confirmed)
KEYNOTE: SEA SPACE GENERATION
Jacques Rougerie, Jacques Rougerie Architecte, France

IAC-22.E5.1.2
DEVELOPMENT OF THE HABITATION AND LOGISTICS OUTPOST MODULE FOR NASA'S GATEWAY LUNAR STATION
R. Bryan Sullivan, Northrop Grumman Corporation, United States

IAC-22.E5.1.3
IMPLEMENTATION OF HUMAN SYSTEMS INTEGRATION TECHNICAL AND MANAGEMENT PROCESS FOR THE LUNAR GATEWAY PROGRAM
Jackelynne Silva-Martinez, NASA, United States

IAC-22.E5.1.4
THE INTERNATIONAL SPACE STATION ARCHAEOLOGICAL PROJECT: NEW INSIGHTS INTO DESIGNING SPACE HABITATS
Alice Gorman, Flinders University, Australia

IAC-22.E5.1.5
ASTRONAUTS AT HOME ON THE INTERNATIONAL SPACE STATION
Phyllis Johnson, University of British Columbia, Canada

IAC-22.E5.1.6
LUNAR WORM: DESIGNING A HYBRID CLASS HABITATION MODULE INSPIRED BY NATURE
Daniele Florenzano, Politecnico di Milano, Italy

IAC-22.E5.1.7
HOLISTIC OUTPOST DESIGN FOR LUNAR LAVA TUBES
Anna Vock, Germany

IAC-22.E5.1.8
TECHNOLOGIES ON A TRANSPARENT RESTROOM COULD BE USED FOR LUNAR HABITATS
Akifumi Mimura, Japan

IAC-22.E5.1.9
MISSION: ASTROACCESS — APPLYING THE PRINCIPLES OF UNIVERSAL DESIGN TO SPACE ARCHITECTURE
Anna Voelker, United States

IAC-22.E5.1.10
WINDOWS AS A KEY ELEMENT — THE SPACE BETWEEN
Sandra Haeuplik-Meusburger, TU Wien, Austria

IAC-22.E5.1.11
DESIGN EXPLORATION FOR A MARTIAN HABITAT THROUGH A DIGITAL TOOL FOR PARAMETRIC INTERIOR ARCHITECTURE
Marta Rossi, Politecnico di Milano, Italy

IAC-22.E5.1.12
ADAPTABILITY IN SPACE USING THE RHYTHMIC BUILDINGS FRAMEWORK
Layla A. van Ellen, Newcastle University, United Kingdom

E5.2. Is Space R&D Truly Fostering A Better World For Our Future?

September 19 2022, 15:00 — W01

Co-Chair(s): Olga Bannova, University of Houston, United States; Nona Minnifield Cheeks, Innovatyr, LLC, United States;
Rapporteur(s): Anna Barbara Imhof, Liquifer Systems Group (LSG), Austria; Kerry Leonard, National Aeronautics and Space Administration (NASA), Goddard Space Flight Center, United States;

IAC-22.E5.2.1
EXITING THE ECHO CHAMBER — HOW SPACE CAN PROVIDE GREATER VALUE BY BETTER UNDERSTANDING ITS BENEFICIARIES AND PARTNERS
David Hebert, ASTROSCALE JAPAN Inc., United States

IAC-22.E5.2.2
INDUSTRY 4.0 AND THE SPACE SECTOR: NEW MANAGEMENT MODEL FOR ANALYTICAL INTEGRATION OF SMART CITIES WITHIN THE FRAMEWORK OF THE ACHIEVEMENT OF THE SUSTAINABLE DEVELOPMENT GOALS IN THE 2030 AGENDA
Sofía Andrea Huerta Ramírez, Universidad Nacional Autónoma de México, Mexico

IAC-22.E5.2.3
COMMERCIAL VIABILITY OF LOW-COST PORTABLE MRI SCANNERS USING ADVANCEMENTS IN SPACE TECHNOLOGIES AND OPERATIONS
Chesler Thomas, University Bourgogne Franche-Comté, France

IAC-22.E5.2.4
FRAMEWORK FOR REGIONAL COOPERATION, CAPACITY-BUILDING, AND COMPETITIVENESS IN SPACE MEDICINE AND BIOLOGY RESEARCH IN ASIA-PACIFIC
Florence Pauline Basubas, Space Generation Advisory Council (SGAC), The Philippines

IAC-22.E5.2.6
STARLINK FOR ASEAN: CAN IT BE THE CHANGEMAKER IN THE RACE TOWARD SDGS?
Morokot Sakal, American University of Phnom Penh, Cambodia

IAC-22.E5.2.7
POLICIES TO OPTIMIZE SPACE R&D INVESTMENTS AND PUBLIC-TO-PRIVATE TECHNOLOGY TRANSFER IN PRIVATE-DRIVEN NATIONAL SPACE PROGRAM
Mi-jin Yoo, Korea Aerospace Research Institute (KARI), Korea, Republic of

IAC-22.E5.2.8
THE NOT SO FUNNY PARALLEL: HUMAN SPACE EXPLORERS AND DISASTER-DISPLACED PEOPLE
Jesper Jorgensen, Denmark

E5.3. Contemporary Arts Practice and Outer Space: A Multi-Disciplinary Approach

September 20 2022, 15:00 — W01

Co-Chair(s): Richard Clar, Art Technologies, United States; Jacques Arnould, Centre National d'Etudes Spatiales (CNES), France;

Rapporteur(s): Daniela De Paulis, The Netherlands;

IAC-22.E5.3.1
SPACE ART: A TRAJECTORY
Eduardo Kac, National Space Society, United States

IAC-22.E5.3.3
META-FUTURISM: AN IMMERSIVE WORKSHOP WITH SCIENCE FICTION ELEMENTS TO FACILITATE A CONVERSATION ON CLIMATE CHANGE AND SPACE EXPLORATION
Mona Nasser, University of Plymouth, United Kingdom

IAC-22.E5.3.4
COSMOS, A MUSICAL AND SPATIAL ELECTRO OPERA
Olivier Boisard, Consulting engineer OB-Conseil, and professor at Ecole Centrale de Lille, France

IAC-22.E5.3.5
EMBRACE THROUGH THE UNIVERSE: SOUND DESIGN WITH COSMIC MUONS AND THE PARAMETERS OF SOLAR WIND
Yuri Tanaka, Kyoto City University of Arts, Japan

IAC-22.E5.3.6
ARTMOONMARS: ART-SCIENCE GALLERY IN SPACE AND ON THE MOON
Bernard Foing, ILEWG "EuroMoonMars", The Netherlands

IAC-22.E5.3.7
\=ENGINES OF \=ETERNITY: AN ARTISTIC INQUIRY INTO SPACE SETTLEMENT IDEOLOGY USING ROTIFER EXPERIMENTS ON BOARD THE ISS
Angelo C.J. Vermeulen, Delft University of Technology (TU Delft), The Netherlands

IAC-22.E5.3.8
ALTAMIRA COMET PROOF-OF-CONCEPT
Greg Pass, Cornell University, United States

IAC-22.E5.3.9
VISUAL STRATEGY IN EARLY STAGE SPACE MISSION FORMULATION ENVIRONMENTS AT NASA'S JET PROPULSION LABORATORY
Katherine Park, Jet Propulsion Laboratory - California Institute of Technology, United States

IAC-22.E5.3.10
SPACE-GROUNDED
Chang Hee Lee, Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of

IAC-22.E5.3.11
AIR AFTER SPACE: FROM THE INVISIBLE TO THE TANGIBLE
Alice Jarry, Concordia University, Canada

IAC-22.E5.3.12
SPACE DOWN
Marie-Pier Boucher, University of Toronto, Canada

IAC-22.E5.3.13
BRINGING SPACE DOWN TO EARTH: VIRTUAL REALITY SIMULATIONS OF THE OVERVIEW EFFECT
Sahba El-Shawa, Space Generation Advisory Council (SGAC), Jordan

IAC-22.E5.3.14
THE METAMORPHOSIS OF A PERIPLANETA AMERICANA
Daniela De Paulis, The Netherlands

IAC-22.E5.3.15
DOWN TO EARTH: ON SPACE URBANISM AND SPACE CITIES
Marie-Pier Boucher, University of Toronto, Canada

IAC-22.E5.3.16
SPACE JUGGLING AND A NEW LOOK AT TRAJECTORIES IN ROTATING HABITATS
Robert Dipert, North Carolina State University, United States

E5.4. Space Assets and Disaster Management

September 21 2022, 15:00 — W01

Co-Chair(s): Geoffrey Languedoc, Canadian Aeronautics & Space Institute (CASI), Canada; Jillianne Pierce, Space Florida, United States;

IAC-22.E5.4.1
TRANS-GOVERNMENTAL SPACE NETWORKS AS SOFT DISASTER MANAGEMENT MECHANISMS VERSUS HARD DISASTER MANAGEMENT MECHANISMS; CHALLENGES AND EFFECTIVENESS
Sima Moradinasab, Shahid Beheshti University, Iran

IAC-22.E5.4.2
SPACE SAFETY FOR DISASTER MANAGEMENT ON THE GROUND
Ilaria Cinelli, AIKO S.r.l., Italy

IAC-22.E5.4.3
ROLE OF CULTURE ON SPACE SCIENCES IN AFRICA
Babagana BABAGANA, KANURI DEVELOPMENT ASSOCIATION, Nigeria

IAC-22.E5.4.4
DEFENCE AGAINST THE DARKNESS CAUSING ARTS
Dharshun Sridharan, Australia

IAC-22.E5.4.5
IMPROVING THE PREPAREDNESS OF MOZAMBIQUE AGAINST CYCLONES EVENT
Mustapha Iderawumi, Nigeria

IAC-22.E5.4.6
REMOTE-SENSING TECHNOLOGIES TOWARDS FLOOD MITIGATION IN INDIA'S NORTHEAST REGION: A CASE-STUDY
Priyanka Das Rajkakati, France

IAC-22.E5.4.7
OIL SPILLS ANALYSIS IN THE PERUVIAN COAST USING EARTH OBSERVATION DATA: LA PAMPILLA REFINERY CASE 2022
Natalia Indira Vargas-Cuentas, Image Processing Research Laboratory (INTI-Lab). Universidad de Ciencias y Humanidades - UCH, Peru

IAC-22.E5.4.8
SATELLITE GROUND SENSOR TERMINAL DESIGN: USE OF LORA TO TRANSMIT REMOTE SENSOR DATA FROM NEPAL'S HIMALAYAN REGION FOR DISASTER MITIGATION
Sagar Koirala, Nepal Space Foundation, Nepal

IAC-22.E5.4.9
DISASTER PREVENTION AND EVACUATION TECHNOLOGIES ON EARTH AND THEIR APPLICATION TO SPACE TRAVEL
Taichi Yamazaki, ASTRAX, Inc., Japan

E5.5. Sharing space achievements and heritage: space museums and societies

September 22 2022, 10:15 — W01

Co-Chair(s): Peter Buist, European Union Agency for the Space Programme (EUSPA), The Netherlands; Jean-Baptiste Desbois, SEMECCEL Cité de l'Espace, France; Ines Prieto, SEMECCEL Cité de l'Espace, France;

Rapporteur(s): Clementine Decoopman, Space Generation Advisory Council (SGAC), Austria;

IAC-22.E5.5.1
THE PEDRO E. PAULET PERUVIAN AEROSPACE MUSEUM THROUGH TWITTER 2022
David Villanueva, Universidad Nacional Mayor de San Marcos, Peru

IAC-22.E5.5.2
THE AUSTRALIAN SPACE DISCOVERY CENTRE: A PUBLIC FACE FOR THE AUSTRALIAN SPACE AGENCY
Kerrie Dougherty, Australia

IAC-22.E5.5.3
REUNION SPACE ACADEMY, OPENING THE DOOR TO POSSIBILITIES
Erika Velio, PIKALI, La Reunion

IAC-22.E5.5.4
HOW A PROFESSIONAL SOCIETY SURVIVED (AND THRIVED IN) THE PANDEMIC
Alan T. DeLuna, American Astronautical Society (AAS), United States

IAC-22.E5.5.5
STEM, STEAM AND SHAPE IN THE SPACE ARCHIVE: DEFINING THE ROLE OF ARCHIVES IN AEROSPACE RESEARCH AND EDUCATION
Reagan Grimsley, University of Alabama in Huntsville, United States

IAC-22.E5.5.6
VIDEOGAMES AS A PLATFORM TO CONNECT TO HERITAGE: PRELIMINARY CONSIDERATIONS AROUND THE SPATIAL DELIMITATION AND THE INTEROPERABILITY OF OPEN DATA.
Jordi Sandalinas, University Pompeu Fabra of Barcelona, Spain

IAC-22.E5.5.7
"MY SPACE HERITAGE IS MORE IMPORTANT THAN YOUR SPACE HERITAGE": THE CARNARVON SATELLITE EARTH STATION AS A CASE STUDY ON ISSUES IN THE INTERPRETATION OF A SPACE HERITAGE SITE
Kerrie Dougherty, Australia

IAC-22.E5.5.8
WHAT DO THEY NEED FOR A SPACE MUSEUM?
Ayako Kurono, Japan

IAC-22.E5.5.10
A CHANCE FOR EVERYONE TO STEP IN THE ENVIRONMENT OF SPACE
Shivam Garg, India

E5.6. Simulating Space Habitation: Habitats, Design and Simulation Missions

September 22 2022, 13:45 — W01

Co-Chair(s): Anna Barbara Imhof, Liquifer Systems Group (LSG), Austria; Julie Patarin-Jossec, Russian Academy of Sciences, France;

Rapporteur(s): Sandra Haeuplik-Meusburger, TU Wien, Austria;

IAC-22.E5.6.1
COMPARISON BETWEEN SPACE ANALOGS FOR FUTURE SPACE MISSIONS
Marcos Bruno, Universidad Nacional de Cuyo, Argentina

IAC-22.E5.6.2 (non-confirmed)
TECHNOLOGY DEMONSTRATOR FOR A ROTATING SPACE STATION
David Nixon, Consultant, France

IAC-22.E5.6.3
INTEGRATING DUAL-PURPOSED MEANINGFUL EXTENDED REALITY (XR) EXPERIENCES INTO A DAILY EXERCISE ROUTINE IN ISOLATED, CONFINED, AND EXTREME (ICE) ENVIRONMENTS: ENGINEERING DESIGN STUDENT CONCEPTS FOR IMPROVING CREW MOTIVATION AND PROPRIOCEPTION
Kaja Antleij, Deakin University, Australia

IAC-22.E5.6.4
DEVELOPMENT AND CONSTRUCTION OF A LOW-COST OPEN-SOURCE HABITAT FOR ANALOG MISSIONS
Oscar Ojeda, Texas A&M University, United States

IAC-22.E5.6.5
SITE SELECTION CRITERIA FOR SPACE ANALOGS: JORDAN SPACE RESEARCH INITIATIVE CASE STUDY
Sahba El-Shawa, Space Generation Advisory Council (SGAC), Jordan

IAC-22.E5.6.6
DESIGN OF MARS MODULAR SETTLEMENT UNITS
Rahaf Zorba, Jordan

IAC-22.E5.6.7
LUNEVA: THE FIRST MEXICAN HIGH ALTITUDE ANALOG SPACE RESEARCH ECO-STATION
Acatzin Benitez Salgado, Universidad Autónoma del Estado de México (UAEMéx), Mexico

IAC-22.E5.6.8
STANDARDIZATION OF SPACE ANALOG MISSIONS FOR IMPROVEMENT OF SCIENTIFIC OUTCOME
Agata Kolodziejczyk, Analog Astronaut Training Center, Poland

IAC-22.E5.6.9 (non-confirmed)
A STUDY OF SPACE ANALOG COMMUNICATIONS SYSTEMS
Karen Rucker, United States

E6. IAF BUSINESS INNOVATION SYMPOSIUM

Coordinator(s): Ken Davidian, United States; Nancy C. Wolfson, American Institute of Aeronautics and Astronautics (AIAA), United States;

E6.1. Entrepreneurship and Innovation: The Practitioners' Perspectives

September 21 2022, 15:00 — 733/734

Co-Chair(s): Gary Martin, International Space University, United States; Nicolas Peter, International Space University (ISU), France;

Rapporteur(s): AZAM SHAGHAGHI, Space Tourism Society Canada, Canada;

IAC-22.E6.1.1
CATALYZING SPACE INDUSTRIES: - LESSONS LEARNED FROM NEW ZEALAND ON BUILDING ENTREPRENEURIAL SPACE ECOSYSTEMS IN DEVELOPING AND EMERGING COUNTRIES
Eric Dahlstrom, SpaceBase Limited, New Zealand

IAC-22.E6.1.2
THE DIFFICULTIES OF SMALL SPACE STARTUPS IN ACCESSING MANUFACTURING RESOURCES
Shehroz Hussain, Canada

IAC-22.E6.1.3
LESSONS LEARNED FROM SGAC'S PRE-ACCELERATOR PROGRAM ON LEGAL/IP PROTECTION, SUSTAINABILITY TESTING, AND RELEVANCE OF ACCESSIBLE NETWORK FOR MARKET VALIDATION FOR SPACE ENTREPRENEURS
Harlee Quizzagan, Space Generation Advisory Council (SGAC), The Philippines

IAC-22.E6.1.4
INTEGRATING SPACE INDUSTRY: THE 5TH ELEMENT
Vugar Bayramov, Space Agency of Republic of Azerbaijan (Azercosmos), Azerbaijan

IAC-22.E6.1.5
THE EVOLUTION OF AVATAR COLLABORATION IN SPACE: INNOVATION, OPPORTUNITIES AND CHALLENGES OF NEW SPACE BUSINESS DEVELOPMENT
Naoko Sugita, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.E6.1.6
STRATEGIC APPROACH IN SECTOR DEVELOPMENT IN EMERGING SPACE ECOSYSTEMS
Michal Brichta, Slovak Investment and Trade Development Agency (SARIO) - Slovak Space Office, Slovak Republic

IAC-22.E6.1.7
THE CONTRIBUTION OF SPACE TO THE MEDIA & ENTERTAINMENT INDUSTRIES
Luinaud Mathieu, PricewaterhouseCoopers Advisory (PwC), France

IAC-22.E6.1.8
ESA'S OPEN SPACE INNOVATION PLATFORM - A RADICALLY NEW, OPEN, LOW THRESHOLD ACCESS TO EARLY STAGE RESEARCH AND DEVELOPMENT ACTIVITIES
Leopold Summerer, European Space Agency (ESA), The Netherlands

IAC-22.E6.1.9
A TRANSITION OF CHINA'S SPACE ENTREPRENEURIAL ACTIVITIES
Zihua Zhu, Beijing Commsat Technology Development Co., Ltd., China

IAC-22.E6.1.10
PROCUREMENT A KEY DRIVER TO FOSTER NEW MARKETS IN THE NEW SPACE ECONOMY
Nicolas Peter, International Space University (ISU), France

E6.2. Finance and Investment: The Practitioners' Perspectives

September 20 2022, 10:15 — 733/734

Co-Chair(s): Joerg Kreisel, JOERG KREISEL International Consultant (JKIC), Germany; Luisella Giulicchi, Women in Aerospace Europe (WIA-E), The Netherlands;

Rapporteur(s): Daria Stepanova, Moscow Institute of Physics and Technology, Russian Federation;

IAC-22.E6.2.1
KEYNOTE: NEW ECONOMY FOR COMMERCIAL SUSTAINABILITY DRIVING SPACE RESOURCES UTILIZATION AND PPP
Nancy C. Wolfson, American Institute of Aeronautics and Astronautics (AIAA), United States

IAC-22.E6.2.2
SAFE HAVEN FOR UKRAINIAN SPACE STARTUPS IN POLISH ACCELERATION PROGRAM
Krzysztof Kanawka, Blue Dot Solutions, Poland

IAC-22.E6.2.3
TAXATION INCENTIVES: A TOOL FOR FAST-TRACKING THE GROWTH OF EMERGING NEWSPEACE INDUSTRIES. CASE STUDY: AFRICA
Adewale Adelanwa, Nigeria

IAC-22.E6.2.4
A FIRST STEP TOWARDS THE DEMOCRATIC COMMERCIALISATION OF \ \ SPACE RESOURCES DATA
Harry Lars Ghillemyrn, Luxembourg

IAC-22.E6.2.5
SPACE VENTURE EUROPE: ENTREPRENEURSHIP AND INVESTMENT IN THE EUROPEAN SPACE SECTOR
Jules Varma, European Space Policy Institute (ESPI), Austria

IAC-22.E6.2.6
A GROWING GLOBAL SPACE ECONOMY...BUT WHERE EXACTLY?
Steve Boehinger, Euroconsult, France

IAC-22.E6.2.7
START-UP SPACE: GLOBAL INVESTMENT TRENDS
Brian Dunn, Bryce Space and Technology, United States

IAC-22.E6.2.8
INITIAL USER-DRIVEN FRAMEWORK FOR DEVELOPING TRADE-OFF SCENARIOS FOR "PERCEIVED RISKS" OF SPACE DEBRIS COLLISION
Stela Tkatchova, EISMEA, Belgium

IAC-22.E6.2.9
SPACE INVESTMENT TO ENCOURAGE TO SUSTAINABLE GROWTH OF SPACE ECONOMY
Misuzu Onuki, Space Access Corporation, Japan

IAC-22.E6.2.10
THE ESA INVESTOR FORUM: UNLEASHING PRIVATE CAPITAL FOR SCALING-UP SPACE INNOVATION.
Gonzalo Martin de Mercado, ESA - European Space Agency, United Kingdom

IAC-22.E6.2.11
BRIDGING THE VALLEY OF DEATH - A MUCH NEEDED HANDSHAKE BETWEEN PRIVATE AND PUBLIC ACTORS.
Maud Moulicc, HE Space, The Netherlands

IAC-22.E6.2.12
ASSET-BASED FINANCING IN THE SPACE INDUSTRY - LESSONS FROM AVIATION FINANCE AND MARKET READINESS
Susana Fornies Rodriguez, France

E6.3. Innovation: The Academics' Perspectives

September 19 2022, 15:00 — 733/734

Co-Chair(s): Ken Davidian, United States; George A. Danos, Cyprus Space Exploration Organisation (CSEO), Cyprus;

Rapporteur(s): Anamol Mittal, International Space University (ISU), France;

IAC-22.E6.3.1
SPACE SECTOR DESCRIPTION
Ken Davidian, United States

IAC-22.E6.3.2
CREATERNITY SPACE: IN SEARCH OF CIRCULARITY FOR REUSE OF SPACECRAFT MATERIALS
Margot Clauss, Luleå University of Technology, Sweden

IAC-22.E6.3.4
THE GLOBAL SPACE ACCELERATOR LANDSCAPE
Christopher Richardson, International Space University (ISU), United States

IAC-22.E6.3.5
THE SPIN (W)IN METHOD: THE BEST SPIN-OFF STRATEGY FOR YOUR SPACE COMPANY
Alev Sönmez, Blekinge Institute of Technology, Germany

IAC-22.E6.3.6
TRENDS IN SATELLITE MASS DISTRIBUTION DATA
Adam Dąbrowski, Poland

IAC-22.E6.3.7
WHAT IS VALUE IN THE NEW SPACE ECONOMY? UNVEILING ITS VALUE DIMENSIONS
Alessandro Paravano, Politecnico di Milano, Italy

IAC-22.E6.3.8
TOWARDS ANTIRACIST AND ANTICOLONIAL ATTITUDES AND NORMS IN TECHNOLOGY INDUSTRIES: A COMPARATIVE ANALYSIS OF POLICIES IN THE AEROSPACE AND NUCLEAR INDUSTRIES AND THEIR IMPACTS ON INNOVATION
Katlyn Turner, Massachusetts Institute of Technology (MIT), United States

IAC-22.E6.3.9
THE LEADERSHIP COMPETENCIES OF NEWSPACE ORGANISATIONS
Alina Vizireanu, Space Generation Advisory Council (SGAC), United Kingdom

IAC-22.E6.3.10
PLACEHOLDER FOR SPACE IS BUSINESS PAPER WRITING COMPETITION WINNER
Ken Davidian, United States

E6.4. Strategic Risk Management for Successful Space & Defence Programmes

September 19 2022, 10:15 — 733/734

Co-Chair(s): Maria-Gabriella Sarah, European Space Agency (ESA), France; Helen Tung, NewSpace2060, Australia; Ruediger Suess, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;

Rapporteur(s): Andrew Court, TNO, The Netherlands;

IAC-22.E6.4.1
CAPTURING ERM LESSONS LEARNED FROM THE COVID-19 PANDEMIC THROUGH CONCEPT MAPPING
Maria-Gabriella Sarah, ESA - European Space Agency, Italy

IAC-22.E6.4.2 (non-confirmed)
TOOL-BASED APPROACH TO REGULATORY RISK MITIGATION
Marina Pokrovskaya, Germany

IAC-22.E6.4.3
ROOM FOR IMPROVEMENT – THE SPACE INDUSTRY AND ESG GOALS
Charity Weeden, ASTROSCALE JAPAN Inc., United States

IAC-22.E6.4.4
SECURITY AND STABILITY IN OUTER SPACE: LESSONS FROM ARMS CONTROL
Jessica West, Project Ploughshares, Canada

IAC-22.E6.4.6
MANAGING BLACK SWAN RISK IN THE SPACE SECTOR - OBSERVATIONS FROM LESSONS LEARNED BASED ON INSURANCE AND CONTRACT PRACTICE
Katarzyna Malinowska, Kozminski University, Poland

IAC-22.E6.4.7
IDEATING A PARTICIPATORY RISK ASSESSMENT MATRIX FOR FUTURE LUNAR MISSIONS
Matija Rencelj, European Space Policy Institute (ESPI), Austria

IAC-22.E6.4.8
"MOON OBJECTIVE AND LUNAR BASE". ANTHROPOLOGICAL PERSPECTIVE OF DEFENSE AND SECURITY. DR ISABELLE TISSERAND. ANTHROPOLOGIST, DOCTOR OF THE SCHOOL OF ADVANCED STUDIES IN SOCIAL SCIENCES (EHES). CITIZEN RESERVIST CC. FRENCH NAVY.
Isabelle Tisserand, France

IAC-22.E6.4.9
GOING DIGITAL, STAYING SECURE: CYBER ERM ACTIVITIES IN A POST-PANDEMIC SETUP
Antonio Carlo, Tallinn University of Technology, Estonia

IAC-22.E6.4.10
RISK MANAGEMENT AT CNES
Bernard Chemoul, Centre National d'Etudes Spatiales (CNES), France

IAC-22.E6.4.11 (non-confirmed)
REDUCING THE STRATEGIC RISKS TO COMMERCIAL LUNAR MISSIONS USING PEOPLE MANAGEMENT APPROACH.
Natalia Lemarquis, International Space University (ISU), France

E6.5-GTS.1. Entrepreneurship Around the World

September 20 2022, 15:00 — W07

Co-Chair(s): George A. Danos, Cyprus Space Exploration Organisation (CSEO), Cyprus; Nancy C. Wolfson, American Institute of Aeronautics and Astronautics (AIAA), United States;
Rapporteur(s): Anamol Mittal, International Space University (ISU), France;

IAC-22.E6.5-GTS.1.1
STARDUST SPACE COMPANY
Andrea Santos Lopez, International Space University (ISU), France

IAC-22.E6.5-GTS.1.2
ENTREPRENEURSHIP IN EMERGING SPACE NATIONS OF ASIA PACIFIC REGION
Sindhu Paramasivam, Asia Pacific Oceania Space Association-APOSA, India

IAC-22.E6.5-GTS.1.3
NEW SPACE ENTREPRENEURSHIP IN BRAZIL: CHALLENGES AND OPPORTUNITIES
Ian Grosner, Brazilian Space Agency (AEB), Brazil

IAC-22.E6.5-GTS.1.4
BARRIERS OF ENTERING SPACE MARKET – CASE OF ENTREPRENEURS IN CENTRAL EASTERN EUROPE
Katarzyna Malinowska, Kozminski University, Poland

IAC-22.E6.5-GTS.1.5
A NEW RELATIONSHIP BETWEEN SPACE STARTUPS AND THE GOVERNMENT IN CHINA
Zihua Zhu, Beijing Commsat Technology Development Co., Ltd., China

IAC-22.E6.5-GTS.1.6
BUSINESS OPPORTUNITIES IN THE DEVELOPING COUNTRIES: TECHNOLOGY TRANSFER
Itzel Rocillo, Universidad Nacional Autónoma de México (UNAM), Mexico

IAC-22.E6.5-GTS.1.7
THE SPACELAND BUSINESS MODEL TO OVERCOME CULTURAL BARRIERS IN SPACE-ENGAGEMENT WORLD-WIDE
Carlo Viberti, SpaceLand Africa, Mauritius

IAC-22.E6.5-GTS.1.8
THE ECONOMICAL VALUE OF BUILDING CUBESAT USING WIDE SUPPLIERS BASE
Saish Sridharan, Space Products and Innovation, Germany

IAC-22.E6.5-GTS.1.10
ENTREPRENEURIAL OPPORTUNITIES AND TRENDS IN THE EMERGING GLOBAL SPACE ECOSYSTEM
Kelli Kedis Ogborn, Space Foundation, United States

E7. IISL COLLOQUIUM ON THE LAW OF OUTER SPACE

Coordinator(s): Lesley Jane Smith, Leuphana University of Lüneburg/Weber-Steinhaus & Smith, Germany; Catherine Doldirina, International Institute of Space Law (IISL), Italy; Tanja Masson-Zwaan, International Institute of Air and Space Law, Leiden University, The Netherlands;

E7.1. IISL Highlight lecture and Young Scholar session

September 18 2022, 15:15 — S01

Co-Chair(s): Setsuko Aoki, Keio University, Japan; Philippe Clerc, Centre National d'Etudes Spatiales (CNES), France;

IAC-22.E7.1.1
KEYNOTE: HIGHLIGHT LECTURE BY PROF. ARMEL KERREST
Armel Kerrest, University of Western Brittany (UBO), France

IAC-22.E7.1.2
LEGAL ISSUES OF INTERNATIONAL COOPERATION IN THE OPERATION OF CHINA'S SPACE STATION
Jie Long, Shenzhen University, China

IAC-22.E7.1.3
CISLUNAR NETWORKS: LEGAL AND REGULATORY ISSUES RELATED TO THE ESTABLISHMENT OF HYBRID EARTH-MOON SATELLITE COMMUNICATION SYSTEMS
Vinicius Aloia, Luxembourg

IAC-22.E7.1.4
FROM CHUQUICAMATA TO NEREUS: A CONTRIBUTION OF CHILEAN LEGISLATION TO INTERNATIONAL LAWS ON SPACE MINING.
Isi Casas del Valle Pacheco, Space Generation Advisory Council (SGAC), Chile

IAC-22.E7.1.5
SPACEFLIGHT ACCIDENT INVESTIGATION: THE NEED FOR CLARITY BEFORE AND AFTER A CATASTROPHE
Ramzi Masri-Elyafaoui, United States

IAC-22.E7.1.6
THE INCREASING LEGAL EFFECT INTERNATIONAL ORGANISATIONS HAVE ON THE DEVELOPMENT AND IMPLEMENTATION OF SPACE LAW AND POLICY WITH A SPECIAL FOCUS ON NATO, EU AND ESA
Rosanna Hoffmann, European Space Agency (ESA), France

IAC-22.E7.1.7
INTERNATIONAL LEGAL CONSIDERATIONS WHEN TRANSITIONING TELEMETRY, TRACKING, AND COMMAND (TT&C) CONTROLS TO RECEIVE ON-ORBIT SERVICING
Laura Cummings, Astroscale Ltd, United States

IAC-22.E7.1.8
COMPARING THE POWER OF MAKING INTERNATIONAL SPACE LAW: CHINA AND THE UNITED STATES
Xiaodao Li, The University of Hong Kong, China

IAC-22.E7.1.9
ORBITAL RIGHTS OF WAY: LEGAL TOOLS TO CULTIVATE MORE RESPONSIBLE SPACE ACTORS
Gabriella Mijfsud, International Institute of Air and Space Law, Leiden University, The Netherlands

IAC-22.E7.1.10
PROPOSAL FOR A LEGAL DEFINITION OF SPACE DEBRIS
Andrea Capurso, LUISS Guido Carli University, Italy

E7.2. Dispute Settlement

September 19 2022, 10:15 — S01

Co-Chair(s): Maureen Williams, Chair, ILA Space Law Committee, UK & UBA, Conicet, Buenos Aires, Argentina; Irmgard Marboe, University of Vienna, Austria;

Rapporteur(s): Catherine de Souza Santos, Catholic University of Santos, Brazil;

IAC-22.E7.2.1
ARBITRATION AND ALTERNATIVE DISPUTE RESOLUTION: MATCHING DYNAMICS AND FLEXIBILITY FOR THE NEW SPACE AGE
Maura Zara, First Steps Legal, Italy

IAC-22.E7.2.2 (non-confirmed)
ARBITRATION FOR SPACE DISPUTES: THE WAY FORWARD
Sofia Stettatou, Institute of Air and Space Law, McGill University, Greece

IAC-22.E7.2.3
IN SEARCH OF THE MOST APPROPRIATE MECHANISM FOR RESOLVING THE DISPUTES ARISING FROM LARGE SATELLITE CONSTELLATIONS
S. Hadi Mahmoudi, Shahid Beheshti University, Iran

IAC-22.E7.2.4
HUMAN SETTLEMENTS ON CELESTIAL BODIES AND ADR: CRITICAL ASPECTS FOR CONSIDERATION
Michail Chatzipanagiotis, University of Cyprus, Cyprus

IAC-22.E7.2.5
IMPROVING THE PERMANENT COURT OF ARBITRATION'S OUTER SPACE RULES - WHY WE NEED MORE ARBITRATORS.
Luca Erhart, King's College London, United Kingdom

IAC-22.E7.2.6
INTERNATIONAL INVESTMENT LAW AS A FRAMEWORK TO PROTECT PRIVATE ACTORS IN OUTER SPACE
Vivasvat (Viva) Dadwal, United States

IAC-22.E7.2.7
ORBITAL CONGESTION? TAKE A CLAIMS COMMISSION FOR QUICK RELIEF!
Larry Martinez, International Institute of Space Law (IISL), United States

IAC-22.E7.2.8
SETTLEMENT OF DISPUTES IN THE FIELD OF SATELLITE MEDIA
Philippe Achilleas, Institut du Droit de l'Espace et des Telecommunications (IDEST), France

IAC-22.E7.2.9
RE-INVIGORATING INTERNATIONAL ARBITRATION OF SPACE RELATED DISPUTES BY NATIONAL LEGISLATION
Michael Friedl, George Washington University, Austria

IAC-22.E7.2.10
SPECIALISED DISPUTE RESOLUTION FOR COMMERCIAL SPACE DISPUTES – A PRACTITIONER'S PERSPECTIVE
Naomi Briercliffe, Allen & Overy LLP, United Kingdom

IAC-22.E7.2.11
USING SOCIAL MEDIA TO PROMOTE SPACE LAW EDUCATION AND DISPUTE SETTLEMENT: DEVELOPING STELLAR DECISIS, THE ANIMATED SPACE LAW MOOT COURT EDUCATIONAL SERIES
Christopher Hearsey, The Space Court Foundation Inc., United States

IAC-22.E7.2.12
THE FUTURE OF GLOBAL SPACE GOVERNANCE: THE NECESSITY OF INTERNATIONAL COOPERATION FOR SUSTAINABLE DEVELOPMENT.
Gabriela Garcez, Catholic University of Santos, Brazil

E7.3. Balancing Needs: Protection of Space Science

September 19 2022, 15:00 — S01

Co-Chair(s): Michelle Hanlon, University of Mississippi School of Law, United States; Tanja Masson-Zwaan, International Institute of Air and Space Law, Leiden University, The Netherlands;
Rapporteur(s): Giuliana Rotola, Scuola Superiore Sant'Anna, Italy;

IAC-22.E7.3.1
ETHICAL AND LEGAL CONSIDERATIONS IN PREVENTING THE CONTAMINATION OF SPACE
Caitlyn Singam, University of Maryland - College Park, United States

IAC-22.E7.3.2
INTERNATIONAL RESPONSIBILITY TO PROTECT FREEDOM OF OUTER SPACE EXPLORATION VERSUS FREEDOM OF USE OF OUTER SPACE
Merve ERDEM BURGER, Ankara University, Turkey

IAC-22.E7.3.3
THE RELATIONSHIP BETWEEN "EXPLORATION" AND "USE": THE DUE REGARD PRINCIPLE AS A TOOL TO PROTECT SPACE SCIENCE
Andrea Harrington, Air University, United States

IAC-22.E7.3.4
OPEN SCIENCE AND COMMERCIAL SECRETS
PJ Blount, Cardiff University, United Kingdom

IAC-22.E7.3.5
OBSERVATIONS OF SATELLITES IN DECAM IMAGES: A MITIGATIVE PROPOSAL FOR SATELLITE INTRUSIONS
Charles Mudd, Mudd Law, United States

IAC-22.E7.3.6
SKY FULL OF STARS OR SATELLITES: THE IMPACT OF MEGA-CONSTELLATIONS ON GROUND-BASED ASTRONOMY
Panagiota Brouma, National and Kapodistrian University Of Athens, Greece

IAC-22.E7.3.7
A WALK IN THE DARK AND THE LAW OF SATELLITE MEGACONSTELLATIONS
Roy Balleste, Stetson University College of Law, United States

IAC-22.E7.3.8
MEGA-CONSTELLATIONS OF SATELLITES AND THEIR IMPACT ON ASTRONOMY: EXPLORING THE ROLE OF ARTICLE IX OF THE OUTER SPACE TREATY
Rafael Moro Aguilar, United States

IAC-22.E7.3.9
CONCENTRATED LUNAR RESOURCES: IMMINENT IMPLICATIONS FOR GOVERNANCE AND JUSTICE
Martin Elvis, Harvard-Smithsonian Center for Astrophysics (CfA), United States

IAC-22.E7.3.10
PLANETARY PROTECTION LUNAR POLICY: A CASE STUDY IN BALANCING COSPAR GUIDELINES, SCIENTIFIC CONSENSUS, NASA POLICY, AND MISSION IMPLEMENTATION
James Bernardini, NASA Headquarters, United States

E7.4. Space Sustainability

September 20 2022, 10:15 — S01

Co-Chair(s): Olga Stelmakh-Drescher, International Institute of Space Law (IISL), Germany; Elina Morozova, Intersputnik International Organization of Space Communications, Russian Federation;
Rapporteur(s): Antonino Salmeri, Open Lunar Foundation, Italy;

IAC-22.E7.4.1
PROMOTING SUSTAINABLE VALUE IN EARTH'S ORBIT
Elena Cirkovic, Max Planck Institute, Luxembourg

IAC-22.E7.4.2
MAKING NEWSPACE FOR SUSTAINABILITY
Neta Palkovitz, Tel Aviv University, Israel

IAC-22.E7.4.3
ALL TIME LOW: LEGAL CONSIDERATIONS FOR UTILISING VERY LOW EARTH ORBIT IN SUSTAINABLE COMMERCIAL SATELLITE OPERATIONS
Yuk Chi Chan, Charter, United Kingdom

IAC-22.E7.4.4
ADDRESSING THE ELEPHANT IN THE ORBIT: SEEKING NORMS AND INTERNATIONAL COORDINATION FOR INCREASED TRAFFIC IN LEO
Anja Nakarada Pecujlic, EnduroSat AD, Germany

IAC-22.E7.4.5
GETTING RIGHT-OF-WAY RIGHT IN LOW EARTH ORBIT – AN (ASTRO)NAUTICAL CONUNDRUM
Hjalte Osborn Frandsen, Danish Astronautical Society, Denmark

IAC-22.E7.4.6
SECONDARY MARKET IN SPACE – THE IMPORTANT ROLE IN-SPACE TRANSFERS OF SPACE ASSETS CAN PLAY IN PROMOTING THE LONG-TERM SUSTAINABILITY OF OUTER SPACE
Hamza Hameed, Unidroit, Italy

IAC-22.E7.4.7
HOW DO WE LEGISLATE FOR SPACE SUSTAINABILITY WITHOUT INTERNATIONAL COOPERATION?
Alex Marinova, First Steps Legal, United Kingdom

IAC-22.E7.4.8
THE DEVELOPMENT SPACE SUSTAINABILITY STANDARDS THROUGH NATIONAL LICENSING REGIMES
Leslie I. Tennen, Law Offices of Sterns and Tennen, United States

IAC-22.E7.4.9
HOW TO IMPLEMENT SPACE SUSTAINABILITY RULES IN PRACTISE? THE REWARD APPROACH
Charlotte Croison, Euroconsult, France

IAC-22.E7.4.10
COMMON BUT DIFFERENTIATED RESPONSIBILITY FOR SPACE DEBRIS: USING EQUITABLE PRINCIPLES TO INCENTIVISE DEBRIS MITIGATION
Arpit Gupta, India

IAC-22.E7.4.11
THE FEASIBILITY OF APPLYING THE POLLUTER PAYS PRINCIPLE TO SPACE DEBRIS
Siavash Mirzaee, Iran

IAC-22.E7.4.12
KAITIAKITANGA OF THE ENVIRONMENT AND RESOURCES MANAGEMENT: THE DEVELOPMENT OF A SUSTAINABLE SPACE FARING CIVILIZATION
Giuliana Rotola, Scuola Superiore Sant'Anna, Italy

E7.5. Safety Zones on Celestial Bodies and in Outer Space

September 22 2022, 10:15 — S01

Co-Chair(s): Deepika Jeyakodi, The Netherlands; Mark Sundahl, Cleveland State University, United States;
Rapporteur(s): Laetitia Zarkan Cesari, University of Luxembourg, Luxembourg ;

IAC-22.E7.5.1
"WHAT'S IN A NAME?" LEGAL ASPECTS OF 'SAFETY ZONES' ON CELESTIAL BODIES AND ELSEWHERE IN OUTER SPACE
Frans G. Von der Dunk, University of Nebraska, College of Law, The Netherlands

IAC-22.E7.5.2
RULES ON SAFETY ZONES IN INTERNATIONAL LAW APPLICABLE TO SPACE ACTIVITIES
Setsuko Aoki, Keio University, Japan

IAC-22.E7.5.3
THE APPLE OF DISCORD OR THE FRUIT OF SALVATION? A DIALOGUE ON THE PRACTICAL AND LEGAL ASPECTS OF SAFETY ZONES ON THE LUNAR SOUTH POLE
Antonino Salmeri, Open Lunar Foundation, Italy

IAC-22.E7.5.4
AS BROTHERS AND NOT AS WARRIORS ON THE MOON
Christopher Johnson, Secure World Foundation, United States

IAC-22.E7.5.5
SAFETY ZONES AS A MEANS TO ENSURE A BALANCED LIABILITY REGIME IN SPACE
Elina Morozova, Intersputnik International Organization of Space Communications, Russian Federation

IAC-22.E7.5.6
RIGHTS AND OBLIGATIONS IN INTERNATIONAL CONSULTATION FOR ESTABLISHING SAFETY ZONES IN OUTER SPACE
Yu Takeuchi, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.E7.5.7
TOWARDS A TAXONOMY OF SAFETY ZONES
Michael Friedl, George Washington University, Austria

IAC-22.E7.5.8
SOCIAL LICENCE TO OPERATE: A TOOL TO ENSURE LEGALITY AND LEGITIMACY OF SAFETY ZONES
Martin Svec, Institute of International Relations, Czech Republic

IAC-22.E7.5.9
SAFETY IN THE SPACE TREATIES: WHY ARE SAFETY ZONES AND SAFETY MEASURES IN OUTER SPACE NECESSARY?
Dimitra Stefoudi, Leiden University, The Netherlands

IAC-22.E7.5.10
FRAMEWORKS FOR REASONABLE SAFETY ZONES USING THE DUE REGARD PRINCIPLE
Andrea Harrington, Air University, United States

IAC-22.E7.5.12
HOW TO DEVELOP INTERNATIONAL NORMS OF SAFETY ZONES: BASED ON AN ANALYTICAL FRAMEWORK OF THE LEGAL CHOICE
Xiaodao Li, The University of Hong Kong, China

E7.7. Current Developments in Space Law with Special Emphasis on National Space Legislation

September 22 2022, 13:45 — S01

Co-Chair(s): Tare Brisibe, SES Singapore, Singapore, Republic of; Sumaya Al Hajeri, United Arab Emirates Space Agency, United Arab Emirates;

IAC-22.E7.7.1
THE LACK OF NATIONAL SPACE LEGISLATION IN EU MEMBER STATES AND THE ROLE OF THE EU AS A NEW RESPONSIBLE (?) ACTOR IN OUTER SPACE
Irmgard Marboe, University of Vienna, Austria

IAC-22.E7.7.2
POLAND GOES TO SPACE: THE DRAFT POLISH SPACE LAW
Mahulena Hofmann, University of Luxembourg, Luxembourg

IAC-22.E7.7.3
REGULATING SPACE DEBRIS: A COMPARATIVE STUDY OF SUSTAINABILITY REQUIREMENTS IN NATIONAL SPACE LICENSING LAWS
Cassandra Steer, Australian National University (ANU), Australia

IAC-22.E7.7.4
BETWEEN THE DEVELOPMENT AND GOVERNANCE OF SPACE CAPABILITIES: AN ANALYSIS OF THE APPLICATION OF INTERNATIONAL SPACE LAW IN AUSTRALIA FOR THE AWARENESS OF ESTABLISHED AND YOUNG SPACE STATES
Scott Schneider, Australia

IAC-22.E7.7.5
CURRENT STATUS OF JAPAN'S ACTIVE DEVELOPMENT OF SPACE LAWS AND INTERNAL CONTROL SYSTEMS FOR COMPLIANCE IN SPACE AGENCY
Masahiko Sato, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-22.E7.7.6
FORGING NEW SPACE LAW TO SUPPORT INNOVATION AND SUSTAINABILITY OF SPACE RESOURCES: PREVIEW OF THE 2023 WORLD RADIOCOMMUNICATION CONFERENCE
Audrey Allison, The Aerospace Corporation, United States

IAC-22.E7.7.7 (non-confirmed)
REFORMING THE FCC LICENSING PROCEDURE: A POSITIVE STEP TOWARDS MEETING THE REGULATORY CHALLENGES CREATED BY MEGA-CONSTELLATIONS OF SATELLITES?
Fabio Tronchetti, Beihang University (BUAA), China

IAC-22.E7.7.8
MALAYSIA'S NEW SPACE LAW: A CASE STUDY FOR EMERGING SPACE COUNTRIES AND NUANCES FOR INTERNATIONAL SPACE LAW STUDIES
David Lit Xian Ho, Malaysia

IAC-22.E7.7.9
NATIONAL SPACE LAWS AND NON-BINDING INTERNATIONAL INSTRUMENTS – THE PORTUGUESE EXPERIENCE
Cristina Miranda, Vieira de Almeida & Associados, Portugal

IAC-22.E7.7.10
(DO) WE HAVE A LIFT OFF(!?) A COMPARATIVE ANALYSIS OF THE NATIONAL SPACE LEGISLATION FOR THE FEASIBILITY OF COMMERCIAL SPACEPORTS: THE CASE FOR LAUNCH SITES IN BRAZIL AND PORTUGAL
João Frazão, Portugal

IAC-22.E7.7.11
ON STRANGER TIDES: HOW RUSSIAN SPACE LAW ATTEMPTS TO ACCOMMODATE NEWSPACE
Olga Volynskaya, Lomonosov Moscow State University, Russian Federation

IAC-22.E7.7.12
ARTIFICIAL INTELLIGENCE, SPACE LIABILITY AND REGULATION FOR THE FUTURE: A TRANSCONTINENTAL ANALYSIS OF NATIONAL SPACE LAWS
Ioana Bratu, Vrije Universiteit Amsterdam, The Netherlands

E8. IAA MULTILINGUAL ASTRONAUTICAL TERMINOLOGY SYMPOSIUM

Coordinator(s): Susan McKenna-Lawlor, Space Technology (Ireland) Ltd., Ireland; Tetsuo Yoshimitsu, Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency, Japan;

E8.1. Multilingual Astronautical Terminology

September 22 2022, 13:45 — E04B

Co-Chair(s): Susan McKenna-Lawlor, Space Technology (Ireland) Ltd., Ireland; Tetsuo Yoshimitsu, Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency, Japan;
Rapporteur(s): Fabrice Dennemont, International Academy of Astronautics (IAA), France;

IAC-22.E8.1.1
TRANSLATION OF THE COLOGNE COMMENTARY ON SPACE LAW INTO SPANISH - A REVIEW OF ENGLISH-SPANISH SPACE TERMINOLOGY
Rafael Moro Aguilar, United States

IAC-22.E8.1.2
RESEARCH & DEVELOPMENT IN ASTRONAUTICAL TERMINOLOGY - A PROJECT SUMMARY AND CALL FOR SUPPORT
Robert Rovetto, American Institute of Aeronautics and Astronautics (AIAA), United States

IAC-22.E8.1.3
DEVELOPING A GLOBAL SPACE EXPERTISE ONTOLOGY
Jeanne Holm, City of Los Angeles, United States

IAC-22.E8.1.4
MULTILINGUAL ASTRONAUTICAL TERMINOLOGY
Akhila P V, ASTROPHYSICAST, India

IAC-22.E8.1.5
DEFINING AND TRANSLATING SPACE LEGAL TERMINOLOGY
Julie Minato, DLR (German Aerospace Center), France

IAC-22.E8.1.6
"SPACE OBJECTS" OR "SPACE DEBRIS"? LEGAL DEFINITIONS AND MAIN DISTINCTIONS
Gabriele Redigonda, University of Firenze, Italy

IAC-22.E8.1.7
WHAT'S IN A NAME? REDEFINING "ASTRONAUT"
Bailey Cunningham, United States

E9. IAF SYMPOSIUM ON SECURITY, STABILITY AND SUSTAINABILITY OF SPACE ACTIVITIES

Coordinator(s): Serge Plattard, University College London (UCL), United Kingdom; Stefano Zatti, University of Rome "La Sapienza", Italy;

E9.2. Cyber-based security threats to space missions: establishing the legal, institutional and collaborative framework to counteract them

September 18 2022, 15:15 — E04B

Co-Chair(s): Julien Airaud, Centre National d'Etudes Spatiales (CNES), France; Stefano Zatti, University of Rome "La Sapienza", Italy;

IAC-22.E9.2.1
CYBER-SECURING AUSTRALIA'S SPACE INFRASTRUCTURE: AN ASSESSMENT OF THE POLICY AND LEGAL FRAMEWORKS
Vinicius Guedes Gonçalves de Oliveira, Flinders University, Australia

IAC-22.E9.2.2
A METHOD TO EMPLOY A REGIME FOR A SPACE CRITICAL INFRASTRUCTURE ASSESSMENT FRAMEWORK
Nathaniel Dailey, The MITRE Corporation, United States

IAC-22.E9.2.3
CYBER LAWS AND BEST PRACTICES FOR THE SPACE SECTOR - WHAT IS MISSING AND WHAT IS NEEDED
Helena Correia Mendonça, Vieira de Almeida & Associados, Portugal

IAC-22.E9.2.4
INDUSTRY'S MANAGEMENT OF CYBER RISKS DURING LAUNCH ACTIVITIES UNDER LAW IN AUSTRALIA
Scott Schneider, Australia

IAC-22.E9.2.5
GATEWAY IMPLEMENTATION OF CYBERSECURITY REQUIREMENTS
Svetlana Hanson, NASA, United States

IAC-22.E9.2.6
THE SPACE DOMAIN CYBER-SECURITY (SPADOCs) FRAMEWORK: A PROCESS FRAMEWORK TO ORGANIZE, UNDERSTAND AND EDUCATE
Bruce Chesley, Teaching Science and Technology, Inc (TSTI), United States

IAC-22.E9.2.8
RECONCILING INTERNATIONAL AND EUROPEAN LAW TO ENSURE THE CYBER SECURITY OF SPACE MISSIONS
Giulia Pavesi, KU Leuven - University of Leuven, Belgium

IAC-22.E9.2.9
DEVELOPING RISK BASED CYBER MISSION ASSURANCE ONTOLOGIES FOR SPACE LAUNCH MISSION SYSTEMS
Scott Schneider, Australia

E10. IAF SYMPOSIUM ON PLANETARY DEFENSE AND NEAR-EARTH OBJECTS

Coordinator(s): Alex Karl, Space Applications Services, Belgium; Alissa J. Haddaji, Harvard University, United States;

E10.1. Planetary Defense from Asteroids and Comets

September 21 2022, 15:00 — S01

Co-Chair(s): Daniel Mazanek, NASA, United States; Changyin Zhao, Purple Mountain Observatory (PMO), China;
Rapporteur(s): Alejandro J. Roman Molinas, Paraguayan Space Agency, Paraguay; Alex Karl, Space Applications Services, Belgium;

IAC-22.E10.1.1
SUMMARY AND HIGHLIGHTS OF THE 2021 IAA PLANETARY DEFENSE CONFERENCE
Alex Karl, Space Applications Services, Belgium

IAC-22.E10.1.2
LICIAUCUBE: A DEEP SPACE CUBSAT TO WITNESS THE FIRST ASTEROID KINETIC IMPACTOR TEST
Marilena Amoroso, Italian Space Agency (ASI), Italy

IAC-22.E10.1.3
THE SPECTRAL IMAGER FOR THE PLANETARY DEFENCE MISSION HERA
Marco Esposito, Cosine Remote Sensing B.V., The Netherlands

IAC-22.E10.1.4
ESA'S IMPACT EFFECTS TOOL - QUANTITATIVE PREDICTIONS OF NEO IMPACT EFFECTS IN ATMOSPHERE AND AT THE SURFACE
Anca-Maria Radulescu, Elecnor Deimos, Romania

IAC-22.E10.1.5
KEY TAKEAWAYS AND LESSONS LEARNED FROM THE 4TH PLANETARY DEFENSE INTERAGENCY TABLETOP EXERCISE
Dipak Srinivasan, The John Hopkins University Applied Physics Laboratory, United States

IAC-22.E10.1.6
UNDERSTANDING THE SOCIAL-ANTHROPOLOGICAL ASPECTS OF AN ASTEROID IMPACT THREAT RESPONSE FROM TRANSDISCIPLINARY LESSONS LEARNED IN NATURAL DISASTER MANAGEMENT
Alissa J. Haddaji, Harvard University, United States

IAC-22.E10.1.7
STATISTICAL ANALYSIS OF A WEIGHTING SCHEME FOR ASTEROID OBSERVATION ASTROMETRIC ERRORS TAKING INTO CONSIDERATION THE CLASSIFICATION OF THE OBSERVED ASTEROIDS
Nicolo' Stronati, Cranfield University, United Kingdom

IAC-22.E10.1.8
ROBUST OPTIMISATION OF NEO DEFLECTION STRATEGIES UNDER MIXED ALEATORY AND EPISTEMIC UNCERTAINTY
Yirui Wang, University of Strathclyde, United Kingdom

IAC-22.E10.1.9
IDENTIFICATION OF NEAR-EARTH ASTEROIDS USING MULTI-SPACECRAFT SYSTEMS
Arjan Vermeulen, Delft University of Technology (TU Delft), The Netherlands

IAC-22.E10.1.10
THE LEGAL ASPECTS OF PLANETARY DEFENSE: CONCLUSIONS OF THE SMPAG AD-HOC LEGAL WORKING GROUP REPORT AND WAYS FORWARD
Alissa J. Haddaji, Harvard University, United States

E10.2-A6.10. Joint Technical Session: "Near-Earth Objects & Space Debris"

September 22 2022, 13:45 — S03

Co-Chair(s): Thomas Schildknecht, SwissSpace Association, Switzerland; Darren McKnight, LeoLabs, United States; Daniel Mazanek, NASA, United States; Alissa J. Haddaji, Harvard University, United States;

Rapporteur(s): Philipp Maier, Institute of Space Systems, University of Stuttgart, Germany; Camilla Colombo, Politecnico di Milano, Italy;

IAC-22.E10.2-A6.10.1
KEYNOTE: EXPLOITING THE SYNERGIES OF OBSERVING NEO AND SPACE DEBRIS WITH THE FLYEYE TELESCOPE
Elena Vellutini, Italian Space Agency (ASI), Italy

IAC-22.E10.2-A6.10.2
THE ARECIBO OBSERVATORY'S LEGACY AND FUTURE RADAR CAPABILITIES
Flaviane Venditti, Arecibo Observatory in Puerto Rico, Puerto Rico

IAC-22.E10.2-A6.10.3
FAST ROTATING NEAR EARTH ASTEROIDS OBSERVED WITH THE ARECIBO PLANETARY RADAR SYSTEM
Luisa Fernanda Zambrano Marin, Arecibo Observatory in Puerto Rico, Puerto Rico

IAC-22.E10.2-A6.10.4
A LOW-COST GLOBAL SPACE DEBRIS TRACKING NETWORK BASED ON HETEROGENEOUS METEOR DETECTION INFRASTRUCTURE
Olivia Borgue, University of Luxembourg, Luxembourg

IAC-22.E10.2-A6.10.5
OPTIMIZATION-BASED TELESCOPE PASSIVE AUTO-FOCUSING THROUGH IMAGE QUALITY ASSESSMENT FOR THAI NATIONAL SPACE OBJECT OBSERVATION
Peerapong Torteeka, National Astronomical Research Institute of Thailand (NARIT), Thailand

IAC-22.E10.2-A6.10.6
SATELLITE DETECTION AND TRACKING CAPABILITIES OF THE AUSTRALIAN NATIONAL UNIVERSITY
Doris Grosse, Australian National University (ANU), Australia

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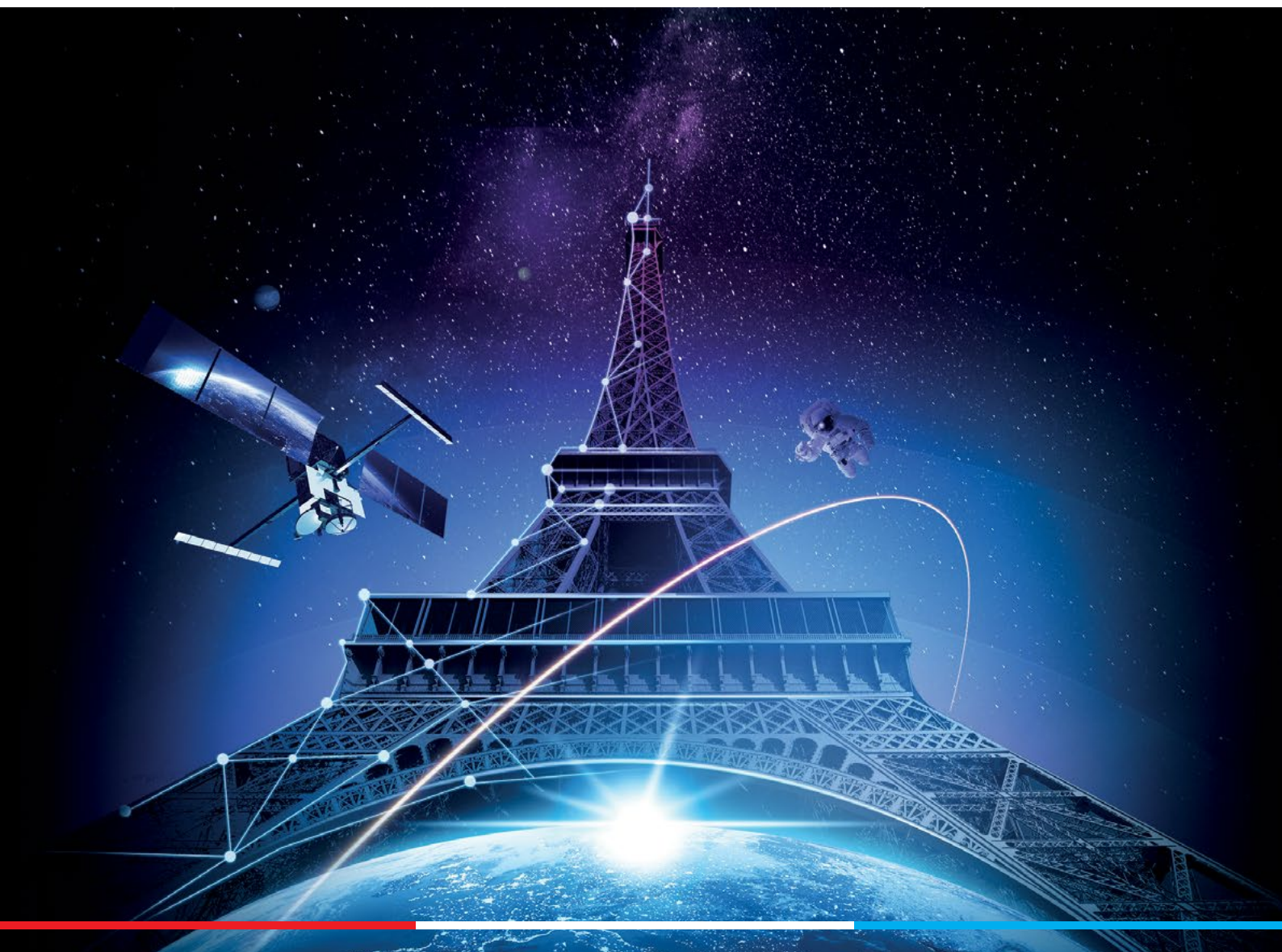
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