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14 – 18 October 2024 | Milan, Italy

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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 74th 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 2023 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 2023 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: BCC Winter Garden C, Baku Convention Center

Opening hours:
Sunday 1 October, 14:00-18:00
Monday 2 October - Thursday 5 October, 08:30-18:00
Friday 6 October, 08:30-16:30

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
Heydar Aliyev Center (HAC)

3rd floor

Room numbers
Baku Convention Center (BCC)

Ground floor
Baku Convention Center (BCC)

3rd floor
## Technical Sessions

### Technical Sessions at a Glance

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<thead>
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<th>Time</th>
<th>Room Number</th>
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<tbody>
<tr>
<td>02/10/2023</td>
<td>15:15-17:45</td>
<td>BCC B3, A1, A2, A3, A4, A5, A6, A7, A8, A9, A10</td>
</tr>
<tr>
<td>03/10/2023</td>
<td>10:15-12:45</td>
<td>HAC Hall B, E1, E2, E3, E4, E5, E6, E7, E8, E9, E10</td>
</tr>
<tr>
<td>04/10/2023</td>
<td>15:00-17:30</td>
<td>BCC B6, A1, A2, A3, A4, A5, A6, A7, A8, A9, A10</td>
</tr>
<tr>
<td>05/10/2023</td>
<td>10:15-12:45</td>
<td>HAC Hall B, E1, E2, E3, E4, E5, E6, E7, E8, E9, E10</td>
</tr>
<tr>
<td>06/10/2023</td>
<td>15:00-17:30</td>
<td>BCC B7, A1, A2, A3, A4, A5, A6, A7, A8, A9, A10</td>
</tr>
</tbody>
</table>

### Categories

- **Category A**: Science & Exploration
- **Category B**: Applications & Operations
- **Category C**: Technology
- **Category D**: Infrastructure
- **Category E**: Space & Society

### Special Sessions

- Technical Sessions by Symposium
- Special Sessions
- Keynote Speakers
- Interactive Presentations

### Authors' Index

- A1 → A7
- B1 → B6
### 2.2 Technical Sessions by Day

#### Monday, 2 October 2023

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<th>Room</th>
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</thead>
<tbody>
<tr>
<td>A1.1</td>
<td>Behaviour, Performance and Psychosocial Issues in Space</td>
<td>BCC B6</td>
</tr>
<tr>
<td>A2.1</td>
<td>Gravity and Fundamental Physics</td>
<td>BCC B7</td>
</tr>
<tr>
<td>A3.1</td>
<td>Space Exploration Overview</td>
<td>BCC B3</td>
</tr>
<tr>
<td>A5.4</td>
<td>Deep Space Habitats and Resources</td>
<td>BCC B3</td>
</tr>
<tr>
<td>A6.7</td>
<td>Operations in Space Debris Environment, Situational Awareness - SSA</td>
<td>BCC A6</td>
</tr>
<tr>
<td>B1.1</td>
<td>International Cooperation in Earth Observations</td>
<td>BCC B1</td>
</tr>
<tr>
<td>B2.8-GTS.3</td>
<td>Space Communications and Navigation Global Technical Session</td>
<td>BCC B5</td>
</tr>
<tr>
<td>B3.1</td>
<td>Governmental Human Spaceflight Programmes (Overview)</td>
<td>BCC A7</td>
</tr>
<tr>
<td>B4.2</td>
<td>Small Space Science Missions</td>
<td>BCC A2</td>
</tr>
<tr>
<td>B5.1</td>
<td>Tools and Technology in Support of Integrated Applications</td>
<td>BCC B2</td>
</tr>
<tr>
<td>C1.8</td>
<td>Orbital Dynamics (1)</td>
<td>BCC B4</td>
</tr>
<tr>
<td>C2.1</td>
<td>Space Structures I - Development and Verification (Space Vehicles and Components)</td>
<td>BCC A1</td>
</tr>
<tr>
<td>C4.1</td>
<td>Liquid Propulsion (1)</td>
<td>BCC A8</td>
</tr>
<tr>
<td>D1.1</td>
<td>Innovative and Visionary Space Systems</td>
<td>HAC Hall A</td>
</tr>
<tr>
<td>D2.1</td>
<td>Launch Vehicles in Service or in Development</td>
<td>BCC A3</td>
</tr>
<tr>
<td>D4.1</td>
<td>Innovative Concepts and Technologies</td>
<td>BCC Balcony C2</td>
</tr>
<tr>
<td>E1.1</td>
<td>Ignition - Primary Space Education</td>
<td>HAC Museum GA</td>
</tr>
<tr>
<td>E2.1</td>
<td>Student Conference - Part 1</td>
<td>BCC A5</td>
</tr>
<tr>
<td>E5.1</td>
<td>Space Architecture: Habitats, Habitability, and Bases</td>
<td>BCC A4</td>
</tr>
<tr>
<td>E7.1</td>
<td>Young Scholars Session with Keynote Lecture</td>
<td>HAC Hall B</td>
</tr>
<tr>
<td>E9.2</td>
<td>Cyber-based security threats to space missions: establishing the legal, institutional and collaborative framework to counteract them</td>
<td>BCC Auditorium Balcony</td>
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#### Tuesday, 3 October 2023

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
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<tbody>
<tr>
<td>A1.2</td>
<td>Human Physiology in Space</td>
<td>BCC B6</td>
</tr>
<tr>
<td>A3.2A</td>
<td>Moon Exploration – Part 1</td>
<td>BCC B3</td>
</tr>
<tr>
<td>A4.1</td>
<td>SETI 1: SETI Science and Technology</td>
<td>BCC B7</td>
</tr>
<tr>
<td>A6.9</td>
<td>Orbit Determination and Propagation - SST</td>
<td>BCC A6</td>
</tr>
<tr>
<td>B3.2</td>
<td>Commercial Human Spaceflight Programmes</td>
<td>BCC A7</td>
</tr>
<tr>
<td>B4.1</td>
<td>24th Workshop on Small Satellite Programmes at the Service of Developing Countries</td>
<td>BCC A2</td>
</tr>
<tr>
<td>C1.9</td>
<td>Orbital Dynamics (2)</td>
<td>BCC B4</td>
</tr>
<tr>
<td>C2.2</td>
<td>Space Structures II - Development and Verification (Deployable and Dimensionally Stable Structures)</td>
<td>BCC A1</td>
</tr>
<tr>
<td>C3.1</td>
<td>Solar Power Satellite</td>
<td>BCC B1</td>
</tr>
<tr>
<td>No.</td>
<td>Title</td>
<td>Room</td>
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<tr>
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<tr>
<td>C4.3</td>
<td>Solid and Hybrid Propulsion (1)</td>
<td>BCC A8</td>
</tr>
<tr>
<td>D1.2</td>
<td>Space Systems Architectures</td>
<td>HAC Hall A</td>
</tr>
<tr>
<td>D2.3</td>
<td>Upper Stages, Space Transfer, Entry &amp; Landing Systems</td>
<td>BCC A3</td>
</tr>
<tr>
<td>D4.2</td>
<td>Contribution of Moon Village to Solving Global Societal Issues</td>
<td>BCC Balcony C2</td>
</tr>
<tr>
<td>D5.1</td>
<td>For a successful space program : Quality and Safety!</td>
<td>BCC A4</td>
</tr>
<tr>
<td>D6.1</td>
<td>Commercial Spaceflight Safety and Emerging Issues</td>
<td>BCC B5</td>
</tr>
<tr>
<td>E1.2</td>
<td>Lift Off - Secondary Space Education</td>
<td>HAC Museum GA</td>
</tr>
<tr>
<td>E2.2</td>
<td>Student Conference - Part 2</td>
<td>BCC A5</td>
</tr>
<tr>
<td>E3.1</td>
<td>International cooperation in using space for sustainable development: The “Space2030” agenda</td>
<td>BCC Auditorium Balcony</td>
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<tr>
<td>E6.4</td>
<td>Strategic Risk Management for Successful Space &amp; Defence Programmes</td>
<td>HAC Balcony 2</td>
</tr>
<tr>
<td>E7.2</td>
<td>UNCOPUOS and ITU Registration of Large Constellations</td>
<td>HAC Hall B</td>
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</table>

15:00 Technical Sessions

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<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Room</th>
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</thead>
<tbody>
<tr>
<td>A1.3</td>
<td>Medical Care for Humans in Space</td>
<td>BCC B6</td>
</tr>
<tr>
<td>A3.2B</td>
<td>Moon Exploration – Part 2</td>
<td>BCC B3</td>
</tr>
<tr>
<td>A4.2</td>
<td>SETI 2: SETI and Society</td>
<td>BCC B7</td>
</tr>
<tr>
<td>A6.4</td>
<td>Mitigation - Tools, Techniques and Challenges - SEM</td>
<td>BCC A6</td>
</tr>
<tr>
<td>B1.2</td>
<td>Earth Observation Systems</td>
<td>BCC B1</td>
</tr>
<tr>
<td>B2.1</td>
<td>Advances in Space-based Navigation Technologies</td>
<td>BCC B2</td>
</tr>
<tr>
<td>B3.3</td>
<td>Utilization &amp; Exploitation of Human Spaceflight Systems</td>
<td>BCC A7</td>
</tr>
<tr>
<td>B4.3</td>
<td>Small Satellite Operations</td>
<td>BCC A2</td>
</tr>
<tr>
<td>B6.3</td>
<td>Mission Operations, Validation, Simulation and Training</td>
<td>BCC A5</td>
</tr>
<tr>
<td>C1.1</td>
<td>Attitude Dynamics (1)</td>
<td>BCC B4</td>
</tr>
<tr>
<td>C2.3</td>
<td>Space Structures - Dynamics and Microdynamics</td>
<td>BCC A1</td>
</tr>
<tr>
<td>C4.5</td>
<td>Electric Propulsion (1)</td>
<td>BCC A8</td>
</tr>
<tr>
<td>D1.3</td>
<td>Technologies to Enable Space Systems</td>
<td>HAC Hall A</td>
</tr>
<tr>
<td>D2.2</td>
<td>Launch Services, Missions, Operations, and Facilities</td>
<td>BCC A3</td>
</tr>
<tr>
<td>D4.3</td>
<td>Modern Day Space Elevators Customer Design Drivers</td>
<td>BCC Balcony C2</td>
</tr>
<tr>
<td>E1.3</td>
<td>On Track - Undergraduate Space Education</td>
<td>HAC Museum GA</td>
</tr>
<tr>
<td>E2.3-GTS.4</td>
<td>Student Team Competition</td>
<td>BCC B5</td>
</tr>
<tr>
<td>E3.2</td>
<td>The future of space exploration and innovation</td>
<td>BCC Auditorium Balcony</td>
</tr>
<tr>
<td>E5.2</td>
<td>Is Space R&amp;D Truly Fostering A Better World For Our Future?</td>
<td>BCC A4</td>
</tr>
<tr>
<td>E6.3</td>
<td>Innovation: The Academics’ Perspectives</td>
<td>HAC Balcony 2</td>
</tr>
<tr>
<td>E7.3</td>
<td>Legal Issues Relating to Emerging Space Activities on Celestial Bodies</td>
<td>HAC Hall B</td>
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</tbody>
</table>
### Wednesday, 4 October 2023

#### 10:15  Technical Sessions

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<tr>
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<th>Title</th>
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<tbody>
<tr>
<td>A2.2</td>
<td>Fluid and Materials Sciences</td>
<td>BCC B7</td>
</tr>
<tr>
<td>A3.3A</td>
<td>Mars Exploration – missions current and future</td>
<td>BCC B3</td>
</tr>
<tr>
<td>A5.1</td>
<td>Human Exploration of the Moon and Cislunar Space</td>
<td>HAC Hall A</td>
</tr>
<tr>
<td>A6.3</td>
<td>Impact-Induced Mission Effects and Risk Assessments</td>
<td>BCC A6</td>
</tr>
<tr>
<td>B1.3</td>
<td>Earth Observation Sensors and Technology</td>
<td>BCC B1</td>
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<tr>
<td>B2.2</td>
<td>Advances in Space-based Communication Systems and Services, Part 1</td>
<td>BCC B2</td>
</tr>
<tr>
<td>B3.4-B6.4</td>
<td>Flight &amp; Ground Operations aspects of Human Spaceflight - Joint Session of the IAF Human Spaceflight and IAF Space Operations Symposia</td>
<td>BCC A7</td>
</tr>
<tr>
<td>B4.4</td>
<td>Small Earth Observation Missions</td>
<td>BCC A2</td>
</tr>
<tr>
<td>B6.4-B3.4</td>
<td>Flight &amp; Ground Operations of HSF Systems - A Joint Session of the IAF Human Spaceflight and IAF Space Operations Symposia</td>
<td>BCC A7</td>
</tr>
<tr>
<td>C1.2</td>
<td>Attitude Dynamics (2)</td>
<td>BCC B4</td>
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<tr>
<td>C2.4</td>
<td>Advanced Materials and Structures for High Temperature Applications</td>
<td>BCC A1</td>
</tr>
<tr>
<td>C4.2</td>
<td>Liquid Propulsion (2)</td>
<td>BCC A8</td>
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<tr>
<td>C4.4</td>
<td>Solid and Hybrid Propulsion (2)</td>
<td>BCC B6</td>
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<tr>
<td>D2.4</td>
<td>Future Space Transportation Systems</td>
<td>BCC A3</td>
</tr>
<tr>
<td>D3.1</td>
<td>Strategies &amp; Architectures as the Framework for Future Building Blocks in Space Exploration and Development</td>
<td>BCC Balcony C2</td>
</tr>
<tr>
<td>D5.2</td>
<td>Emerging trends of knowledge management in organizations</td>
<td>BCC A4</td>
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<tr>
<td>D6.3</td>
<td>Enabling safe commercial spaceflight: vehicles and spaceports</td>
<td>BCC B5</td>
</tr>
<tr>
<td>E1.4</td>
<td>In Orbit - Postgraduate Space Education</td>
<td>HAC Museum GA</td>
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<tr>
<td>E2.4</td>
<td>Educational Pico and Nano Satellites</td>
<td>BCC A5</td>
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<tr>
<td>E3.3</td>
<td>Space Economy Session – A focus on in-space operations and their potential to stimulate economic development</td>
<td>BCC Auditorium Balcony</td>
</tr>
<tr>
<td>E6.2</td>
<td>Public-Private Partnerships: Traditional and New Space Applications</td>
<td>HAC Balcony 2</td>
</tr>
<tr>
<td>E7.4</td>
<td>Key Governance Issues in the New Space Age</td>
<td>HAC Hall B</td>
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</table>

#### 15:00  Technical Sessions

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>A1.4</td>
<td>Medicine in Space and Extreme Environments</td>
<td>BCC B6</td>
</tr>
<tr>
<td>A2.3</td>
<td>Microgravity Experiments from Sub-Orbital to Orbital Platforms</td>
<td>BCC B7</td>
</tr>
<tr>
<td>A3.3B</td>
<td>Mars Exploration – Science, Instruments and Technologies</td>
<td>BCC B3</td>
</tr>
<tr>
<td>A5.2</td>
<td>Human Exploration of Mars</td>
<td>HAC Hall A</td>
</tr>
<tr>
<td>A6.2</td>
<td>Modeling and Risk Analysis</td>
<td>BCC A6</td>
</tr>
<tr>
<td>B1.4</td>
<td>Earth Observation Data Systems and Technology</td>
<td>BCC B1</td>
</tr>
<tr>
<td>B2.3</td>
<td>Advances in Space-based Communication Systems and Services, Part 2</td>
<td>BCC B2</td>
</tr>
<tr>
<td>B3.5</td>
<td>Astronaut Training, Accommodation, and Operations in Space</td>
<td>BCC A7</td>
</tr>
<tr>
<td>B4.5</td>
<td>Access to Space for Small Satellite Missions</td>
<td>BCC A2</td>
</tr>
<tr>
<td>B5.2</td>
<td>Integrated Applications End-to-End Solutions</td>
<td>BCC A5</td>
</tr>
<tr>
<td>C1.3</td>
<td>Guidance, Navigation and Control (1)</td>
<td>BCC B4</td>
</tr>
<tr>
<td>C2.5</td>
<td>Advancements in Materials Applications and Rapid Prototyping</td>
<td>BCC A1</td>
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Thursday, 5 October 2023

10:15 Technical Sessions

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<tbody>
<tr>
<td>A1.5</td>
<td>Radiation Fields, Effects and Risks in Human Space Missions</td>
<td>BCC B6</td>
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<tr>
<td>A2.4</td>
<td>Science Results from Ground Based Research</td>
<td>BCC B7</td>
</tr>
<tr>
<td>A3.4A</td>
<td>Small Bodies Missions and Technologies (Part 1)</td>
<td>BCC B3</td>
</tr>
<tr>
<td>A5.3-B3.6</td>
<td>Human and Robotic Partnerships in Exploration - Joint session of the IAF Human Spaceflight and IAF Exploration Symposia</td>
<td>BCC A7</td>
</tr>
<tr>
<td>A6.5</td>
<td>Post Mission Disposal and Space Debris Removal 1 - SEM</td>
<td>BCC A6</td>
</tr>
<tr>
<td>A7.1</td>
<td>Space Astronomy missions, strategies and plans</td>
<td>BCC Auditorium Balcony</td>
</tr>
<tr>
<td>B1.5</td>
<td>Earth Observation Societal and Economic Applications, Challenges and Benefits</td>
<td>BCC B1</td>
</tr>
<tr>
<td>B2.4</td>
<td>Advances in Space-based Communication Systems and Services, Part 3</td>
<td>BCC B2</td>
</tr>
<tr>
<td>B3.6-A5.3</td>
<td>Human and Robotic Partnerships in Exploration - Joint session of the IAF Human Spaceflight and IAF Exploration Symposia</td>
<td>BCC A7</td>
</tr>
<tr>
<td>B4.6B</td>
<td>Generic Technologies for Nano/Pico Platforms</td>
<td>BCC A2</td>
</tr>
<tr>
<td>B5.3</td>
<td>Satellite Commercial Applications</td>
<td>BCC A5</td>
</tr>
<tr>
<td>C1.4</td>
<td>Guidance, Navigation and Control (2)</td>
<td>BCC B4</td>
</tr>
<tr>
<td>C2.6</td>
<td>Space Environmental Effects and Spacecraft Protection</td>
<td>BCC A1</td>
</tr>
<tr>
<td>C3.2</td>
<td>Wireless Power Transmission Technologies and Application</td>
<td>BCC B5</td>
</tr>
<tr>
<td>C4.7</td>
<td>Hypersonic Air-breathing and Combined Cycle Propulsion, and Hypersonic Vehicle</td>
<td>BCC A8</td>
</tr>
<tr>
<td>D1.4A</td>
<td>Space Systems Engineering - Methods, Processes and Tools (1)</td>
<td>HAC Hall A</td>
</tr>
<tr>
<td>D2.6</td>
<td>Future Space Transportation Systems Verification and In-Flight Experimentation</td>
<td>BCC A3</td>
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<td>D4.4</td>
<td>Strategies for Rapid Implementation of Interstellar Missions: Precursors and Beyond</td>
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<td>D5.3</td>
<td>Predicting, testing, and measuring the effects of the space environment on space missions</td>
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<tr>
<td>E1.6</td>
<td>Calling Planet Earth - Space Outreach to the General Public</td>
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<td>E4.2</td>
<td>Scientific and Technical Histories</td>
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<tr>
<td>E9.3</td>
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15:00  Technical Sessions

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<td>A2.5</td>
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<td>Solar System Exploration including Ocean Worlds</td>
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<td>Post Mission Disposal and Space Debris Removal 2 - SEM</td>
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<td>Assessing and Mitigating the Global Freshwater Crisis</td>
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<td>B2.5</td>
<td>Advances in Space-based Communication Technologies, Part 1</td>
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<td>B3.7</td>
<td>Advanced Systems, Technologies, and Innovations for Human Spaceflight</td>
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<td>B4.5A-C4.8</td>
<td>Joint Session between IAA and IAF for Small Satellite Propulsion Systems</td>
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<td>C2.7</td>
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<td>D1.4B</td>
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<td>D4.5</td>
<td>Space Resources, the Enabler of the Earth-Moon Econosphere</td>
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<td>E1.7</td>
<td>New Worlds - Non-Traditional Space Education and Outreach</td>
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<td>E3.6</td>
<td>Cost and Procurement impacts on Space Programmes linked to high inflation and worldwide scarcity of components and materials</td>
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<td>E5.4</td>
<td>Space Assets and Disaster Management</td>
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<td>E6.1</td>
<td>Space Entrepreneurship and Investment: The Practitioners’ Perspectives</td>
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<td>E10.1</td>
<td>Planetary Defense from Asteroids and Comets</td>
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Friday, 6 October 2023

10:15  Technical Sessions

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<td>A3.4B</td>
<td>Small Bodies Missions and Technologies (Part 2)</td>
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<td>A6.8-E9.1</td>
<td>Policy, Legal, Institutional, Economic and Security Aspects of Debris Mitigation, Debris Remediation and STM</td>
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<tr>
<td>A7.2</td>
<td>Science Goals and Drivers for Future Exoplanet, Space Astronomy and Space Physics</td>
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<td>B1.7</td>
<td>Earth Observations to address Earth’s Environment and Climate Challenges</td>
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<td>B4.8</td>
<td>Small Spacecraft for Deep-Space Exploration</td>
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<tr>
<td>B6.2</td>
<td>Innovative Space Operations Concepts and Advanced Systems</td>
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<td>C1.6</td>
<td>Mission Design, Operations &amp; Optimization (1)</td>
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<td>C2.8</td>
<td>Specialized Technologies, Including Nanotechnology</td>
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<td>C3.3</td>
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<td>C4.9</td>
<td>Disruptive Propulsion Concepts for Enabling New Missions</td>
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<tr>
<td>D1.5</td>
<td>Lessons Learned in Space Systems: Achievements, Challenges, Best Practices, Standards</td>
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<td>D2.8</td>
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<td>D3.2B</td>
<td>Systems and Infrastructures to Implement Sustainable Space Development and Settlement - Technologies</td>
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<td>E9.1-A6.8</td>
<td>Policy, Legal, Institutional, Economic and Security Aspects of Debris Mitigation, Debris Remediation and STM</td>
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<td>A1.8</td>
<td>Biology in Space</td>
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<td>A2.7</td>
<td>Life and Physical Sciences under reduced Gravity</td>
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<td>A3.2C</td>
<td>Moon Exploration – Part 3</td>
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<td>A6.1</td>
<td>Space Debris Detection, Tracking and Characterization - SST</td>
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<td>A7.3</td>
<td>Technology Needs for Future Missions, Systems, and Instruments</td>
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<td>Mission Design, Operations &amp; Optimization (2)</td>
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<td>C2.9</td>
<td>Smart Materials and Adaptive Structures</td>
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<td>C3.4</td>
<td>Space Power System for Ambitious Missions</td>
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<td>C3.5-C4.10</td>
<td>Joint Session on Nuclear Power and Propulsion Systems, and Propellantless Propulsion</td>
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<td>Joint Session on Nuclear Power and Propulsion Systems, and Propellantless Propulsion</td>
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<td>D1.6</td>
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<td>D2.9-D6.2</td>
<td>Emerging Space Ventures, including Space Logistics and Space Safety for Sustainability</td>
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<td>D3.3</td>
<td>Space Technology and System Management Practices and Tools</td>
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<td>D6.2-D2.9</td>
<td>Emerging Space Ventures, including Space Logistics and Space Safety for Sustainability</td>
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<td>E1.9</td>
<td>Space Culture – Public Engagement in Space through Culture</td>
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<td>E5.6</td>
<td>Simulating Space Habitation: Habitats, Design and Simulation Missions</td>
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<td>E7.7</td>
<td>Recent Developments in Space Law with Particular Focus on Space Debris Remediation</td>
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<td>E8.1</td>
<td>Multilingual Astronautical Terminology</td>
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<td>E10.2</td>
<td>Informing Planetary Defense</td>
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3  Keynote Speakers

Monday 2 October

**B1**  IAF EARTH OBSERVATION SYMPOSIUM

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**Session:** 1. International Cooperation in Earth Observations

**Tanita SUEPA**
Strategic Alliance Office, Director
Geo-Informatics & Space Technology Development Agency (GISTDA)
Thailand

**KEYNOTE:** B3.1 Committee on Earth Observation Satellites (CEOS): 2023 Report of Activities to the 74th International Astronautical Congress

**Abstract**
As the 2023 CEOS Chair, GISTDA 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 almost four 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. GISTDA will outline the key initiatives undertaken in 2023 by the CEOS Chair and CEOS Strategic Implementation Team, and will present important highlights of the CEOS organisation. The key CEOS Chair priorities for 2023 include: 1. Supporting CEOS Preparations and Inputs to the Global Stocktake of the UNFCCC Paris Agreement and 2. Supporting Exploration of New Geometries for Space Agencies and CEOS with New Space.

**B3**  IAF HUMAN SPACEFLIGHT SYMPOSIUM

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**Session:** 1. Governmental Human Spaceflight Programmes (Overview)

**James FREE**
Associate Administrator for the Exploration Systems Development Mission Directorate (ESMD)
National Aeronautics and Space Administration (NASA)
United States

**KEYNOTE:** B3.1 Implementing an Inclusive Deep Space Ecosystem

**Abstract**
NASA’s Moon to Mars exploration strategy is a multi-faceted effort to use the Moon as a proving ground in preparation for sending humans to Mars, all along putting scientific discovery at the forefront. The activities to support this strategy, led by NASA’s Exploration Systems Development Mission Directorate (ESMD), involve a series of progressive steps, from testing our deep space transportation systems, the Space Launch System rocket and Orion spacecraft, to building the first space station in lunar orbit, known as the Gateway, to deploying robotic and human landers to the Moon and Mars. NASA’s Moon to Mars initiative will enable humanity to understand the solar system and its habitability better while inspiring the next generation of space exploration and discovery.

On the heels of the successful Artemis I mission, ESMD is developing the systems necessary and plotting a course for future missions to achieve the objectives set by NASA’s Moon to Mars exploration strategy. While ESMD is focused on building these systems, the directorate carries the mantle of long-term planning and, over the past year, has implemented an architecture concept review process. This process distills the objectives and goals into characteristics and needs from which use cases, functions, elements, and requirements are derived. From there, the directorate implements new programs and establishes partnerships to build the elements that will achieve these functions, as well as designs missions to put the elements into use. As the architecture advances, ESMD and its partners, including other NASA Mission Directories, international space agencies, industry organizations, and academic institutions, will develop the technologies and capabilities needed to achieve the objectives. This collaboration will be instrumental to build a long-term presence beyond low-Earth orbit for scientific discovery and will be an invaluable asset in expanding humanity’s exploration of the solar system.

This paper will elaborate on ESMD’s role in executing NASA’s Moon to Mars exploration strategy through iterative architecture development and the implementing programs charged with building the elements. Readers will gain insight into NASA’s internal management and collaborative efforts to create a cadence of exploration missions to the Moon and inform future exploration of farther away destinations, including Mars.
KEYNOTE: C4.1 Overview on Development of Liquid Rocket Engines for Heavy Launch Vehicles in China

Abstract
Liquid rocket engines are the core parts of heavy launch vehicles in China. They represent the milestone of national space propulsion technologies and the premise of China’s major aerospace projects such as manned Lunar exploration, deep space exploration and space infrastructure development. To meet the requirements of the first stage, second stage and third stage for the heavy launch vehicles, study and research on key technologies of 500tf LOX/kerosene engine, 220tf LOX/LH2 engine and 25tf LOX/LH2 engine have been carried out. The overview on development of these liquid rocket engines will be presented. The 500tf LOX/kerosene engine has two-thrust-chambers with high pressure staged combustion, swinging after pump and staged startup process. The 220tf LOX/LH2 engine has high pressure staged combustion system with a single fuel-rich preburner driving the high pressure turbopumps in parallel. The 25tf LOX/LH2 engine has the closed expansion cycle. Those engines represent China’s top level in liquid rocket propulsion technologies with characteristics of non-toxic, high performance, high reliability and wide thrust range. Based on the basic research, technology studies and innovations, the first full-system test of 500tf LOX/kerosene engine and 25tf LOX/LH2 engine, semi-system test of 220tf LOX/LH2 engine have been successfully completed. Comprehensive breakthroughs in key technologies of these engines have laid a solid foundation for the development of heavy launch vehicles, and have dramatically improved China’s liquid rocket propulsion technologies.
### Session: 1. Young Scholars Session with Keynote Lecture

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#### Keynote: E7.1 Trajectory Towards a Common Understanding - a Multi-Continental Next-Generational Perspective on the Rule of Law in Outer Space

**Abstract**

The IISL's 15th Nandasiri Jasentuliyana Keynote Lecture on Space Law (2023) highlights a key mission of the IISL: the expansion of the rule of law in the exploration and use of outer space for peaceful purposes. The keynote lecture explores the role that the rule of law holds under international and national space law from the angle of the five regions of the IISL Manfred Lachs Space Law Moot Court Competition: Africa, Asia Pacific, Europe, Latin America, and North America; with the five authors of the keynote lecture each representing one region. Regional understandings as well as historical development of conceptions of the rule of law in outer space are highlighted. The keynote lecture pronounces on how the rule of law can advance the (peaceful) use of outer space by focusing on its commonalities across the globe.
Tuesday 3 October

A4  52nd IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) – The Next Steps

**Session: 1. SETI 1: SETI Science and Technology**

**Date:** 03.10.2023  **Time:** 10:15  **Room:** BCC B7

**Vishal GAJJAR**
Astronomer
Berkeley SETI Research Center
United States

**KEYNOTE: A4.1 “Pesek Lecture” - Expanding The Search for ETI Through Wide-Band and Broadband Pulsed Signals**

Abstract
The search for extraterrestrial intelligence (ETI) through radio frequencies has primarily focused on detecting continuous-wave narrowband signals. However, we show that wide-band and broadband pulsed beacons are more energy-efficient over longer operational periods compared to narrowband beacons. The search for these unconventional signals helps us to narrow down the existence of ETIs within the multi-dimensional parameter space. These signal classes consist of wide-band periodic pulses similar to Earth’s air-traffic radar, 24 different types of wide-band signals with built-in modulations, and three different types of broadband signals with artificially created dispersions. Here, we present the results of our surveys for two different signal classes, which included 1883 stars in the solar neighbourhood and around half a million stars at the Galactic Center, using 250 hours of observations with the Robert C. Byrd Green Bank Telescope as part of the Breakthrough Listen program [Gajjar et al. 2021]. We have developed a novel, open-source CPU-based software, blipps, that uses a fast folding algorithm (FFA) to detect wide-band periodic signals. We conducted searches for kHz-wide-band signals with periods between 11-100 seconds and duty cycles between 10-50% at the Galactic Centre. To the best of our knowledge, these searches represent the first FFA exploration for technosignatures. We found no evidence of kHz-wide periodic signals, placing a constraint on the abundance of transmitting extraterrestrial worlds to fewer than one in 600,000 stars at the Galactic Center [Suresh et al. 2023]. In another extensive survey, we targeted 1883 stars in the solar neighborhood and the Galactic Center for broadband pulsed beacons. We did not detect any signals of interest and have therefore placed a constraint on the existence of broadband beacons, with fewer than 1 in 1000 stars in the solar neighborhood and fewer than 1 in half a million stars at the Galactic Center having transmitter power densities greater than 105 W/Hz and 107 W/Hz, respectively [Gajjar et al. 2022]. One of the significant challenges in searching for unconventional signals using single dishes is the high number of false positives due to radio frequency interference. We discuss how we are addressing this challenge by using interferometers such as the Allen Telescope Array and the Giant Meterwave Radio Telescope.

A4  52nd IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) – The Next Steps

**Session: 2. SETI 2: SETI and Society**

**Date:** 03.10.2023  **Time:** 15:00  **Room:** BCC B7

**Lori WALTON**
Private Consultant for the Mineral Exploration Sector
Canada

**KEYNOTE: A4.2 “Billingham Cutting Edge Lecture” - The History of the IAA SETI Permanent Committee - 1990 to 1999**

Abstract
This paper is the third in a series outlining the history of the International Academy of Astronautics (IAA) SETI (search for extraterrestrial intelligence) Permanent Committee. The IAA established the SETI Committee in 1974 in response to growing awareness that humanity might detect intelligent extraterrestrial life. The IAA SETI Committee has an extraordinarily broad mandate to examine all aspects of the search for intelligent extraterrestrial life, including international issues, astrophysical and astronomical observations, biochemistry, exoplanets, complex life and evolution, planetary space missions, SETI search strategies, and the societal, legal, and political impact of a verified detection. The founding and early years of the IAA SETI Permanent Committee up to 1989 are described in two previous papers. By the late 1980s, the IAA SETI Committee focused on drafting “The Declaration of Principles Regarding Activities Following the Detection of Extraterrestrial Intelligence.” Of particular concern was a separate agreement, which would present the outline of a potential response from earth. This paper describes SETI Committee activities during the 1990s, including the SETI Review Meetings held during the International Astronautical Congress, membership, SETI searches, and SETI topics of interest. Throughout the 1990s, the IAA SETI Committee worked vigorously on the contentious issue of transmissions from earth. The possibility of intelligent extraterrestrial life was heightened by the end of the 1990s with the confirmed detection of exoplanets.
D4 21st IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE

Session: 3. Modern Day Space Elevators Customer Design Drivers
03.10.2023 15:00 BCC Balcony

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

KEYNOTE: D4.3 "Jerome Pearson Memorial Lecture" - Research Into Characteristics of a Permanent Space Access Transportation Infrastructure

Abstract
Space Elevators’ remarkable transformational capabilities as a permanent space access infrastructure dwarfs traditional space access approaches. Transportation infrastructures, such as trains, provide to the user: permanent, daily, and routine; massive movement; safe; inexpensive; environmentally friendly; storage facilities at stations (ours are at GEO and the Apex Anchor); assembly and repair areas (above the massive gravity of Earth at GEO and the Apex Anchor); rapid transit (in our case to Moon/Mars); and, others. This paper will start discussions with the top-level transformational characteristics of a permanent space access transportation infrastructure – Space Elevators. This analysis at “a higher level” will enable discussions about the possibilities, instead of the technical difficulties in fulfilling their promise. The results of the ISEC Dual Space Access Architecture study show the characteristics leading to remarkable capabilities enabling many new and traditional missions. As such, the realization surfaces that: “As we build it – they will come!” This phrase has driven inventions and developments from the beginning of time. These types of statements are commercially powerful when a projected technology is going to transform the “way of doing business.” These transformational leaps have enabled remarkable capabilities in communications, transportation, sports, business, and/or leisure. One potentially powerful transformation comes from Space Elevator electric tether climbers which can be seen as one of these game changers for the environment – no burning of rocket fuels inside our atmosphere or leaving of space debris in LEO. As Alfaro and Barry have stated: “The industry must . . . develop a long-term sustainable economic overview for Space Elevators to accelerate the development of this megaproject.” As this is realized, investors will support the development of this transformational permanent space access transportation infrastructure.

As we build it, they will come!
**Wednesday 4 October**

**A2**  
**IAF MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM**  
**Date** 04.10.2023  
**Time** 10:15  
**Room** BCC B7

**Session:** 2. Fluid and Materials Sciences  
**Evgeniya SKRYLEVA**  
**Scientist** Lomonosov Moscow State University, Russia

**KEYNOTE: A2.2 Investigation of the Fluids Behavior Under Microgravity Conditions: Conducting Experiments, Mathematical Modeling and Numerical Simulations**  
**Abstract**  
The behavior of liquids in microgravity is significantly different from the behavior in terrestrial conditions. In the absence of terrestrial gravity, capillary pressure becomes the main driving force. The study of capillary effects under terrestrial conditions is difficult, since they are masked by the gravitational force. Capillary imbibition under ordinary gravity is possible in small capillaries, in which it is difficult to observe it. To observe capillary flow in larger capillaries, where the flow is well visualized, it is necessary to resort to experiments in conditions of reduced gravity. This work is devoted to the study of fluid flow in microgravity. Studies of the flow of liquids due to capillary forces are very relevant for space technologies. For example, on board the space station, the supply of liquid from a reservoir (for example, fuel) is possible only due to capillary forces. Also, the results of studying seepage processes in microgravity can be useful in the development of a plant growing system for bioregenerative life support systems in space for long-term manned flights. It should be noted that the results of studying seepage processes under microgravity conditions can also find applications for Earth technologies and processes, for example, for oil production. Capillary effects strongly influence the seepage processes under terrestrial conditions, but the study of capillary effects under standard gravity is difficult: it is problematic to visualize the liquid flow in small pores, and capillary imbibition is impossible in large pores due to the prevailing gravity. Therefore, it is so important to conduct experiments on the flow of liquid due to capillary effects in microgravity. This paper describes experiments on capillary imbibition at a spacecraft in Earth orbit, as well as during parabolic flights. The features of the experiments, experimental equipment, post-processing of experimental data are described. Experiments in microgravity are very time-consuming and expensive. Therefore, it is important to develop mathematical models and numerical schemes for predictive simulations of fluid flow in microgravity. Description of the behavior of fluids in microgravity requires special mathematical models, which are described in this paper. Comparison of the results of numerical simulations with experimental data makes it possible to develop verified software packages. The paper also discusses the issues of numerical modeling of the processes of flow through a porous medium, taking into account chemical interactions between fluids. The authors wish to acknowledge the support by Russian Science Foundation (Grant initiative 22-21-00236).

**A6**  
**21st IAA SYMPOSIUM ON SPACE DEBRIS**  
**Date** 04.10.2023  
**Time** 10:15  
**Room** BCC A6

**Session:** 3. Impact-Induced Mission Effects and Risk Assessments  
**Zizheng GONG**  
**Chief Engineer** Beijing Institute of Spacecraft Environment Engineering, CAST, China

**KEYNOTE: A6.3 Progress in China’s Space Debris Protection Research-RETROSPECT and PROSPECT**  
**Abstract**  
Over the past two decades, China has made remarkable progress in the field of space debris protection, which not only provided strong support for the design of space debris protection for China’s manned spacecraft, but also manifested different characteristics in multiple research directions and keeps improving its capabilities. This paper introduces the recent progress in China’s space debris protection research in detail, including:

1. space debris impact risk assessment, protection design, and protection structure development, etc., for China space station.
2. development of advanced shielding materials, including wave impedance-gradient materials with high kinetic energy dissipation, active materials PTFE/Al based on thermochemical reaction, and silicon carbide fiber/Basalt/Kevlar/Al-mesh stuffed Whipple shields.
3. developing of vulnerability research, including threshold impact conditions for spacecraft component failure (cable, pipeline, pressure vessel, Solar array), spacecraft survivability evaluation software.
4. developing of ultrahigh-velocity launching techniques, including achieved the stable launch capability over 10 km/s for the spherical projectile with mm diameter at three-stage light gas gun, launched sub-gram flyer to above 18 km/s by using Electric gun, and launched sub-gram flyer over 10 km/s by Laser-driven device.
5. developing of the satellite impact breakup model and the space debris environment engineering model (SDEEM). The basic function of SDEEM 2019 is basically equivalent to the latest version of MASTER. On-orbit detection of millimeter-scale space debris is being carried out.
6. The influence of temperature and projectile shape on impact effect and ballistic limit curve. Keyword: Space debris, China space station shield design, advanced shielding materials, vulnerability, ultrahigh-velocity launching techniques, satellite breakup model and the space debris environment engineering model, projectile shape effect. The research priorities for the next 10 years in China are prospected.
**B2**

**Session:** 3. Advances in Space-based Communication Systems and Services, Part 2

**Christopher VASKO**  
Optical and Quantum Innovation Engineer  
European Space Agency (ESA)

**KEYNOTE: B2.3 Optical and Quantum Communication – Bridging the Final Frontiers to Space. Where We Are and Where We Might Be Going**

**Abstract**
Optical and Quantum Communication are certainly disruptive technologies for satcom market. While terrestrial services have successfully revolutionized the market, significant technology gaps remain for space applications for both optical and quantum technologies. Initially, only few isolated and self-standing developments have successfully been launched in niche areas. This is now changing rapidly.

In the recent years, the emergence of large commercial satcom constellations have created new opportunities for developing upstream technologies, figuratively tying satellites into commercial networks and making them true non-terrestrial networks. The move from RF towards optical technologies is made evident as next generations of constellation nodes aim to embark optical intersatellite links to manage the data traffic across the constellations.

Quantum technologies are slowly evolving beyond quantum key distribution concepts. Those are the domain of security applications and often underpin large governmental projects that are able to develop security sensitive hardware. However, other quantum technologies are slowly emerging from labs and academic environments, in search of early adopters. Today a key challenge remains in the identification of commercial use cases that allow to validate the advantages of quantum technologies in real world conditions beyond the labs.

This paper will review ongoing development programmes around the world aimed at developing Optical and Quantum communication technologies, discuss current market developments and upcoming projects. It aims to provide a wider, global perspective on the topic and to refine both the context and background on these for an interested audience.

**C1**

**Session:** 2. Attitude Dynamics (2)

**Mikhail OVCHINNIKOV**  
Chief Researcher and the Head of Space Systems Dynamics Department  
Keldysh Institute of Applied Mathematics  
Russia

**KEYNOTE: C1.2 “Breakwell Lecture” - Small Satellites Dynamics and Control: Retrospect and Future**

**Abstract**
Small satellites offer a number of well-known benefits, such as low cost, simplified development, manufacturing, launch and operation, as well as their consequent accessibility and utility for a wide range of users, from universities to large space agencies. One of the conceptual advantages of small satellites is the possibility to combine the existing practice with novel techniques and non-verified, sometimes risky, approaches. This feature refers also to development of small satellites dynamics models and motion control algorithms. In the beginning of the small-satellite era, passive and semi-passive techniques were used to provide attitude without any control of orbital motion having been provided by conditions of the piggy-back launch or by orbital-station deployment. Emergence of multi-satellite constellations and, next, formations demanded to ensure the relative distance and even relative motion which cannot be solved without proper attitude motion, even if orbital motion is provided without fuel. Nowadays tendency to implement small satellites in interplanetary and even beyond the Solar System missions requires to make use of available physical knowledge and fresh mathematical techniques. The paper presents the author’s accomplished experience in the field since 1980’s accompanied by the results of his colleagues and other small satellite fans, up to the prospection on the subject.
**KEYNOTE: E1.4 Hands-on Education With Cubesats Motivating Innovative New Space Projects: Smart, Small, Self-Organizing Spacecraft Systems (S5)**

**Abstract**

Education in space technology needs to reflect not only related important theory, but should also include practical implementation classes to practice problem solution capabilities. In this context in the curriculum “Satellite Technology” at University Würzburg already in the first semester so called “CanSat” labs were introduced since 2000, where teams of students implement a measurement device to characterize atmospheric properties, like density or temperature. The CanSat device will be deployed from an aircraft in about 3 km altitude, is implemented in an empty can as structural subsystem, and will descent by using a parachute.

In more advanced semesters, small CubeSat satellites serve as example to practice system engineering skills. In a “FlatSat” a baseplate with access to space simulation environments, measurement and test equipment allows to access different subsystem hardware components. This way challenges at different complexity levels are offered to the students and solved in hands-on approaches in close interaction with supervisors. A set of essential satellite building blocks (such as on-bord data handling system, power control system, attitude control system) is provided, such that the students can solve given specific tasks, like integration of sensor payloads or autonomous control software, and test them in hardware-in-the-loop experiments.

At the stage of MSc- or PhD-level, students are integrated in related project teams to ongoing research projects, based on CubeSat approaches. In particular, satellite formations are a core research topic in Würzburg, allowing parallel teams to contribute. Here innovative topics in Earth observation, like characterization of cloud composition by use of computed tomography approaches to derive from measurement of backscattered Sun light from different perspectives enabled by the multi-satellite system. This way, slice by slice an image of the cloud’s interior is generated. It is motivating for the students to work here in cooperation with scientists in interdisciplinary and international teams.

Hands-on experiments guide students in the “Satellite Technology” program at University Würzburg in tasks of increasing complexity to apply system engineering skills for finding solutions. At advanced stage of studies, they acquired the appropriate experience to contribute to ongoing CubeSat research projects as a precursor to contribute to future complex space technology implementation projects at agencies and in industry.

**E6**

**IAF BUSINESSES AND INNOVATION SYMPOSIUM**

**Session:** 2. Public-Private Partnerships: Traditional and New Space Applications  
**Date:** 04.10.2023  
**Time:** 10:15  
**Room:** HAC Balcony 2

**Richard DALBELLO**  
Director  
Office of Space Commerce, National Oceanic and Atmospheric Administration (NOAA)  
United States

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

**KEYNOTE: E6.2 The U.S. Department of Commerce and the SEIC IAF on PPP Models for Space Resources and Sustainability**

**Abstract**

Join our Keynote Speakers for a session on space sustainability and space resource utilization at the IAC 2023! Space resources refer to the natural physical materials and substances that can be found in space and on celestial bodies, such as asteroids, comets, the Moon, and other planets. With the increasing diversity of commercial activity in space, including in-situ resource utilization, there is a corresponding imperative to manage human-made debris, evolve collision avoidance mechanisms, and vastly improve coordination and data sharing among operators. Our SEIC E6.2 session’s experts will discuss the relationships between space sustainability and novel space activities such as in-situ resource utilization and in-space assembly and manufacturing. They will also discuss implications for space operations, facilitation of new commercial activities that can help sustain space ventures, and the new norms and regulatory framework needed to do so safely- in the long term. Our distinguished experts - Dr. Richard DalBello, Director of the Office of Space Commerce, and Nancy C. Wolfson, Chair of the IAF-SEIC- will each share their insights through their respective presentations. Dr. DalBello will discuss “Achieving Space Sustainability,” Dr. Abdub-Madrid will expound on “Space Resources and The Future of Space Exploration,” and Nancy C. Wolfson will discuss the new IAF-SEIC research project on “Designing an Entity Model After the UN-ITU” for Space Resources. We will conclude the session with an interactive Q&A/Poll.
Thursday 5 October

A7  IAF SYMPOSIUM ON ONGOING AND NEAR FUTURE SPACE ASTRONOMY AND SOLAR-SYSTEM SCIENCE MISSIONS

<table>
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<th>Session: 1. Space Astronomy Missions, Strategies and Plans</th>
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Pietro UBERTINI  
Associate Director of Research  
National Institute for Astrophysics (INAF)  
Italy

KEYNOTE: A7.1 The Italian Participation to the CSES-1 and CSES-2 Missions: Recent Results and Future Perspectives

Abstract
Based on an agreement between the China National Space Administration (CNSA) and the Italian Space Agency (ASI), the Limadou Collaboration represents the Italian contribution to the China Seismo Electromagnetic Satellite (CSES) constellation.

The scientific institutes participating to this space program are the Italian National Institute for Nuclear Physics (INFN), the Italian Institute for Astrophysics (INAF), the Italian Institute of Geophysics and Volcanology (INGV) and various Italian Universities. The first CSES-1 was launched on February 2, 2018 from the Jiuquan space center carrying a suite of eight advanced instruments, two of them developed with a large Italian contribution: the High-Energy Particle Detector (HEPD-01) and the Electric Field Detector (EFD-01). During the 5 years of successful operation the mission has obtained important results in the field of Cosmic Rays, Space Weather, Sun- Earth interaction, lithosphere-ionosphere-magnetosphere coupling also associated to pre-seismic and co-seismic phenomena, and more recently on the ionospheric electric field perturbations triggered by terrestrial (eruptions) and strong impulsive cosmic explosions.

We will discuss the status of the mission, outline the main results obtained, and future perspectives opened by the joint operation of CSES-1 and CSES-2, the latter carrying on board the new, state of the art, Italian instruments HEPD-02 and EFD-02.

The talk is presented on behalf of CSES- Limadou Collaboration.

E10  IAF SYMPOSIUM ON PLANETARY DEFENSE AND NEAR-EARTH OBJECTS

<table>
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<th>Session: 1. Planetary Defense from Asteroids and Comets</th>
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Jason KALIRAI  
Mission Area Executive for Civil Space  
The Johns Hopkins University Applied Physics Laboratory  
United States

KEYNOTE: E10.1 Dart: Latest Results From the Dimorphos Impact and a Look Forward to Future Planetary Defense Initiatives

Abstract
DART, the Double Asteroid Redirection Test, successfully impacted asteroid Dimorphos on September 26, 2022, becoming the first mission to demonstrate asteroid deflection. Shared live via a NASA broadcast, over a million concurrent viewers around the world watched as the DART spacecraft streamed images to Earth up to the final second before its impact with Dimorphos. In this talk, we will share with the audience the final phases of the DART encounter and the latest results from the DART Investigation Team’s analysis of ground and space-based data. This includes measurements on the amount of deflection that DART imparted on Dimorphos, a determination of the momentum transfer enhancement factor, and results on understanding the geology and surface characteristics of the impact site.

The success of the DART mission paves the future for a bold international Planetary Defense program. We will share ideas on bolstering international coordination, developing new technologies that can mitigate different types of asteroid threats, and closing identified gaps in our overall preparedness.
Friday 6 October

**B2**  
IAF SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM  
Date  |  Time  |  Room  
--- | --- | ---  
06.10.2023  |  10:15  |  BCC B2  

**Session:** 6. Advances in Space-based Communication Technologies, Part 2  
**Mirko MAGAROTTO**  
Researcher  
University of Padova  
Italy  

**KEYNOTE: B2.6 X-Band Plasma-Based Reflective Surface**

**Abstract**

Recently, plasma-based reflective surfaces have been proposed to control the reflection of an incident electromagnetic (EM) wave in terms of beam-steering and polarization. A plasma-based reflective surface consist on a series of plasma discharges placed on top of a ground plane in which the phase front of the reflected wave (i.e., its direction) can be reconfigured varying plasma parameters. Specifically, the plasma density can be controlled varying the electrical power spent to sustain each discharge. Moreover, if a magnetic field is added, also the polarization of the reflected wave can be fully controlled (e.g., conversion from linear to circular).

Plasma-based reflective surfaces are an appealing technology for SatCom and radio navigation. Indeed, operations of beam-forming and beam-steering can be accomplished electronically without relying on mechanical moving parts or complex phasing systems. This feature can be exploited in broadcast satellites if multi-beam antennas are required to widen the coverage area maintaining high signal levels. The possibility to control the polarization is also appealing if signals are transmitted relying on circular polarization (e.g., in the field of radio navigation). Indeed the design of the antennas that generate the signal could be eased with respect to the state of the art (e.g., horn antennas instead of helix). Finally, once the plasma is turned “off”, the interference produced by plasma-based reflective surfaces on other antennas in the nearby is drastically reduced provided that the main conductive medium (i.e., plasma) fades. This is very useful in satellite applications where several antennas are usually stacked together because of the strict volume constrains.

In this work we present the design of a plasma-based reflective surface operated in X band. A combined numerical-experimental approach will be adopted. Numerical simulations of both the plasma dynamics within the discharges and the EM response of the reflective surface will be accomplished with the software OpenFoam and CST Studio Suite, respectively. Plasma discharges will be realized and tested to be used as benchmark for the numerical solvers both in terms of plasma parameters and EM response. Thus, the design presented in this work will be a first step toward the development of a plasma-based reflective surface for space application.

**C4**  
IAF SPACE PROPULSION SYMPOSIUM  
Date  |  Time  |  Room  
--- | --- | ---  
06.10.2023  |  10:15  |  BCC A8  

**Session:** 9. Disruptive Propulsion Concepts for Enabling New Missions  
**Jiro KASAHARA**  
Professor  
Institute of Materials and Systems for Sustainability, Nagoya University  
Japan  

**KEYNOTE: C4.9 Space Flight Experiments of Detonation Engine System by Using Sounding Rocket S-520**

**Abstract**

The detonation engine generates detonation and compression waves at extremely high frequencies (1~100 kHz) to drastically increase reaction speed, leading to radical reduction of rocket engine weights and high performance by easy generation of thrust. The research group of Nagoya University, Keio University, JAXA/ISAS, and Muroran Institute of technology has successfully demonstrated a detonation engine in space flight. The Detonation Engine System (DES) developed in this study was loaded onto the mission section of the sounding rocket S-520-31 and launched from the JAXA Uchinoura Space Center at 5:30 a.m. on July 27, 2021. After the separation of the first stage rocket, the rotating detonation engine and pulse detonation engine were successfully operated in space, and photo images, pressure, temperature, vibration, position, and attitude data were acquired by telemetry and RATS (Reentry and Recovery Module with Deployable Aeroshell Technology for Sounding Rocket Experiment). The fuel is methane and the oxidizer is oxygen. The success of this space flight demonstration will bring the detonation engine much closer to practical use as a kick motor for deep space exploration, and as a first and second stage engine for rockets. Now the liquid propellant (ethanol-N2O) detonation engine system for the next sounding rocket S-520-34 project scheduled on summer 2024 is in the process of development. The recent progress of the project and fundamental research of detonation engines will be addressed.
KEYNOTE: C4.10-C3.5 Nuclear Thermal Propulsion – Progress and Potential

Abstract
This keynote address will describe the current research and development efforts currently underway within the United States on Nuclear Thermal Propulsion (NTP), with a particular focus on the Demonstration Rocket for Agile Cislunar Operations (DRACO) project, a joint effort of the United States Defense Advanced Projects Agency and the National Aeronautics and Space Administration. The impact of NTP propulsion on both human and scientific exploration of the Solar System will also be discussed. And finally, the topic of advanced NTP propulsion will be addressed, including liquid fuel NTP engines.

KEYNOTE: E4.3 Overview of Space Science and Technology History – Destiny Against of Rule

Abstract
International Astronautical Congress 1973: It has been held the 24th IAC in 1973 in Baku capital of Azerbaijan. It was biggest Congress of the IAF for that time in terms of participants more than 1500 from 30 countries such as USA, Czechoslovakia, Cuba, Argentina, Brazil, India, Japan, Iran, Spain, Italy, France, Sweden and embraced topics reflecting a wide range of space science and technology. The slogan of the Congress was “Cosmos must become an area of peace”, “Cosmos must serve humanity: it must be discovered for the happiness of man!” Azerbaijan was one of the republics of the former Soviet Union. The Congress 1973 has created an excellent environment on establishment of entity related to the space science and technology activities. Taking into account of the capacity of country it has been decided engagement of Azerbaijan for Earth study by use of advances of space technology.

Establishment of the Caspiy Center: A few months later after the end of the Congress, on 21 August 1974, the south-eastern Scientific Center for Natural Resource Studies – Caspiy was established in Baku. This Center has been transferred into Space Research of Natural Resources Institute behind of National Academy. In 1981, the Institute has become the Scientific Production Association for Space Research (SPASR), which was pioneer of such management system as scientific production within the Academy system of the former Soviet Union. SPASR from 1985 to 1992 operated under the Ministry of General Machine-Building the second powerful ministry after Ministry of Defense of the former USSR.

Azerbaijan National Aerospace Agency: Azerbaijan National Aerospace Agency (ANAS) has established on the base of Scientific Production Association for Space Research after collapse of Soviet Union. During all the period space science and technology organization was engaged in various scientific research fields such as astrophysics, development of space-borne and air-borne parts and equipment, and remote sensing devices. In the meantime, number of local and international events have conducted.

IAF Memberships: Azerbaijan National Aerospace Agency is the first organization who become the member of the IAF. Today Shamakhy Astrophysical Observatory and Azercosmos are the members of the IAF.

Azercosmos: Space Agency of the Republic of Azerbaijan (Azercosmos) is providing customized solutions based on advanced technologies for peace and prosperity. Now days Space Agency of the Republic of Azerbaijan services are not limited only deliver a broad spectrum of services and solutions, as well as engage in a wide range of R&D activities Space Agency of the Republic of Azerbaijan is the main organization who responsible for IAC74 which will be held in Baku, Azerbaijan in October 2-6, 2023.
4 Special Sessions

4.1 Special Sessions at a Glance
4.2 Special Sessions per Day

Monday 2 October

15:15 - 16:25  Artemis “Audience Astronauts” Prepare for Mars

Room: HAC Hall C  
Format: Simulated Crew Briefing

Organizers:
- **Sam SCIMEMI**  
  Senior Assistant, Exploration Systems Development Mission Directorate (ESDMD), National Aeronautics and Space Administration (NASA)  
  United States

- **Erin MAHONEY**  
  Deputy Communications Director, Strategy and Architecture, Exploration Systems Development Mission Directorate (ESDMD), National Aeronautics and Space Administration (NASA)  
  United States

- **Darcy ELBURN**  
  Communications Integration Manager, Moon to Mars Program Office, Exploration Systems Development Mission Directorate (ESDMD), National Aeronautics and Space Administration (NASA)  
  United States

Speakers:
- **Kenneth BOWERSOX**  
  Deputy Associate Administrator, Space Operations Mission Directorate (SOMD), National Aeronautics and Space Administration (NASA)

- **Koichi WAKATA**  
  Astronaut, Japan Aerospace Exploration Agency (JAXA)  
  Japan

- **Erika ALVAREZ**  
  Systems Engineering and Integration, Moon to Mars Program Office, Exploration Systems Development Mission Directorate (ESDMD), National Aeronautics and Space Administration (NASA)  
  United States

- **Patrick CHAI**  
  In-space Propulsion Lead, Mars Architecture Team, Exploration Systems Development Mission Directorate (ESDMD), National Aeronautics and Space Administration (NASA)  
  United States

- **Ryan WATKINS**  
  Program Scientist, Science Mission Directorate, National Aeronautics and Space Administration (NASA)  
  United States

Will you be selected for a Mars analog mission at the Moon? A raffle will determine audience members to participate in a simulated astronaut briefing. In the 2030s, they will be Artemis astronauts assigned a months-long mission to the Moon that will act as the first integrated partial Mars analog. Experts will walk you through your mission, then the audience will investigate the mission concept through probing questions. Are you up for the challenge?
By participating in this guided workshop, you will help design the ideal user journey for sending experiments to a future commercial space station in low Earth orbit (LEO). This session will seek to uncover current challenges for research and development on the International Space Station, brainstorm ways to overcome barriers, identify opportunities for new capabilities, and publish a report on key findings. This workshop is ideally suited for a diverse, international audience of academic researchers planning to use or using LEO to advance their science, industry scientists and leaders seeking to leverage new LEO platforms to advance their R&D strategies, and university administrators.
Tuesday 3 October


Room: HAC Hall C
Format: Fishbowl

Organizers:

Harry CIKANEK
Chair, IAF Earth Observations Committee
United States

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

Speakers:

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

Koji TERADA
Vice President, Japan Aerospace Exploration Agency (JAXA)
Japan

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

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

Wildfire threats and impacts are increasing dramatically and rapidly due to climate change and human development. This has greatly increased the political priority to address these threats. Space Based observations play a unique and essential role in mitigating the risks and impacts before, during and after wildfires. Engage with Agency leaders for Earth Observations to develop an integrated view of this much needed application of the unique capabilities of space-based observations and products.
11:35 - 12:45  Community Engagement Workshop on the Standardization of Earth Observation Analysis Ready Data

Room: HAC Hall C  
Format: Workshop  
Organizer:  
Liping DI  
Professor and Director,  
Center for Spatial Information Science and Systems, George Mason University  
United States

Speakers:  
Liping GUO  
Research Professor and Associate Director,  
Center for Spatial Information Science and Systems, George Mason University  
United States

Matthew STEVENTON  
Chair,  
ARD Oversight Group, Committee on Earth Observation Satellites (CEOS)

Joshua LIEBERMAN  
Director,  
Collaborative Solutions and Innovation Program,  
Open Geospatial Consortium (OGC)  
United States

Liping DI  
Professor and Director,  
Center for Spatial Information Science and Systems, George Mason University  
United States

Analysis ready data (ARD) is satellite data that have been processed to a minimum set of requirements and organized into a form that allows immediate analysis with a minimum of additional user effort and interoperability both through time and with other datasets. ARD standardization will impact all of you. Please come to the workshop to learn the current status of ARD standardization, voice your opinions, and engage in defining ISO and OGC ARD standards.

15:00 - 16:10  Give Space a Chance for Climate Action: a Multidisciplinary Workshop for Monitoring, Adaptation, and Mitigation

Room: HAC Hall C  
Format: Workshop  
Organizers/Speakers:  
Bruce CHESLEY  
Senior Associate,  
Teaching Science and Technology, Inc (TSTI)  
United States

Marcello ROMANO  
Professor,  
Politecnico di Torino  
Italy

Julie CHESLEY  
President,  
The Chesley Group  
United States

Sita SONTY  
Partner and Associate Director,  
Boston Consulting Group  
United States

Mahhad NAYYER  
Manager,  
Space Sustainability Center, National Aerospace Science & Tech Park  
Pakistan

Building on the momentum created at the Global Conference on Climate Change (GLOC) in May 2023, this workshop invites the global space community to add their voice to the ongoing call for climate action utilizing space-based approaches. This engaging and interactive session fosters a vigorous discussion of climate mitigation actions and sets the foundation for future technology development, policy initiatives, and action on climate change mitigation.
16:20 - 17:30  Intelligent Space Sustainability: How Can AI Help Shape Sustainability in Space?

Room: HAC Hall C  
Format: Workshop

Organizer:

James PARR  
CEO, Trillium Technologies  
United Kingdom

Speakers:

James PARR  
CEO, Trillium Technologies  
United Kingdom

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

Alison LOWNDES  
Senior Scientist, NVIDIA  
United Kingdom

Anu OJHA  
Engagement, International and Inspiration Director, UK Space Agency  
United Kingdom

Tejpaul BHATI  
Chief Revenue Officer, Axiom Space, LLC  
United States

Peter MARTINEZ  
Executive Director, Secure World Foundation  
United States

Carolyn MERCER  
Chief Technologist, Science Mission Directorate, National Aeronautics and Space Administration (NASA)  
United States

Space technology and exploration are playing an increasingly vital role in shaping Humanity’s future. How can we ensure bold space endeavours are done sustainably over the next decade and beyond? As AI matures in capabilities, what will be the role of autonomy and ML in enabling sustainable space exploration and exploitation? We will explore key ideas in space traffic management, planetary protection as well as emerging technologies for spacecraft end-of-life, green fuels and closed-loop systems.
Wednesday 4 October

10:15 - 11:25  Metaverse Technology (VR/AR/XR) for Space Capacity Building

Room: HAC Hall C
Format: Metaverse Interactive Session

Organizer:

Hilde STENUIT
Scientist Team Lead, Business Development Team, ICE Cubes, Space Applications Services NV Belgium

Speakers:

Hilde STENUIT
Scientist Team Lead, Business Development Team, ICE Cubes, Space Applications Services NV Belgium

James GREEN
Chief Executive Officer, Chairman, Space Science Endeavors LLC, The Metavisionaries United States

Wasim AHMED
CEO, The Metavisionaries UK United Kingdom

Camilo Andrés REYES
Project Manager, Space-related Initiatives, The Metavisionaries UAE United Arab Emirates

Join us at the “Metaverse for Space Capacity Building” special session. Experience the power of immersive and interactive capacity building through the metaverse for space-related topics. Be a part of the cutting-edge technology revolutionizing the way space capacity building is conducted. Meet and network with experts from around the world and collaborate on future projects. Don’t miss this opportunity to learn and be a part of shaping the future of the space industry! Register now!
11:35 - 12:45  Reimagining the Spacecraft Design Process: Agile Development for Reusable Space Systems

Room: HAC Hall C  
Format: Mock Design Challenge & Discussion  
Organizers:

Ryan DE FREITAS BART  
PhD Candidate,  
Department of Aeronautics and Astronautics,  
Massachusetts Institute of Technology  
United States

Frances DE FREITAS  
Agile Coach,  
Northrop Grumman Corporation  
United States

Join us to discuss innovative concepts for the development of reusable space systems using agile processes! In this session, we will hold a mock design competition where participants will be separated into teams and tasked with reviewing a design process for a proposed reusable lunar lander. This workshop welcomes participants from all disciplines to develop novel concepts to frame a White Paper on this topic to inform future research directions and spacecraft development programmes.

15:00 - 16:10  Space Infrastructure Games 2 - Standardization and Modularity

Room: HAC Hall C  
Format: Interactive Games and Reflection  
Organizer:

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

Speakers:

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

Manny SHAR  
Managing Director,  
Orbit Fab  
United Kingdom

Al TADROS  
Mike Gold,  
Chief Growth Officer,  
Redwire Space  
United States

Joerg KREISEL  
CEO,  
JKIC  
Germany

Dave HEBERT  
Vice President,  
Global Marketing and Communication,  
Astroscale  
United States

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

Join us to compete in interactive physical games (with prizes) to explore the positive and negative impacts of Standardization and Modularity for the creation of a sustainable and profitable Space Economy. Take advantage of this unique opportunity to engage with colleagues, local participants, young professionals, and space leaders/experts on how these ideas are impacting current projects and discuss how they can be implemented to accelerate humanity’s expansion into space.
16:20 - 17:30 Disruptive ISRU: Sustainability and Regolith Utilization

Room: HAC Hall C  
Format: Campfire

Organizers:

Haroon B. OQAB  
President,  
Columbiad Launch Services  
Canada

George B. DIETRICH  
Chairman,  
Columbiad Launch Services  
Canada

Speakers:

John WEN  
Director,  
Laboratory for Emerging Energy Research (LEER)  
Canada

Jean-Pierre HICKEY  
Director,  
Multi-physics Interaction Laboratory (MPI Lab),  
University of Waterloo  
Canada

Massimiliano VASILE  
Director,  
Aerospace Centre for Excellence, University of Strathclyde  
United Kingdom

Nobuyuki KAYA  
President,  
Wave Arrays  
Japan

Andrew WILSON  
Managing Director,  
Metasat  
United Kingdom

Regolith represents the largest and most accessible solid resource on the lunar and Mars surface. The sustainable use of this resource is enabling new technological advances that will shape space exploration for years to come. This special session brings together an interdisciplinary panel in a campfire format to discuss the novel usage of regolith and the potential sustainability implication for long-term space missions.
Thursday 5 October

10:15 - 11:25 Could You Help Us With This Asteroid? A Planetary Defense Workshop to Save the World

Room: HAC Hall C
Format: Workshop

Organizers:

Alex KARL
Operations Engineer,
Space Applications Services
Belgium

Alissa J. HADDAJI
Director,
Boston Space Consortium;
Lecturer in Space Law,
Policy and Ethics
United States

Speakers:

Aurélie MOUSSI
Project Manager,
Small Bodies Exploration Missions, Centre National d’Etudes Spatiales (CNES)
France

Daniel MAZANEK
Senior Space Systems Engineer,
Langley Research Center, National Aeronautics and Space Administration (NASA)
United States

Anastasia MEDVEDEVA
Independent Journalist,
Aerospace Communicator and Influencer
Russia

Frans VON DER DUNK
Professor of Space Law,
College of Law, University of Nebraska-Lincoln
United States

Have you heard about the asteroid impact that wiped out the dinosaurs? Want to help prevent it from happening again? Join this citizen-science workshop led by world experts in the field of planetary defense. Using various fictitious scenarios, we’ll discuss different areas: technology, science, legal and media/communications to learn how to distinguish facts from fiction, and you can contribute! With your help and guided by the experts this workshop will explore different aspects to mitigate a NEO impact threat and how to avoid the fate of the dinosaurs.
11:35 - 12:45  Innovative Technology Infusion Approaches For Future Deep Space Exploration Missions

Room: HAC Hall C  
Format: Campfire

Organizers:

Tom CWIK  
Chief Technologist,  
NASA Jet Propulsion Laboratory (JPL)  
United States

Charles NORTON  
Deputy Chief Technologist,  
NASA Jet Propulsion Laboratory (JPL)  
United States

Speakers:

Carolyn MERCER  
Chief Technologist,  
Science Mission Directorate, National Aeronautics and Space Administration (NASA)  
United States

A. C. CHARANIA  
Agency Chief Technologist,  
National Aeronautics and Space Administration (NASA)  
United States

Agnès MESTREAU  
ESA-ESTEC Head of the Systems Engineering Division, European Space Agency (ESA)  
Netherlands

Hitoshi KUNINAKA  
Director General,  
Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency (JAXA)  
Japan

Join us for a keynote, panel, and audience interactive discussion on the opportunities and challenges of infusing new technology into deep space science missions. This session will allow scientists, technologists, project and program managers to share their stories, and work with you, to formulate a pathway together toward achieving more ambitious science return through the adoption of mission-enabling advances in space technology.
Every country has something to offer to the global space community and can contribute to its endeavors. The Space for emerging ecosystems – emerging ecosystems for space will gather experience from all over the world on how to build a new space ecosystem, scale it up, and make it a valuable part of the global space community.
16:20 - 17:30  Developing an Ecosystem to Prepare the Next Generation of Space-Oriented Citizens

Room: HAC Hall C
Format: Workshop

Organizers:

Ayelet WEIZMAN
Lecturer, Researcher & Leader, Innovation, Space & Robotics, EdTech Programme, Kibbutzim College of Education Israel

Maya GLICKMAN-PARIENTE
CEO, Head of Operations, SPACECIALIST, Sky and Space Company Israel

Speakers:

Danna Linn BARNETT
Senior Satellite Systems Engineer, Chairwoman, Elbit Systems, WiSpace Israel

Liat DOZORETZ
Manager, Space Education Center, Kiryat Shmona Municipality Israel

Michal JASHINSKI
Senior System Engineer, Israel Aerospace Industries. Ltd. Israel

Orianne LEIBOVITZ
Senior System Engineer, Israel Aerospace Industries. Ltd. Israel

Alice MILLER
Vice-President, Space, Helios Israel

What skills do you think your grandchildren will need in the future? The day when human space travel will be common, and many more people will be working on space-stations orbiting the Earth is very near. Our grandchildren will be the ones to lead this future, and we must provide them with the right skills to be capable of using their full potential. Now is the time to brainstorm all the possible aspects that they will need, such as Education, Finances, Law, Well-Being, Science, Engineering, etc. In this interdisciplinary session we will set the guidelines for a healthy space-traveling future society.
Friday 6 October

10:15 - 11:25  “Be It Resolved, Non-Legally Binding Instruments Like the Artemis Accords Will Lead to the Harmonization of the Law of Outer Space...”

Room: HAC Hall C
Format: Debate

Organizer:
Viva DADWAL
Associate, King & Spalding LLP
Canada

Speakers:
Michael GOLD
Chief Growth Officer, Redwire
United States

Ian GROSNER
Federal Attorney, Brazilian Space Agency (AEB)
Brazil

Ruvimbo SAMANGA
Ambassador, MILO Space Science Institute
Zimbabwe

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

This multidisciplinary session brings together high-level speakers from the fields of space law and policy, politics and diplomacy, to engage in a fun and interactive debate on the impact of non-legally binding instruments on the development of the law on outer space. Non-legally binding instruments like the Artemis Accords have gained relevance following the rapid and successful contributions of emergent State and non-State actors, proliferation of space technologies, and a strained multilateral order.

The debate is organized by the Space Arbitration Association.

Disclaimer: The debate aims to examine the development of the law on outer space in an inclusive and respectful manner. The views and opinions expressed at this event are advanced solely to facilitate dialogue and discussion for educational purposes. They do not necessarily reflect the actual views of any of the speakers or their employers.
This special session shall discuss core principles of international law such as jurisdiction, due diligence, due regard, and good faith, including related disputes and specific cases, as it relates to commercial outer space activities. For example, due diligence evolved as an element of a State’s international obligations and such considerations overlap with broader discussions on the role of fault in international responsibility. As private outer space activities have increased, young professionals should get acquainted with the challenges posed by commercial space exploration and how the creation of new legal regimes and practices can promote long-term sustainability in outer space activities.
13:45 - 14:55  International Treaty for Moon Farside Protection

Room: HAC Hall C
Format: Workshop

Organizer:
Nicolò ANTONIETTI
Corresponding Member, International Academy of Astronautics (IAA), National Institute of Astrophysics (INAF), InCosmiCon Italy

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

Speakers:

Niklas HEDMAN
Committee Services and Research Section Chief, United Nations Office for Outer Space Affairs (UNOOSA) Sweden

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

Marc Klein WOLT
Director, Radboud Radio Lab Netherlands

Brad BAILEY
Assistant Deputy, Associate Administrator for Exploration, National Aeronautics and Space Administration (NASA) United States

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

Antonino SALMERI
Space Lawyer, Lunar Policy Platform Italy

This Special Session advocates the support by all scientists working in different areas of science to submit the UNO an international treaty for the Moon Farside protection:

1. COSMOLOGY needs the radio quietness to pick up the feeble radiation of the hydrogen line down-shifted to MHz or kHz frequencies
2. ASTROBIOLOGY studies pre-biological interstellar molecules by virtue of their roto-vibrational spectra
3. SETI needs radio quietness to possibly detect Alien Civilizations “signatures”
4. PLANETARY DEFENSE. The seeing from the Moon is wonderful. Thus, optical telescopes pointing at the (blocked) Sun would enable high-accuracy measurements of the orbital parameters of NEOs
5 Interactive Presentations Sessions

5.1 Category Coordinators and Members of the IP Award Committee

<table>
<thead>
<tr>
<th>Category</th>
<th>SCIENCE AND EXPLORATION</th>
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<tr>
<td></td>
<td>Maria-Antonietta Perino</td>
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<td>Thales Alenia Space,</td>
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<td>Italy</td>
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<td></td>
<td>Igor V. Sorokin</td>
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<tr>
<td></td>
<td>S.P. Korolev Rocket and Space Corporation Energia</td>
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<td>Russian Federation</td>
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<td></td>
<td>John C. Mankins</td>
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<tr>
<td></td>
<td>Vice President, Moon Village Association (MVA)</td>
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<tr>
<td></td>
<td>Vice President, ARTEMIS Innovation Management Solutions</td>
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<td>Roberta Mugelisi-Dow</td>
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<tr>
<td></td>
<td>Integrated Applications Manager, European Space Agency (ESA)</td>
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<tbody>
<tr>
<td></td>
<td>Lyn Wigbels</td>
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<tr>
<td></td>
<td>American Astronautical Society (AAS), United States</td>
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</table>
5.2 IP Sessions and IP Award Ceremony

IP Session
Wednesday 4 October,
Baku Convention Centre (BCC),
12:50 – 13:30
(IP Area)

IP Award Ceremony
Thursday 5 October,
Baku Convention Centre (BCC),
12:50 – 13:30
(Room BCC A6)

IP Session
Thursday 5 October,
Baku Convention Centre (BCC),
13:30 – 14:50
(IP Area)

IP Session & IP Cocktail Reception
Thursday 5 October,
13:30-14:50,
IP Area Baku Convention Centre (BCC)
5.4 Interactive Presentations Schedule

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

Wednesday 4 October 2023

**SCREEN #1**

13:00-13:10  IAC-23/A1/IPB/80628
MARTIAN BIOSPHERE
Miguel Correa, Aerospace Technology Investigation Center - Fuerza Aérea Colombiana, Colombia

POWERING THE NEW SPACE ECONOMY WITH ADVANCED SOLAR TECHNOLOGIES
Luke Gordon, Solestial, Inc. United States

**SCREEN #2**

13:00-13:10  IAC-23/A1/IPB/74791
AUTOMATED PUPILLOMETRY IN SPACE NEUROSCIENCE
Bader Shirah, [unlisted], Saudi Arabia

PUBLIC PERCEPTION AND ATTITUDE OF SPACE TRAVEL AND EXPLORATION AND SPACE MEDICINE IN SAUDI ARABIA
Bader Shirah, [unlisted], Saudi Arabia

**SCREEN #3**

13:00-13:10  IAC-23/A6/IPB/75232
A MODEL FOR SATELLITE COLLISIONS
Mathilde Leuridan, Germany

STUDY OF SMALL SATELLITE CONSTELLATION FOR HIGH-RESOLUTION GREENHOUSE GAS MONITORING
Andrew Karim, Universite Laval, Canada

**SCREEN #4**

13:00-13:10  IAC-23/A2/IPB/79367
PROJECT MUSA: A SYSTEMS ENGINEERING APPROACH TO BIOLOGICAL EXPERIMENTATION IN MICROGRAVITY
Carlos Rodriguez, Orbital Space Technologies Costa Rica

DIGITAL TWIN TECHNOLOGY AS A NEW APPROACH FOR INFRASTRUCTURE MANAGEMENT
Adalat Samadov, National Aviation Academy - Azerbaijan, Azerbaijan

THE EAGLE HAS LANDED: EVIDENCE OF THE NEED TO ASSIST SPACE TOURISTS TO OUTER SPACE
Barbara Le Roy, [unlisted], France

**SCREEN #5**

13:00-13:10  IAC-23/E7/IPB/80075
THE CASE OF OVERLAPPING SAFETY ZONES ON THE MOON: DELIMITATION OF SPACE, RIGHTS AND OBLIGATIONS
Niki Giannakou, National and Kapodistrian University Of Athens, Greece

PARAMETRIC INDEX INSURANCE FOR KENYAN SMALLHOLDER FARMERS BASED ON SATELLITE DERIVED SOIL MOISTURE.
Hellen Wanjala, Planet Labs Inc., The Netherlands

AEROSPACE MONITORING OF ENVIRONMENTAL RISKS
Aytaj Badalova, National Aviation Academy - Azerbaijan, Azerbaijan

**SCREEN #6**

13:00-13:10  IAC-23/B1/IPB/76749
DETECTION OF THE COLLAPSED BUILDINGS IN TURKY FROM MULTI-SENSOR VERY HIGH RESOLUTION SATELLITE IMAGES.
Tatsuyuki Sekine, ELSPINA VEINZ INC., Japan

EARTH’S ORBITS AS A UNESCO WORLD HERITAGE SITE
Selene Connelli, Space Generation Advisory Council (SGAC), Italy

A BUILDER’S APPROACH TO ENGAGING THE SPACE ECONOMY: BALANCING ENTUSIASM WITH CLARITY
Kelli Redis Ogborn, Space Foundation, United States

**SCREEN #7**

13:00-13:10  IAC-23/C3/IPB/78337
FEASIBILITY ANALYSIS OF INTEGRATING THERMO-ELECTRIC GENERATORS TO SPACECRAFT SOLAR PANELS
Surya Vaibhav DVR, BMS College of Engineering, Bengaluru, India

SWARM UAVS: A NOVEL APPROACH FOR EFFICIENT REMOTE SENSING ON MARS
Shambhavi A S, Nitte Meenakshi Institute of Technology, India

HARDWARE DEGRADATION MODELS FOR DESIGN OPTIMIZATION OF REUSABLE SPACE SYSTEMS
Ryan de Freitas Bart, Massachusetts Institute of Technology (MIT), United States
<table>
<thead>
<tr>
<th>Time</th>
<th>Session/Session ID</th>
<th>Title</th>
<th>Authors</th>
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<tr>
<td>13:20-13:30</td>
<td>IAC-23/A6/IPB/78346</td>
<td>BREAKING THE CYCLE: NOVEL CAPTURE MECHANISMS FOR ACTIVE SPACE DEBRIS REMOVAL</td>
<td>Anisa Taggart, University of Nottingham, United Kingdom</td>
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<td>13:00-13:10</td>
<td>IAC-23/E1/IPB/75662</td>
<td>AN INTERDISCIPLINARY APPROACH TO SPATIAL DESIGN AT THE UNIVERSITY LEVEL</td>
<td>Julia Alvarez Vallero, INVAP, Argentina</td>
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<td>13:10-13:20</td>
<td>IAC-23/E1/IPB/78303</td>
<td>MISSION MINERVA: THE ESA-ASI EDUCATION ACTIVITIES TO TACKLE EDUCATIONAL POVERTY IN VIEW OF DEVELOPING THE FUTURE SPACE WORKFORCE</td>
<td>Germanna Galoforo, Italian Space Agency (ASI), Italy</td>
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<tr>
<td>13:20-13:30</td>
<td>IAC-23/C4/IPB/78916</td>
<td>SIDEWALL-MOUNTED PLANE TYPE PROPULSION SYSTEM FOR POST MISSION DISPOSAL OF CUBESATS</td>
<td>Daeban Seo, Korea Aerospace Research Institute (KARI), Korea, Republic of</td>
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<td>13:00-13:10</td>
<td>IAC-23/C2/IPB/76972</td>
<td>4D LIDAR AND SENSOR FUSION FOR AUTONOMOUS ROVERS MISSIONS</td>
<td>Oussama Jouini, Space Generation Advisory Council (SGAC), Tunisia</td>
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<td>13:10-13:20</td>
<td>IAC-23/B1/IPB/77404</td>
<td>RESEARCH ON IMAGE DATA PROCESSING BASED ON IMPROVED TRANSFORMER SEMANTIC COMMUNICATION</td>
<td>Tingwei Shi, University of Electronic Science and Technology of China (UESTC), China</td>
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<td>13:00-13:10</td>
<td>IAC-23/C1/IPB/75958</td>
<td>MACHINE LEARNING BASED GUIDANCE FOR OPTIMAL SPACECRAFT DE-ORBITING</td>
<td>Emanuela Gaglio, Scuola Superiore Meridionale, Italy</td>
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<td>13:00-13:10</td>
<td>IAC-23/E1/IPB/79008</td>
<td>THE SCIENCE OF ASTRONOMY</td>
<td>Andrea Paternoster, Politecnico di Torino - Thales Alenia Space Italia - ISAE Supaero Toulouse, Italy</td>
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<td>13:00-13:10</td>
<td>IAC-23/A6/IPB/78592</td>
<td>DEPLOYING A LOW-COST OPEN-SOURCE PLATFORM FOR CONDUCTING MICROGRAVITY RESEARCH IN SPACE AS A VOLUNTEER STUDENT ORGANIZATION</td>
<td>Freider Flaan, Norwegian University of Science and Technology, Norway</td>
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<td>13:10-13:20</td>
<td>IAC-23/A1/IPB/75484</td>
<td>IMBIBITION OF MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE TOOLS FOR INFERRING EXOPLANETARY HABITABILITY</td>
<td>king kumire, University of South Africa - UNISA, South Africa</td>
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Wednesday 4 October 2023

THREE-BODY MOON-MARS TRANSFER WITH REVISITED WEAK STABILITY BOUNDARY CONCEPT AND AEROBRaking CAPTURE 
Gabriele Macciolla, Politecnico di Torino, Italy

13:00-13:10  IAC-23/A6/IPB/79820  
SPACECRAFT REFLECTANCE EXPERIMENTAL FACILITY FOR SPACE TRAFFIC MANAGEMENT AND BRIGHTNESS ESTIMATION: LESSONS LEARNED FROM HELIOS AT SSLAB 
Gaia Lorenzi, Sapienza University of Rome, Italy

SCREEN #20

UK ADR: THE UK SPACE AGENCY’S ACTIVE DEBRIS REMOVAL MISSION 
Jodie Howlett, UK Space Agency, United Kingdom

RESEARCH PROGRESS AND FUTURE PROSPECTS OF NOVEL LIQUID PROPELLANT 
Xing Zhang, China Aerospace of Science and Technology Corporation, China

SCREEN #21

13:00-13:10  IAC-23/E6/IPB/76904  
UNFOLDING SPACE PROGRAM GOVERNANCE MODELS DRIVING THE TRANSITION TOWARDS THE NEW SPACE 
Valentina Zancan, Politecnico di Milano, Italy

FEASIBILITY STUDY OF LOADS REDUCTION IN PROCESS OF LARGE SPACE DEBRIS OBJECT CAPTURING WITH ROBOTIC ARM 
Georgy Shcheglov, Bauman Moscow State Technical University, Russian Federation

SMALL LAUNCHERS - 2023 INDUSTRY SURVEY AND MARKET ANALYSIS 
Erik Kulu, Estonia

SCREEN #22

13:00-13:10  IAC-23/C4/IPB/78952  
GREEN PROPELLANTS: SELF-PRESSURIZATION BEHAVIOR MODELLING 
Simone La Luna, Politecnico di Milano, Italy

THE EXTENDED WAHBA’S PROBLEM IN DUAL AND MULTIDUAL QUATERNIONS 
Daniel Condurache, Technical University of Iasi, Romania

ASSESSMENT OF A PHOTOSENSITIVE SOL-GEL AS A SPACE READY MATERIAL THROUGH THE RECORDING OF HOLOGRAPHIC OPTICAL ELEMENTS 
Kevin McGrath, Dublin Institute of Technology, Ireland

SCREEN #16

13:00-13:10  IAC-23/A1/IPB/77124  
ANALYSIS OF THE PLASTIC CHANGES INDUCED IN THE SOLEUS MUSCLE UNDER A MICROGRAVITY CONDITION 
Ryoaske Tsuji, University of Tsukuba, Japan

OPTIMIZED GEOHAZARDS MONITORING, ASSESSMENT AND MAPPING USING MULTI-SOURCE EARTH OBSERVATION MICROWAVE SATELLITE MISSIONS FOR THE CASPIAN SEA COASTAL PETROLEUM AND GAS INDUSTRY 
Emil Bayramov, Nazarbayev University, Kazakhstan

SCREEN #17

13:00-13:10  IAC-23/B4/IPB/79332  
COMPARISON OF REACTION WHEELS AND MAGNETORQUERS PERFORMANCE IN PRECISE ONE-AXIS STABILIZATION OF A CUBESAT SOLAR OBSERVATORY 
Anna Okhitina, Keldysh Institute of Applied Mathematics, RAS, Russian Federation

SCREEN #18

13:00-13:10  IAC-23/E3/IPB/76904  
HIGH INFLATION AND SUPPLY CHAIN DISRUPTION 
Stephen Airey, European Space Agency (ESA), The Netherlands

SOFTWARE DEVELOPMENT FOR THE BUDGETING OF A CUBESAT SYSTEM DESIGN BASED ON VARIABLE PARAMETERS 
Edlira Hoxha, Space Products and Innovation - SPiN, Italy

SCREEN #19

13:00-13:10  IAC-23/A6/IPB/79869  
EAGLEAI: ESTIMATION OF ATTITUDE GEO-LOCALIZING LANDMARKS ON EARTH 
Nelly Gaillard, Italy

THE EXTENDED WAHBA’S PROBLEM IN DUAL AND MULTIDUAL QUATERNIONS 
Daniel Condurache, Technical University of Iasi, Romania

SCREEN #20

13:00-13:10  IAC-23/A6/IPB/79292  
UK ADR: THE UK SPACE AGENCY’S ACTIVE DEBRIS REMOVAL MISSION 
Jodie Howlett, UK Space Agency, United Kingdom

THE EXTENDED WAHBA’S PROBLEM IN DUAL AND MULTIDUAL QUATERNIONS 
Daniel Condurache, Technical University of Iasi, Romania

SCREEN #21

13:00-13:10  IAC-23/B4/IPB/79332  
COMPARISON OF REACTION WHEELS AND MAGNETORQUERS PERFORMANCE IN PRECISE ONE-AXIS STABILIZATION OF A CUBESAT SOLAR OBSERVATORY 
Anna Okhitina, Keldysh Institute of Applied Mathematics, RAS, Russian Federation

THE EXTENDED WAHBA’S PROBLEM IN DUAL AND MULTIDUAL QUATERNIONS 
Daniel Condurache, Technical University of Iasi, Romania

SCREEN #22

13:00-13:10  IAC-23/C4/IPB/78952  
GREEN PROPELLANTS: SELF-PRESSURIZATION BEHAVIOR MODELLING 
Simone La Luna, Politecnico di Milano, Italy

THE EXTENDED WAHBA’S PROBLEM IN DUAL AND MULTIDUAL QUATERNIONS 
Daniel Condurache, Technical University of Iasi, Romania

ASSESSMENT OF A PHOTOSENSITIVE SOL-GEL AS A SPACE READY MATERIAL THROUGH THE RECORDING OF HOLOGRAPHIC OPTICAL ELEMENTS 
Kevin McGrath, Dublin Institute of Technology, Ireland
### Screen #23

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<td>13:00-13:10</td>
<td>IAC-23/C2/IPB/79544</td>
<td>THERMAL CONTROL DESIGN OF REMOTE-SENSING SPACECRAFT ON ELLIPTICAL SUN-SYNCHRONOUS ORBIT</td>
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<td></td>
<td>Byungho Lee, Moscow Aviation Institute (National Research Institute, MAI), Russian Federation</td>
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<td>Maria Vittoria Prest, Sapienza University of Rome, Italy</td>
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<tr>
<td>13:20-13:30</td>
<td>IAC-23/C1/IPB/79290</td>
<td>MODEL PREDICTIVE CONTROL BASED ON RECURRENT NEURAL NETWORK FOR REUSABLE LAUNCH VEHICLE WITH DYNAMICS UNCERTAINTIES</td>
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<td>Xiaokui Yue, Northwestern Polytechnical University, China</td>
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<td>13:00-13:10</td>
<td>IAC-23/A6/IPB/78876</td>
<td>ORBIT DETERMINATION WITH THE HELP OF SPACE-BASED OPTICAL INSTRUMENTATION IMAGES</td>
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<td>Dmitri Petrov, Moscow Institute of Physics and Technology (MIPT), Russian Federation</td>
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<td>Sebastian Ogadle, Andes Aerospace, Italy</td>
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<td>Sebastian Ogadle, Andes Aerospace, Italy</td>
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<td>13:00-13:10</td>
<td>IAC-23/C2/IPB/78229</td>
<td>DEVELOPMENT OF RADIOACTIVE BIO-COATINGS VIA METAL-DOPING OF MELANIN NANOPARTICLES</td>
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<tr>
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<td>Aryan Waghmode, The Johns Hopkins University, United States</td>
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<td>Shrushti Patil, India</td>
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<td>Mayuko Shihara, Chiyoda Corporation, Japan</td>
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### Screen #26

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<tbody>
<tr>
<td>13:00-13:10</td>
<td>IAC-23/C2/IPB/78666</td>
<td>STANDARDIZATION OF CUBESAT PLATFORM FOR MASS PRODUCTION APPLICATIONS</td>
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<tr>
<td></td>
<td>Eyoas Areda, Kyushu Institute of Technology, Japan</td>
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<td></td>
<td>David Reid, University of Bristol, United Kingdom</td>
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<tr>
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<td>Florian Strasser, Technische Universität München, Germany</td>
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### Screen #27

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<tr>
<td>13:00-13:10</td>
<td>IAC-23/E1/IPB/75629</td>
<td>HYBRID ONLINE AND HANDS-ON TRAINING FRAMEWORK FOR SPACE EMERGING NATION: THAILAND CASE STUDY AND FOLLOW UP</td>
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<td></td>
<td>Paripat Pairat, Geo-Informatics and Space Technology Development Agency (GISTDA), Thailand</td>
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<td>Tobia Armando La Marca, Scuola Superiore Meridionale, Italy</td>
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<td>Siritam Kumar, Sri Sairam Engineering College, India</td>
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### Screen #28

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<tbody>
<tr>
<td>13:00-13:10</td>
<td>IAC-23/A6/IPB/80142</td>
<td>ENGINEERING MODEL OF THE SOLID ROCKET MOTOR FOR DIRECT DEORBITATION</td>
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<tr>
<td></td>
<td>Pawel Nowakowski, Lukaszewicz Research Network – Institute of Aviation (ILOT), Poland</td>
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<tr>
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<td>Sathesh Raj V Periasamy, [unlisted], Malaysia</td>
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<tr>
<td>13:20-13:30</td>
<td>IAC-23/C1/IPB/77299</td>
<td>A CONSTELLATION DESIGN FOR ORBITING SOLAR REFLECTORS TO ENHANCE TERRESTRIAL SOLAR ENERGY</td>
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<td>Onur Çelik, University of Glasgow, United Kingdom</td>
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### Screen #29

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<tr>
<td>13:00-13:10</td>
<td>IAC-23/A3/IPB/77140</td>
<td>REAL-TIME TRAJECTORY OPTIMIZATION FOR ASTEROID LANDING USING PICARD ITERATION-BASED CONVEXIFICATION AND DEEP NEURAL NETWORKS</td>
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<td>Yangyang Ma, Northwestern Polytechnical University, China</td>
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<td>Gustav Fosse Hansen, Norwegian University of Science and Technology, Norway</td>
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<td>13:20-13:30</td>
<td>IAC-23/C2/IPB/80253</td>
<td>DESIGN OF A DIFFERENTIAL SYSTEM FOCUSED ON REUSABILITY AND PAYLOAD HOSTING CAPABILITIES FOR A ROVER BASED ON ROCKER-BOGIE LOCOMOTION MECHANISM</td>
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<td>Lorenzo Caraccio, Politecnico di Torino, Italy</td>
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### Screen #30

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<tr>
<td>13:00-13:10</td>
<td>IAC-23/C1/IPB/78791</td>
<td>CONVEX OPTIMIZATION OF SPACECRAFT REST-TO-REST ATTITUDE REORIENTATION MANEUVERS WITH KEEP-OUT CONSTRAINTS</td>
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<td>Alessandro Zavoli, Sapienza University of Rome, Italy</td>
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Wednesday 4 October 2023

13:10-13:20  IAC-23/C1/IPB/79158
DYNAMIC ANALYSIS OF MECHANICAL MOTION OF A VARIABLE-MASS ROCKET SYSTEM
Valeh Bakshali, Azerbaijan Technical University, Azerbaijan

IN-ORBIT ATTITUDE DETERMINATION AND SYSTEM MODELING OF SKOLTECH B1 AND B2 CUBESATS
Bisma Sajid, Skolkovo Institute of Science and Technology, Russian Federation

SCREEN #31

13:00-13:10  IAC-23/B1/IPB/76142
EARTH OBSERVATION FROM NEAR-EQUATORIAL ORBITS WITH SMALL AND VERY SMALL SATELLITES: “EQUATORIAL SENTINELS” FOR ENVIRONMENT
Erick Lansard, Nanyang Technological University, Singapore, Republic of Singapore

THE NEXT ARECIBO TELESCOPE ON THE MOON’S FAR SIDE
Akanksha Hale, Student, India

UNISEC LOCAL CHAPTER EMPOWERMENT PROGRAM: AN APPROACH FOR SPACE WORKFORCE DEVELOPMENT IN NON-SPACEFARING COUNTRIES
Rei Kawashima, UNISEC Global, Japan

SCREEN #32

13:00-13:10  IAC-23/A3/IPB/76438
MEMS PLASMA SPECTROMETER FOR SMALL MISSIONS
Paweł Knapskiewicz, Wrocław University of Science and Technology, Poland

THE LASERS MISSION CONCEPT FOR ACTIVE DEBRIS REMOVAL USING LASER ABLATION BY A SWARM OF CUBESATS
Iosto Fodde, University of Strathclyde, The Netherlands

ORBITNET: AN OPEN-SOURCE SATELLITE FOR IOT DATA TRANSMISSION IN REMOTE AREAS
Ishita Sharma, University of Swansea, United Kingdom

SCREEN #33

13:00-13:10  IAC-23/E7/IPB/75499
INTERNATIONAL LIABILITY REGIME FOR DAMAGE IN COMMERCIAL HUMAN SPACEFLIGHT: DILEMMAS AND RESPONSES
Jie Long, Shenzhen University, China

SPACE ENVIRONMENTAL PROTECTION GOVERNANCE: A DECENTRALIZED MODEL
Jie Long, Shenzhen University, China

LEGAL ISSUES ON SCIENTIFIC INVESTIGATIONS IN LUNAR STATION ACTIVITIES: IMPLICATIONS FROM THE HIGH SEAS AND ANTARCTIC
Jiaying Yu, The University of Hong Kong, China

SCREEN #34

13:00-13:10  IAC-23/B4/IPB/79659
ALFACRUX CUBESAT MAGNETIC DIPOLE DETERMINATION AND ATTITUDE MOTION ESTIMATION USING MAGNETOMETER MEASUREMENTS ONLY
Emanuel Brenag, University of Brasilia, Brazil

13:10-13:20  IAC-23/C1/IPB/79472
REACTION WHEELS ANGULAR MOMENTUM MANAGEMENT DURING INTERPLANETARY FLIGHT
Yaroslav Mashkov, Keldysh Institute of Applied Mathematics of RAS, Russian Federation

13:20-13:30  IAC-23/C1/IPB/79481
ATTITUDE DETERMINATION AND CONTROL SYSTEM DESIGN FOR A 3U CUBESAT TO MONITOR FORWARD LIGHT SCATTERING OVER EARTH HORIZON
Mehmet Esit, Kyushu Institute of Technology, Japan

SCREEN #35

13:00-13:10  IAC-23/A6/IPB/77925
THE ROLE OF ADVANCED SOFTWARE TOOLS IN ENSURING SPACE DEBRIS MITIGATION IN CUBESAT MISSIONS
Emanuele Tomassi, Politecnico di Milano, Italy

PHYSICAL PERFORMANCE OF PARTICIPANTS IN EIGHT-MONTH VOLUNTARY ISOLATION (SIRIUS-21 EXPERIMENT)
Vera Bakhtereva, SSC RF Institute of Biomedical problems of RAS, Russian Federation

13:20-13:30  IAC-23/C1/IPB/80250
MAGNETORQUERS ATTITUDE CONTROL FOR FORMATION FLYING IN LEO
Ulisana Monakhova, Keldysh Institute of Applied Mathematics, RAS, Russian Federation

SCREEN #36

13:00-13:10  IAC-23/A5/IPB/76397
HOW TO BUILD AN EFFICIENT SPACE HABITATS?
Amirmohsen Pazireh, National Aviation Academy - Azerbaijan, Azerbaijan

COTS FOOD IN SPACE: PARABOLIC FLIGHT TESTING OF AN ADAPTER BETWEEN THE ISS POTABLE WATER DISPENSER AND COMMERCIAL-OFF-THE-SHELF DEHYDRATED FOOD PACKAGES
Roxanne Fournier, University of Waterloo, Canada

THE CRITICALITY OF ROBUST FAILURE ANALYSIS PROGRAMS
Elizabeth Barrios, National Aeronautics and Space Administration (NASA), United States

SCREEN #37

13:00-13:10  IAC-23/B4/IPB/79098
A CUBESAT-SIZED IN-SITU SPACE DEBRIS IMPACT SENSOR
Giacomo Battaglia, University of Padova, Italy

MARTIAN CRATER CLASSIFICATION USING LIGHTGBM
Abdolah Darya, Sharjah Academy for Astronomy, Space Sciences and Technology (SAAST), United Arab Emirates
### SCREEN #38

**13:00-13:10** IAC-23/C1/IPB/79896  
**TRAJECTORY PLANNING AND EXECUTION IN A HYPER REDUNDANT CONTINUUM MANIPULATOR FOR SATELLITE DOCKING**  
Ayush Ranjan, Indian Institute of Technology Kanpur, India

**FORM AND FUNCTION: DEFINING HUMAN SPACE EXPLORATION ORGANIZATIONAL STRUCTURES**  
Ruth Sibani, NASA Headquarters, United States

**STABILIZATION OF TUMBLING SPACECRAFT VIA CONTINUUM ARM USING VISION-LANGUAGE HYBRID MODEL**  
Prateesh Awasthi, Indian Institute of Technology Kanpur, India

### SCREEN #39

**13:00-13:10** IAC-23/E1/IPB/77050  
**A HANDS ON MULTIDISCIPLINARY CRASH COURSE BASED ON A SIMULATION MODEL FOR A DESIGN TO COST MULTITASK MICROSYSTEM TO BE BUILT AND OPERATED ON A PROJECT FINANCING BASIS - THE SEA-LIKE HORIZON SPACE TUTOR (SHST)**  
Giacomo Primo Sciortino, Italian Space Agency (ASI), Italy

**13:10-13:20** IAC-23/A5/IPB/80386  
**AUTOMATED AQUAPONIC SYSTEM**  
Mikołaj Gąbka, AGH University of Science and Technology, Poland

**EXPLORING CHALLENGES AND OPPORTUNITIES FOR SPACE START-UPS IN CANADA**  
Grecia Olano O'Brien, Concordia University, Canada

### SCREEN #40

**13:00-13:10** IAC-23/A6/IPB/79604  
**TOWARDS IN-ORBIT HYPERSONIC IMAGING SPACE DEBRIS DOSAGE**  
Mehdi Dhesi, Astroscale Ltd, United Kingdom

**CUBESAT BASED TESTING TECHNIQUES FOR SPACE SUIT AND EQUIPMENT COMPONENTS**  
Arwa Bin tareef, [unlisted], Jordan

**INVESTIGATING THE EFFECTS OF SPACE ON IN VITRO FERTILIZATION IN MOUSE CELLS**  
Sumbal Mushtaq, Deep Space Initiative, Maldives

### SCREEN #41

**13:00-13:10** IAC-23/C1/IPB/79438  
**OPTIMAL TUNING OF THE NANO-SATELLITE ATTITUDE CONTROLLER USING TRIAD-AIDED KALMAN FILTER AND PARTICLE SWARM OPTIMIZATION**  
Mehmet Fatih Ertürk, TAI - Turkish Aerospace Industries, Inc., Türkiye

**KOREA’S JOURNEY TOWARDS SPACE TECHNOLOGY INDEPENDENCE**  
Nammi Cho, Korea Aerospace Research Institute (KARI), Korea, Republic of

**DESIGN AND DEVELOPMENT OF ENGINE CONTROL UNIT FOR NANO-SATELLITE APPLICATIONS**  
Karol Bresler, Lukasiewicz Research Network – Institute of Aviation (ILOT), Poland

### SCREEN #42

**13:00-13:10** IAC-23/C1/IPB/77087  
**DESIGN OF TRANSFER TRAJECTORIES FROM CISLUNAR ORBITS TO THE RETROGRADE GEO-SYNCHRONOUS ORBIT**  
Yuchen He, Beihang University, China

**SATELLITE WITH DRONES SYSTEM TO REDUCE THE SPACE DEBRIS PROBLEM**  
Dulce Fernanda Lopez Salvador, TECNOLOGICO DE MONTERREY, Mexico

### SCREEN #43

**13:00-13:10** IAC-23/C3/IPB/80600  
**DIAGNOSING HEALTH AND LIFESPAN OF LI-ION BATTERIES IN SPACE MISSIONS USING MACHINE LEARNING ALGORITHMS**  
Ulvi Movsum-zada, Jagiellonian University, Poland

**EARTH OBSERVATION DATA FOR MACHINE LEARNING: A COMPREHENSIVE APPROACH FOR COLLECTING, PREPROCESSING, AND INTEGRATING DATA SETS**  
Fahad Bin Abdullah, BRAC University, Bangladesh

**LESSONS LEARNED FROM THE FIRST GENERATION OF INTERPLANETARY SMALLSATS**  
Aysha Alharam, National Space Science Agency (NSSA), Bahrain

### SCREEN #44

**13:00-13:10** IAC-23/C3/IPB/80600  
**DIAGNOSING HEALTH AND LIFESPAN OF LI-ION BATTERIES IN SPACE MISSIONS USING MACHINE LEARNING ALGORITHMS**  
Ulvi Movsum-zada, Jagiellonian University, Poland

**EARTH OBSERVATION DATA FOR MACHINE LEARNING: A COMPREHENSIVE APPROACH FOR COLLECTING, PREPROCESSING, AND INTEGRATING DATA SETS**  
Fahad Bin Abdullah, BRAC University, Bangladesh

**RIDING THE ATMOSPHERIC CURRENTS OF VENUS: AN SLS LAUNCHED VENUS BALLOON-SPACECRAFT MISSION**  
Benjamin Donahue, The Boeing Company, United States

### SCREEN #45

**13:00-13:10** IAC-23/E7/IPB/80392  
**PROTECTION OF PATENTS IN OUTER SPACE. COULD BLOCKCHAIN TECHNOLOGY BE A SUFFICIENT SOLUTION?**  
Evgenia Yvonn Tseloni, Leiden University, The Netherlands
CHARACTERIZATION OF SURFACE SCIENTIFIC EXTRAVEHICULAR OPERATIONS IN THE CONTEXT OF THE HADEES-C ANALOG STATION
Maria Alejandra Botero Botero, Universidad EAFIT, Colombia

A PRACTICAL PERSPECTIVE OF DEVELOPING SUSTAINABLE SPACE FOR THE EU WITH ESSENTIAL STRATEGIES & POLICIES FRAMEWORK
Swarnajyoti Mukherjee, Apogeo Space Srl, Italy

SCREEN #46

13:00-13:10  IAC-23/B1/IPB/77750
A RESOURCE ALLOCATION STRATEGY IN ORBITAL EDGE COMPUTING EARTH OBSERVATION SATELLITE CONSTELLATIONS TO JOINTLY SAVE ENERGY ON GROUND AND BALANCE ON-BOARD ENERGY CONSUMPTION
Francesco Valente, Sapienza University of Rome, Italy

CHALLENGES, DISPARITIES AND RISKS OF THE EUROPEAN INNOVATION ECOSYSTEM: THE SPREADZINO PROJECT TO BRIDGE THE GAP
Giorgia D'Agostinis, Fondazione E. Amaldi, Italy

SCREEN #47

A CASE DEFINITION IS NEEDED FOR THE SPACEFLIGHT ASSOCIATED NEURO-OCULAR SYNDROME
Mimi Lan, Dartmouth College, United States

THE RELEVANCE OF A TOPICAL TEAM IN THE INVESTIGATION, ADVANCEMENT AND OPPORTUNITIES IN THE RESEARCH FROM THE SCIENTIFIC COMMUNITY THROUGH SPACE TECHNOLOGIES TO TERRESTRIAL IMPACTS.
Lorenzo Scatena, Fondazione E. Amaldi, Italy

SCREEN #48

13:00-13:10  IAC-23/E5/IPB/77619
MARTIAN HABITATS: A REVIEW
Majal Shiny Subbiah, Christ University, India

NEUTRINO OSCILLATION IN AN ANISOTROPIC COSMOLOGICAL MODEL
Sajida Abdulvahabova, Baku State University, Azerbaijan

DEVELOPMENT OF A LIFTING BODY SPACE VEHICLE, DESIGNED FOR THE RETURN OF CARGO AND CREW AFTER THE LUNAR EXPEDITION.
Dmitrii Kremnev, Bauman Moscow State Technical University, Russian Federation
Thursday 5 October 2023

SCREEN #1

13:30-13:40 IAC-23/A5/IPB/80609
OBtaining A High-Density Basaltic Cementitious Compound by Using Compaction Techniques to Improve Its Physical and Mechanical Properties for Future Lunar Infrastructure Construction
Rogelio Morales, Bolivarian Agency for Space Activities (BAE), Venezuela

Accelerators and Incubators - An Australian Case Study
Ariane Platell, QL Space, Australia

13:50-14:00 IAC-23/B6/IPB/76912
Application of Artificial Intelligence in the Space Mining Industry
Salman Sharifzoda, Azerbaijan State Oil and Industry University (ASOIU), Azerbaijan

14:00-14:10 IAC-23/E7/IPB/78552
Mission Impossible? Will an Internationally Binding Legal Regime to Govern the Commercial Exploitation of Space Resources Ever Be Attainable?
Rachael O’Grady, United Kingdom

14:10-14:20 IAC-23/E6/IPB/76556
A Space Ecosystem Maturity Index: Proposition to Assess and Identify the Development Level of Space Innovation Ecosystems Around the World
Francesca Coviella, Imperial College London, Italy

14:20-14:30 IAC-23/E7/IPB/78081
A Call for an Internationally Binding Legal Definition of “Sustainability” in Outer Space Legislation.
Mila Spence, University of Exeter, United Kingdom

14:30-14:40 IAC-23/A6/IPB/76273
Numerically Efficient Impulsive and Low-Thrust Collision Avoidance Maneuvres in Cislunar L1 Near Rectilinear Halo Orbit
Luigi De Maria, Politecnico di Milano, Italy

14:40-14:50 IAC-23/E6/IPB/75547
ABAE Space Hub: A Space Startup Incubator
Rogelio Morales, Bolivarian Agency for Space Activities (BAE), Venezuela

SCREEN #2

Search for Extraterrestrial Intelligence
Narminna Gahirmanova, Baku State University, Azerbaijan

Automatic Data Processing for Space Robotics Machine Learning
Anja Sheppard, University of Michigan, United States

13:50-14:00 IAC-23/A3/IPB/77782
Constraining the Geologic History and Modern Geomorphology of Mars Using High Resolution and Multispectral Cameras on a Swarm of Wind-Driven Mobile Impactors
James Kingsnorth, Team Tumbleweed, The Netherlands

14:00-14:10 IAC-23/C1/IPB/80016
Closed-Loop Guidance for Interplanetary Cubesats with Indirect Methods
Alessandra Mannocchi, Politecnico di Milano, Italy

14:10-14:20 IAC-23/C1/IPB/76988
Multidual Quaternions Based Dynamics Modeling for a Rigid-Flexible Coupling Spacecraft and Application
Daniel Condurache, Technical University of Iasi, Romania

14:20-14:30 IAC-23/A6/IPB/79880
The Debris Mitigation Facility for sustainable Space Missions
Daniel Lubian Arenillas, OKAPI:Orbits GmbH, Germany

14:30-14:40 IAC-23/C1/IPB/77554
Dynamics and Control of Gyroscopic Stabilized Tether Satellite System in LEO
Stefano Aliiberti, Politecnico di Torino, Italy

14:40-14:50 IAC-23/C1/IPB/77817
New Results on the Mass-Optimization Analysis of a Planetary Sunshade System
Cattel Leonardo Matonti, Politecnico di Torino, Italy

SCREEN #3

13:30-13:40 IAC-23/E7/IPB/78729
Lex Ferenda of the Safety of Space Navigation
Ruslan Korygin, Peoples’ Friendship University of Russia (RUDN University), Russian Federation

The Role of Mathematics in Astronomy
Tunzala Mammadova, Azerbaijan State Pedagogical University (ASPU), Azerbaijan

13:50-14:00 IAC-23/B2/IPB/77289
Exploring Space Solutions to Enable Oil & Gas Operation
Mostafa Al Amer, Saudi Space Commission (SSC), Saudi Arabia

14:00-14:10 IAC-23/A7/IPB/78838
James Webb Telescope
Fidan Husieynzoda, Baku State University, Azerbaijan

14:10-14:20 IAC-23/A1/IPB/80663
VÀ‘YTUAL REALITY TECHNOLOGY-PsychologyÅ‘cal Support for Astronauts Å‘n Space Exploratå‘on
Alizada Ravan, Baku State University, Azerbaijan

14:20-14:30 IAC-23/E7/IPB/80710
Cybersecurity in New Space and the Problem of International Regulation
Arianna Vettorel, Ca’ Foscari University of Venice, Italy

14:30-14:40 IAC-23/C1/IPB/79207
Developing an LQR/APF Based Orbit Correction, Orbit Prediction, and Navigation Control for Cubesat’s Formation Flying
Sanjeeviraja Thangavel, [unlisted], Singapore, Republic of

14:40-14:50 IAC-23/D1/IPB/78819
Preliminary Design of a Satellite Infrastructure for Wireless Power Supply of Earth Satellites
Eli Luigi Altieri, Politecnico di Milano, Italy

SCREEN #4

13:30-13:40 IAC-23/B1/IPB/77010
Calculation of the Death Index of the Most Catastrophic Wildfires
Marialina Tsinidis, University of Glasgow, United Kingdom

CCDS (Carbon Cow Dung Sandwich Structure)-Radiation Shielding Material
Vinay Dharmik, India
PROTECTING THE ENVIRONMENT AND SUSTAINABLE DEVELOPMENT THROUGH SPACE TECHNOLOGY

Thursday 5 October 2023

IMPLEMENTING SPACE2030 – SPACE COOPERATION AND CAPABILITY BUILDING
Rose Croshier, Center for Global Development, United States

THE EU AS AN EMERGING ACTOR IN THE FIELD OF SPACE SECURITY AND THE CONTROVERSY BEHIND THE “LIMIT” OF A SHARED COMPETENCE
Giulia Casa, Italy

SCREEN #6

13:30-13:40 IAC-23/C1/IPB/78424
MODEL PREDICTIVE CONTROL WITH SEQUENTIAL CONVEX PROGRAMMING (SCP) FOR COOPERATIVE/NON-COOPERATIVE FORMATION FLYING SATELLITES
Sanjeeviraja Thangavel, [unlisted], Singapore, Republic of

THE EFFECT OF SWIRL INJECTION PARAMETERS ON A VORTEX-COOLED THRUSTER FABRICATED USING THERMOPLASTICS AND METAL
Mousa Aqaii, United Arab Emirates University (UAEU), United Arab Emirates

SCREEN #7

13:30-13:40 IAC-23/A1/IPB/76158
ASTROBIOLOGY AND EXPLORATION
Ayus Ibrahimli, Azerbaijan

13:00-14:10 IAC-23/E3/IPB/80258
THE ROLE OF NON-GOVERNMENTAL ORGANIZATIONS (NGOS) IN ACHIEVING “SPACE 2030” AGENDA AND SUPPORTING SUSTAINABLE DEVELOPMENT
Milica Milosev, Econnects, Serbia

14:40-14:50 IAC-23/C4/IPB/76197
MONITORING AND RESEARCH OF ANIMAL MOVEMENTS ON EARTH BY MEANS OF THE SCIENTIFIC HARDWARE INSTALLED ON THE ISS RS
Mikhail Yu. Belyaev, Korolev RSC Energia, Russian Federation

14:00-14:10 IAC-23/A1/IPB/76217
DEVELOPMENT AND PERFORMANCE ANALYSIS OF A MACHINE LEARNING BASED COGNITIVE PERFORMANCE AND MENTAL FITNESS MONITORING SYSTEM FOR ASTRONAUTS IN TRAINING
Sriram Kumar, Sri Sairam Engineering College, India

14:30-14:40 IAC-23/B2/IPB/77798
SYSTEM DESIGN STUDY OF A CONSTELLATION OF SMALL SPACECRAFT TO DELIVER SEAMLESS 5G CONNECTIVITY TO UNMODIFIED CELL PHONES THROUGH AN END-TO-END NON-TERRESTRIAL NETWORK
Gerardo Vargas Avila, Cranfield University, United Kingdom

15:30-16:00 IAC-23/B3/IPB/80747
"ARMILLARY SPHERE; FLIGHT SIMULATOR AND SPACE SUIT" Dulce Fernanda Lopez Salvador, TECNOLOGICO DE MONTERREY, Mexico

16:00-16:10 IAC-23/C4/IPB/77698
RENEWABLE LIQUID PROPPELLANTS: DECARBONIZING SPACE EXPLORATION
Nazim Muradov, University of Central Florida (UCF), United States

16:10-16:20 IAC-23/C4/IPB/78825
FABRICATION AND PROPULSION PERFORMANCE TESTING OF A 100 MN CLASS RESISTOJET THRUSTER
Mohamed Elawad, United Arab Emirates University (UAEU), United Arab Emirates

16:30-17:40 IAC-23/E3/IPB/76005
ACADEMIA AND INDUSTRY PARTNERSHIP IN SATELLITE ENGINEERING TRAINING, RESEARCH, AND DEVELOPMENT AT UNIVERSITI SAINS MALAYSIA
Md Yusoff Siti Harwani, Universiti Sains Malaysia, Malaysia

17:40-18:50 IAC-23/B4/IPB/77443
EXAMINING THE INFLUENCE OF ANISOTROPIC ENERGETIC ELECTRONS ON DIFFERENTIAL CHARGING
Raphael Bertrand Delgado, National Autonomous University of Honduras (UNAH), Honduras
Thursday 5 October 2023

14:10-14:20 IAC-23/A6/IPB/80716
CREATION OF A SERVICE FOR MONITORING SATELLITE MANEUVERS
Abdulkal Ashurov, L. N. Gumilev Eurasian National University, Kazakhstan

14:20-14:30 IAC-23/C2/IPB/79116
TEG-BASED COOLING SYSTEM: A PROMISING ADVANCEMENT IN MATERIALS AND RAPID PROTOTYPING FOR SPACESUITS
Salom Abulkhayyaj, [unlisted], Jordan

14:30-14:40 IAC-23/A3/IPB/79298
A MULTI-ROBOT PATH PLANNING METHOD BASED ON IMPROVED CONFLICT SEARCH FOR COMPLEX LUNAR ENVIRONMENT
Yifei Guo, “Northwestern Polytechnical University;National Key Laboratory of Aerospace Flight Dynamics”, China

14:40-14:50 IAC-23/A1/IPB/78727
A WEARABLE-BASED SYSTEM TO REDUCE SPACE MOTION SICKNESS BY MULTI-SENSORY PRE-HABITUATION
Carole-Anne Vollette, University of Zurich, Switzerland

A FRAMEWORK FOR NEAR-EARTH ASTEROID MINING CAMPAIGN DESIGN AND ANALYSIS
Ruida Xie, UNSW Australia, Australia

DESIGN AND EVALUATION OF A ROTATING APPARATUS FOR TESTING EARTH OBSERVATION OPTICAL PAYLOAD
Raynell Inojosa, Philippine Space Agency, The Philippines

13:50-14:00 IAC-23/B4/IPB/77746
MISSION DESIGN OF A 3U CUBESAT FOR OPTICAL COMMUNICATION: SAMSAT-LED
Tirza Ghana Berger de Souza, Samara National Research University (Samara University), Russian Federation

14:00-14:10 IAC-23/B4/IPB/77726
EXPANDING THE CAPABILITIES OF LUNAR COLLABORATIVE ROVERS WITH A COMPACT ROBOTIC ARM
Lennart Fox, NEUROSPACE GmbH, Germany

14:10-14:20 IAC-23/E4/IPB/75899
A HISTORY OF SPACE FOOD: ITEMS, ATTRIBUTES, AND CANDIDATES.
Danny Tjokrosetio, Space Generation Advisory Council (SGAC), Saudi Arabia

14:20-14:30 IAC-23/C1/IPB/79670
ATTITUDE CONTROL OF AN EARTH-POINTING SATELLITE EMPLOYING NOVEL ACTUATOR CONFIGURATIONS FOR GLOBAL ASYMPTOTIC STABILITY
Anirudh Etagi, India

14:30-14:40 IAC-23/A3/IPB/77818
THE DEVELOPMENT AND DESIGN OF A SOLAR TRACKER SYSTEM IMPLEMENTED IN SPACE EXPLORATION VEHICLES
Carlos Alfredo Aguilera Manriquez, Samara National Research University (Samara University), Russian Federation

14:40-14:50 IAC-23/A1/IPB/78889
INCONGRUENT BODY MOVEMENT AFFECTS TELEOPERATION PERFORMANCE
Maëlis Lefebvre, [unlisted], France

13:30-13:40 IAC-23/IPB/75197
“THE ASSESSMENT OF “HARMFUL INTERFERENCE” CONFLICTS IN OUTER SPACE ACTIVITIES ACCORDING TO INTERNATIONAL LAW STANDARDS; AND SELECTING THE APPROPRIATE DISPUTE SETTLEMENT METHOD FOR SMALL SATELLITE OPERATORS.”
Vugar Mammadov, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

REAL TIME AUTONOMOUS ON BOARD TIMER DRIFT ESTIMATION AND CALIBRATION IN DEEP SPACE MISSIONS
Pratibha Srivastava, Indian Space Research Organization (ISRO), India

13:50-14:00 IAC-23/C2/IPB/80709
ACTIVE VIBRATION CONTROL OF SMART LIGHTWEIGHT COMPOSITE STRUCTURES FOR A SMALL FLEXIBLE SPACECRAFT
Federico Angeletti, University of Rome “La Sapienza”, Italy

14:00-14:10 IAC-23/E7/IPB/75259
ANALYSIS OF INSURANCE POLICY AND THE RULE OF LAW FOR PROVIDING CYBER SECURITY IN COMMERCIAL SPACE AFFAIRS
Vugar Mammadov, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

14:10-14:20 IAC-23/C4/IPB/78126
DEVELOPMENT OF ATLAS: A LIQUID ROCKET ENGINE CRYOGENIC TEST STAND AND FEED SYSTEM
Danetti Martino, Viterbi School of Engineering, USC, United States

14:20-14:30 IAC-23/E7/IPB/75917
COMPARATIVE ANALYSIS OF THE PRECAUTIONARY PRINCIPLE WITH THE PRINCIPLE OF DUE DILIGENCE FOR COMMERCIAL SPACE ACTORS TOWARD SPACE DEBRIS REMEDIATION.
Vugar Mammadov, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

14:30-14:40 IAC-23/E1/IPB/80662
NOVEL CUBESAT TEST SETUP VALIDATING SATELLITE ATTITUDE DETERMINATION AND CONTROL
A. Bilal Özcan, Istanbul Technical University, Türkiye

14:40-14:50 IAC-23/E7/IPB/76147
ARTEMIS ACCORDS, AND ANALYSIS OF THE DEVELOPMENT OF TRANSPARENCY AND CONFIDENCE-BUILDING MEASURES (TCBMS) FOR INVOLVEMENT OF SMALL AND MEDIUM SPACE AGENCIES.
Vugar Mammadov, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

THE ART OF CELLULAR RESILIENCE: UNLOCKING THE SECRETS OF DNA PROTECTION IN A RADIATION-FILLED UNIVERSE
Jaume Puig, University Pompeu Fabra of Barcelona, Spain

SYSTEM DESIGN AND ANALYSIS OF AN AI-ASSISTED MULTI-MODEL LOCOMOTION FOR MARS EXPLORATION
Nijanthan Vasudevan, Space Generation Advisory Council (SGAC), United States

13:50-14:00 IAC-23/A6/IPB/80335
ACTIVE SPACE DEBRIS REMOVAL WITH ARTIFICIAL INTELLIGENCE ASSISTED CUBESATS USING ROBOT TECHNOLOGY AND SWARM INTELLIGENCE FOR TRAJECTORY PREDICTION, DEBRIS CAPTURE, AND DEORBITING IN LOW EARTH ORBIT
Nijanthan Vasudevan, Space Generation Advisory Council (SGAC), United States

14:00-14:10 IAC-23/E1/IPB/80607
IMPORTANCE OF SCIENCE AND TECHNOLOGY IN WOMEN
Driana Gabriela Sanchez Contreras, Instituto Politecnico Nacional, Mexico
Thursday 5 October 2023

14:10-14:20 IAC-23/ES/IPB/74762
SPACE TUGS AND LAGRANGE POINTS: KEY ARCHITECTURES FOR THE NEW CIS-LUNAR ECONOMY
Paolo Mangili, University of Houston, United States

14:20-14:30 IAC-23/A6/IPB/79061
HOW TO MAKE MONEY FROM SPACE DEBRIS?
Saliha Hacıyeva, Azerbaijan State University of Economics, Azerbaijan

14:30-14:40 IAC-23/D2/IPB/79717
DESIGN OF A LIFTING-BODY EARTH RETURN ORBITER FOR MARS EXPEDITION MISSIONS
Hao Liu, Tsinghua University, China

14:40-14:50 IAC-23/A7/IPB/80573
COSMIC RELIC ANTIHYDROGEN AS UNIQUE TOOL FOR DETERMINATION OF MAGNITUDE OF INTERNAL ELECTRIC FIELD INTENSITY VECTOR OF SINGLE CRYSTAL
Valli Huseynov, Shamakhy Astrophysical Observatory, Azerbaijan

SCREEN #11

IMPLICATIONS OF LUNAR VEHICLE WHEELS CREATED THROUGH 3D PRINTING OF AMORPHOUS METAL AND HIGH ENTROPY ALLOYS
Antonio Stark, Unmanned Exploration Laboratory (UEL), N/A

SENSOR LEVELING AND DISTANCE MATCHING METHODOLOGIES FOR LUNAR ROVERS
Antonio Stark, Unmanned Exploration Laboratory (UEL), N/A

13:50-14:00 IAC-23/B4/IPB/79220
EXPERIMENTAL VERIFICATION OF THE ALTITUDE STABILISATION CAPABILITY OF A METEOROLOGICAL BALLOON
Kamil Ziołkowski, Kazan Federal University, Russia

14:00-14:10 IAC-23/C1/IPB/75565
DESENSITIZED ENSEMBLE GUIDANCE
Akan Selim, Roketsan, Türkiye

14:10-14:20 IAC-23/B4/IPB/78815
USING UNIVERSITY CUBESATS FOR EARTHQUAKE DETECTION AND DISASTER MANAGEMENT
Ugur Drguven, UN CSSTEAP, United Kingdom

14:20-14:30 IAC-23/A2/IPB/80701
RELATIVISTIC COMPARISON OF PARTICLE WAVE MOVEMENT TO ORBITAL MECHANICS: HARMONIC ORBITING FOR GENERATING 1G INERTIA IN A SPACECRAFT
Stefan Alekusa Djerdevic, [unlisted], Serbia

14:30-14:40 IAC-23/E5/IPB/78505
SPACE THROUGH SOCIAL AND HUMANITARIAN SCIENCES: LENS: SOME ISSUES RELATED TO THE DEVELOPMENT OF ASTROSOCIOLGY IN AZERBAIJAN
Tahira Allahyarova, Social Research Center (SRC), Azerbaijan

14:40-14:50 IAC-23/A7/IPB/78353
Λ171Å FE IX LINE PROFILES IN THE SPECTRUM OF SLOW MAGNETO-ACOUSTIC WAVES
Zamina Aliyeva, Baku State University, Azerbaijan

SCREEN #12

13:30-13:40 IAC-23/B1/IPB/77317
SMALL SPACECRAFT FOR GLOBAL GREENHOUSE GAS EMISSION MONITORING
Vera Mayorova, Bauman Moscow State Technical University, Russian Federation

PLASMA MEANS OF COMBATING TECHNOGENIC DEBRIS IN SPACE
Ekaterina Tverdokhlebova, TSNIIOMASH, Russian Federation

13:50-14:00 IAC-23/A6/IPB/76700
FINDING REAL-WORLD ORBITAL MOTION LAWS FROM DATA
Jodo Funongo, FCT-UNL, Portugal

14:00-14:10 IAC-23/A3/IPB/76046
EUROCUBES – EUROPEAN CUBESAT EXPLORATION AND SCIENCE
Raj Kedia, University of Colorado Boulder, United States

14:10-14:20 IAC-23/A6/IPB/76376
A NOVEL METHOD OF SPACE NON-COOPERATIVE TARGET CAPTURE BASED ON MULTI-SOURCE VISUAL INFORMATION FUSION ALGORITHM
Xiaowei Wand, China Academy of Launch Vehicle Technology (CALT), China

14:20-14:30 IAC-23/A6/IPB/78918
ESA'S COLLISION RISK ESTIMATION AND AUTOMATED MITIGATION (CREAM) PROJECT – STATUS, RESULTS AND FUTURE EVOLUTION
Klaus Merz, European Space Agency (ESA/ESOC), Germany

14:30-14:40 IAC-23/B4/IPB/77765
PASSIVE THERMAL CONTROL TO MAINTAIN EARTH-LIKE TEMPERATURES INSIDE A CUBESAT
Yasser Mountaz, The Spring Institute for Forests on the Moon, France

14:40-14:50 IAC-23/A6/IPB/77054
THE IOAG WORKING GROUP ON SUSTAINABILITY OF OPERATIONS IN SPACE (SOS WQ): FINDINGS AND RECOMMENDATIONS IN THE DOMAINS OF SPACE DEBRIS, COLLISION AVOIDANCE AND END-OF-LIFE ACTIVITIES
Klaus Merz, European Space Agency (ESA/ESOC), Germany

SCREEN #13

13:30-13:40 IAC-23/E1/IPB/80719
DAPHNE: MORPH TO SURVIVE WITH AN INNOVATIVE DESIGN APPROACH
Raffaele Minichini, Università degli Studi di Napoli “Federico II”, Italy

A PARADIGM INVOLVING YOUNG PROFESSIONALS IN RESEARCH AND ACADEMIA CONTRIBUTING TO THE SPACE INDUSTRY BROUGHT TO LIGHT
Sri Venkata Vathsala Musunuri, Polytechnique Montreal, Canada

13:50-14:00 IAC-23/C1/IPB/80639
APPLICATION OF DYNAMIC PROGRAMMING FOR LOW-THRUST STATION-KEEPING OPTIMIZATION ON GEOSTATIONARY ORBIT.
Hayeon Kim, Moscow Aviation Institute (National Research Institute, MAI), Russian Federation

14:00-14:10 IAC-23/A4/IPB/76137
HOW TO DISTINGUISH A POTENTIAL SPACESHIP IN SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE?
Ugur Drguven, UN CSSTEAP, United Kingdom

14:10-14:20 IAC-23/B6/IPB/75673
QUESTION ANSWERING OVER KNOWLEDGE GRAPHS FOR EXPLAINABLE SATELLITE SCHEDULING
Raffaele Minichini, Università degli Studi di Napoli “Federico II”, Italy

14:20-14:30 IAC-23/B4/IPB/78211
CAPTURE BASED ON MULTI-SOURCE VISUAL INFORMATION FUSION ALGORITHM
Cheyenne Powell, University of Strathclyde, United Kingdom

14:30-14:40 IAC-23/B6/IPB/75673
TEMPERATURES INSIDE A CUBESAT
Zamina Aliyeva, Baku State University, Azerbaijan

14:40-14:50 IAC-23/A6/IPB/77918
PASSIVE THERMAL CONTROL TO MAINTAIN EARTH-LIKE TEMPERATURES INSIDE A CUBESAT
Yasser Mountaz, The Spring Institute for Forests on the Moon, France

14:50-15:00 IAC-23/C1/IPB/80719
APPLICATION OF DYNAMIC PROGRAMMING FOR LOW-THRUST STATION-KEEPING OPTIMIZATION ON GEOSTATIONARY ORBIT.
Hayeon Kim, Moscow Aviation Institute (National Research Institute, MAI), Russian Federation

15:00-15:10 IAC-23/A4/IPB/76137
HOW TO DISTINGUISH A POTENTIAL SPACESHIP IN SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE?
Ugur Drguven, UN CSSTEAP, United Kingdom

SCREEN #14

TEMPERATURES INSIDE A CUBESAT
Zamina Aliyeva, Baku State University, Azerbaijan

15:20-15:30 IAC-23/B4/IPB/78211
CAPTURE BASED ON MULTI-SOURCE VISUAL INFORMATION FUSION ALGORITHM
Cheyenne Powell, University of Strathclyde, United Kingdom

15:30-15:40 IAC-23/C1/IPB/80719
APPLICATION OF DYNAMIC PROGRAMMING FOR LOW-THRUST STATION-KEEPING OPTIMIZATION ON GEOSTATIONARY ORBIT.
Hayeon Kim, Moscow Aviation Institute (National Research Institute, MAI), Russian Federation

15:40-15:50 IAC-23/A4/IPB/76137
HOW TO DISTINGUISH A POTENTIAL SPACESHIP IN SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE?
Ugur Drguven, UN CSSTEAP, United Kingdom

15:50-16:00 IAC-23/E1/IPB/80719
DAPHNE: MORPH TO SURVIVE WITH AN INNOVATIVE DESIGN APPROACH
Raffaele Minichini, Università degli Studi di Napoli “Federico II”, Italy

16:00-16:10 IAC-23/B6/IPB/75673
TEMPERATURES INSIDE A CUBESAT
Zamina Aliyeva, Baku State University, Azerbaijan

16:10-16:20 IAC-23/C1/IPB/80719
APPLICATION OF DYNAMIC PROGRAMMING FOR LOW-THRUST STATION-KEEPING OPTIMIZATION ON GEOSTATIONARY ORBIT.
Hayeon Kim, Moscow Aviation Institute (National Research Institute, MAI), Russian Federation

16:20-16:30 IAC-23/A4/IPB/76137
HOW TO DISTINGUISH A POTENTIAL SPACESHIP IN SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE?
Ugur Drguven, UN CSSTEAP, United Kingdom

16:30-16:40 IAC-23/B6/IPB/75673
TEMPERATURES INSIDE A CUBESAT
Zamina Aliyeva, Baku State University, Azerbaijan

16:40-16:50 IAC-23/C1/IPB/80719
APPLICATION OF DYNAMIC PROGRAMMING FOR LOW-THRUST STATION-KEEPING OPTIMIZATION ON GEOSTATIONARY ORBIT.
Hayeon Kim, Moscow Aviation Institute (National Research Institute, MAI), Russian Federation

16:50-17:00 IAC-23/A4/IPB/76137
HOW TO DISTINGUISH A POTENTIAL SPACESHIP IN SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE?
Ugur Drguven, UN CSSTEAP, United Kingdom
Thursday 5 October 2023

SCREEN #14

13:30-13:40  IAC-23/B4/IPB/77161
ASSESSING THE EFFECTIVENESS OF DIFFERENT DEPLOYABLE SOLAR PANEL SETUPS ON SHARJAH-SAT-2, AN EARTH OBSERVATIONAL 6U CUBESAT, USING THE CUBESAT TOOLBOX
Fatima Alketbi, Sharjah Academy for Astronomy, Space Sciences and Technology (SAAST), United Arab Emirates

OPTIMUM PANEL DEPLOYMENT ANGLE FOR PASSIVE AERODYNAMIC ATTITUDE STABILIZATION IN CUBESATS
Muhammad Taha Ansari, Khalifa University of Science and Technology (KUST), United Arab Emirates

13:50-14:00  IAC-23/E1/IPB/80703
STRAZPHERA: ACCESSING SPACE BELOW THE KARMAN LINE
Claudia Guerra, Università degli Studi di Napoli “Federico II”, Italy

14:00-14:10  IAC-23/B1/IPB/78269
ONBOARD DIRECT WEAKLY SUPERVISED BAND-TO-BAND ALIGNMENT
Gilberto Goracci, Scuola di Ingegneria Aerospaziale La Sapienza, Italy

14:10-14:20  IAC-23/A3/IPB/79010
ANALOGUE SPACE MISSIONS AS TESTING PLATFORMS FOR A BROADER ACCESS TO SPACE FOR PARASTRONAUTS
Tomas Ducci, University of Vienna, Austria

14:20-14:30  IAC-23/A6/IPB/76549
IMPROVING THE METHOD OF ASSESSING THE POTENTIAL DAMAGE OF SPACE OBJECTS
KaiQi Cui, Purple Mountain Observatory (PMO), China

14:30-14:40  IAC-23/B4/IPB/80344
EARTH OBSERVATION PAYLOADS ON-BOARD A 3U CUBESAT AND THEIR SCIENTIFIC PURPOSE FOR MONITORING SURFACE TEMPERATURE HOTSPOTS
David Vlassov, Polytechnique Montreal, Canada

14:40-14:50  IAC-23/A7/IPB/77254
DETERMINATION METHODS OF THE DISTANCE TO NOVAE
Kamala Alishava, Baku State University Azerbaijan

SCREEN #15

13:30-13:40  IAC-23/C1/IPB/80485
SATELLITE ROUTING WITH QUANTUM ANNEALING: COLLECTING SPACE DEBRIS AND ON-ORBIT SERVICING
Priyank Dubey, Indian Institute of Science Education and Research Berhampur, India

INTRODUCING A NOVEL FAST TERMINAL SLIDING MODE CONTROL WITH THE APPLICATION OF SPACE ROBOTICS
Mahsa Azadmehr, K. N. Toosi University of Technology, Iran

13:50-14:00  IAC-23/B6/IPB/80733
OPTIMIZING ROUTING AND NETWORK PLANNING IN SATELLITE CONSTELLATIONS USING THE FLOYD-WARSHALL ALGORITHM
Angel Vázquez, High Technology Unit (UAT) Faculty of Engineering - UNAM, Mexico

14:00-14:10  IAC-23/C1/IPB/77517
THE CAPTURE OF NEAR-EARTH ASTEROIDS IN CLOSE PROXIMITY ORBITS WITH A TWO-SPACECRAFT STRATEGY USING A LINEAR APPROXIMATION
Livia Ionescu, University of Glasgow, United Kingdom

14:10-14:20  IAC-23/A1/IPB/78746
FEMALE DRY IMMERSION: RESULTS OF A POSTUROGRAPHIC STUDY
Nelly Abu Sheli, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation

14:20-14:30  IAC-23/C1/IPB/79703
COMPARISON OF NON-LINEAR HEURISTIC CONTROL AND LINEAR TIME-VARYING OPTIMAL CONTROL DESIGN FOR 3-AXES ATTITUDE CONTROL OF A MICROSATELITE
Neha Chohan, ReOrbit, Finland

14:30-14:40  IAC-23/B1/IPB/79164
BUILDING A SUSTAINABLE CLIMATE CHANGE MONITORING SATELLITE MISSION THROUGH LIFE CYCLE ASSESSMENT
Dhanisha Sateesh, Space Generation Advisory Council (SGAC), India

14:40-14:50  IAC-23/E5/IPB/75670
FIRST ANALOG MISSION OF THE JORDAN SPACE RESEARCH INITIATIVE: ONE SMALL STEP FOR EMERGING SPACE COUNTRIES, ONE GIANT LEAP FOR JORDAN
Saiba El-Shawa, Jordan Space Research Initiative (JSRI), Jordan

SCREEN #16

THE EUSST COLLISION AVOIDANCE SERVICE READY TO SUPPORT THE NEW SPACE ENVIRONMENT
Cristina Pérez Hernández, CDTI (Centre for the development of Industrial Technology), Spain

REVISITING THE MOON AGREEMENT: ANALYZING 45 YEARS OF POLICY AND LEGAL TRENDS THROUGH THE LENS OF NEWSPACE COMMERCIALIZATION
Natasha Hughes, University of Toronto Aerospace Team (UTAT), Canada

13:50-14:00  IAC-23/B1/IPB/79702
DEEPSEA CLUSTER: DETECTION AND CLASSIFICATION OF ANTHROPOGENIC OCEAN NOISE USING SATELLITE IMAGES
Jahir Uddin, University of Nebraska-Lincoln, United States

14:00-14:10  IAC-23/A3/IPB/79689
OPTIMIZING AUTONOMOUS NAVIGATION OF UNMANNED GROUND VEHICLES IN CHALLENGING TERRAIN THROUGH SURFACE ANALYSIS AND AI
Jahir Uddin, University of Nebraska-Lincoln, United States

14:10-14:20  IAC-23/A1/IPB/77310
COMBINED ELECTROMYSTIMULATION MODE TO MITIGATION OF SPACE FLIGHT EFFECTS ON CONTRACTILE PROPERTIES OF LOWER EXTREMITIES MUSCLES
Ivan Panomarev, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation

14:20-14:30  IAC-23/A1/IPB/77363
EFFECTS OF DIFFERENT DURATION DRY IMMERSION ON SENSORY ORGANIZATION OF POSTURAL SYSTEM
Nikita Shishkin, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation

14:30-14:40  IAC-23/E6/IPB/77031
EMPOWERING EUROPEAN NEWSPACE ENTREPRENEURS: A TAILORED DATABASE FRAMEWORK FOR VENTURE CAPITAL FUNDING
Stirling Forbes, International Space University (ISU), France

14:40-14:50  IAC-23/C1/IPB/77964
INTELLIGENT INTEGRATED NAVIGATION OF SOLAR SYSTEM BOUNDARY EXPLORATION CRUISE PHASE BASED ON Q-LEARNING EXTENDED KALMAN FILTER
Wenjian Tao, School of aeronautics and astronautics, Sun Yat-Sen University Guangzhou, China
Thursday 5 October 2023

13:30-13:40 IAC-23/E3/IPB/77117 KOREA’S PARTICIPATION IN SPACE4WOMEN: A WIN-WIN STRATEGY FOR A UN PROJECT AND A LOCAL INITIATIVE Soayoung Chung, Korea Aerospace Research Institute (KARI), Korea, Republic of

13:40-13:50 IAC-23/A6/IPB/76025 RESIDENT SPACE OBJECT CLASSIFICATION FROM LIGHT CURVES WITH DEEP LEARNING. Elliott Simon, European Space Agency (ESA), Belgium

13:50-14:00 IAC-23/A3/IPB/80007 USING WADI RUM DESERT AND TERRAINS AS A SPACE TESTING FIELDS. M. Omar Albalbaki, Blinc- Borderless lab, Jordan

14:00-14:10 IAC-23/C2/IPB/76706 NITINOL BIOMIMETIC COMPLIANT MECHANISM FOR DEEP SPACE EXPLORATION TESTED ONBOARD THE ISS ON MISSE PLATFORM. Omar Saldana Penetro, Instituto Nacional de Astrofísica, Óptica y Electrónica, Mexico

14:10-14:20 IAC-23/A6/IPB/76402 OPTIMAL LOW THRUST DEBRIS REMOVAL USING A TETHERED SYSTEM CONSIDERING COLLISION AVOIDANCE. Liqiang Hou, Shanghai Jiaotong University, China


14:30-14:40 IAC-23/A3/IPB/77353 INERTIAL-VISUAL COLLABORATIVE NAVIGATION METHOD FOR MASTER-SLAVE MULTI-LUNAR-BASED EQUIPMENT. Siqi Lu, School of Aerospace Engineering, Beijing Institute of Technology, China

14:40-14:50 IAC-23/A1/IPB/79633 VIRTUAL REALITY RESCUE TRAINING SIMULATION- ADDRESSING RETENTION OF SKILLS IN EXTREME ENVIRONMENTS. Carole Dangoisse, [unlisted], United Kingdom

13:30-13:40 IAC-23/A3/IPB/79136 QUANTIFYING IMPROVEMENTS IN DEBRIS RISK ANALYSIS USING A CONSTELLATION OF SPACEBORNE OPTICAL SENSORS. Antonio D’Anniballe, Cranfield University, United Kingdom


13:50-14:00 IAC-23/E5/IPB/80477 TOWARDS THE PRACTICE OF JAPANESE TRADITIONAL PERFORMING CULTURE IN FUTURE SPACE ACTIVITIES. Yurie Suzuki, Royal College of Art, Japan

14:00-14:10 IAC-23/E5/IPB/78839 THE IDEA OF CONVIVIAL SOCIETY EMBODIED IN THE FLAME THAT LIT IN THE STRATOSPHERE. Motoki Kawase, Nagoya Institute of Technology, Japan

14:10-14:20 IAC-23/E6/IPB/78622 THE CATALAN NEWSPACE STRATEGY Josep Colomé Ferrer, Institut d’Estudis Espacials de Catalunya (IEEC), Spain

13:30-13:40 IAC-23/A6/IPB/79136 QUANTIFYING IMPROVEMENTS IN DEBRIS RISK ANALYSIS USING A CONSTELLATION OF SPACEBORNE OPTICAL SENSORS. Antonio D’Anniballe, Cranfield University, United Kingdom


13:50-14:00 IAC-23/E5/IPB/80477 TOWARDS THE PRACTICE OF JAPANESE TRADITIONAL PERFORMING CULTURE IN FUTURE SPACE ACTIVITIES. Yurie Suzuki, Royal College of Art, Japan

14:00-14:10 IAC-23/E5/IPB/78839 THE IDEA OF CONVIVIAL SOCIETY EMBODIED IN THE FLAME THAT LIT IN THE STRATOSPHERE. Motoki Kawase, Nagoya Institute of Technology, Japan

14:10-14:20 IAC-23/E6/IPB/78622 THE CATALAN NEWSPACE STRATEGY Josep Colomé Ferrer, Institut d’Estudis Espacials de Catalunya (IEEC), Spain

14:20-14:30 IAC-23/E6/IPB/78945 NEWSPACE LAB: SUPPORTING THE DEVELOPMENT OF THE SPACE ECOSYSTEM IN CATALONIA. Lluís Foreman Campins, Institut d’Estudis Espacials de Catalunya (IEEC), Spain

14:30-14:40 IAC-23/E6/IPB/77672 TRADE-OFF STUDIES ON MISSION ARCHITECTURE AND CONFIGURATION OF A SMALL PARTIALLY REUSABLE STRATOLAUNCHER FOR SMALLSAT LEO DELIVERY. Luca Colombo, Politecnico di Milano, Italy

14:40-14:50 IAC-23/D2/IPB/77672 TRADE-OFF STUDIES ON MISSION ARCHITECTURE AND CONFIGURATION OF A SMALL PARTIALLY REUSABLE STRATOLAUNCHER FOR SMALLSAT LEO DELIVERY. Luca Colombo, Politecnico di Milano, Italy

13:30-13:40 IAC-23/C1/IPB/77992 STUDY ON SHORT RANGE FORMATION FLIGHT AND DOCKING CONTROL USING AC MAGNETIC FIELD. Hayate Tojima, The University of TOKYO, Graduate school, Japan

13:40-13:50 IAC-23/A4/IPB/80680 SETI (OVER HUMAN OUTER BOD OBSERVING INTELLIGENCE) Raghunath Ragunath, India

13:50-14:00 IAC-23/C2/IPB/76069 ADDITIVE DESIGN OF HEAT SWITCH TECHNOLOGY: LESSONS LEARNED. Jakub Mašek, Brno University of Technology, Czech Republic
Thursday 5 October 2023

14:00-14:10 IAC-23/A1/IPB/75705
CORRELATION ANALYSIS AS PART OF A NOVEL BIOMARKER ANALYSIS SYSTEM FOR ASTRONAUT HEALTH IN SPACE
Anurag Sakharuk, University of Saskatchewan, Canada

14:10-14:20 IAC-23/AS/IPB/79508
LAVA TUBE-BASED LUNAR/MARS ANALOG STATION IN JEJU ISLAND
Hong-kyu Moon, Korea Astronomy and Space Science Institute, Republic of Korea

13:30-14:40 IAC-23/ES/IPB/75988
FOOD PRODUCTION SYSTEMS AND METHODS TOWARDS FOOD SECURITY AND SUSTAINABILITY IN SPACE AND ON EARTH.
Delphine Urbah, [unlisted], France

Thursday 5 October 2023

14:40-14:50 IAC-23/AS/IPB/77441
TAXONOMY FOR RESIDENT SPACE OBJECTS IN LEO
Marta Guimaraes, Neuraspace, Portugal

BENDING ANALYSIS AND TESTING OF A HYPERSONIC ROCKET FINS
Mohammed Omar Nawaz, Concordia University, Canada

14:00-14:10 IAC-23/CI/IPB/76195
GENERAL OVERVIEW OF NEAR-EARTH MAGNETIC ANOMALY EFFECTS ON SATELLITE ATTITUDE ESTIMATION
Demet Cilden-Guler, Istanbul Technical University, Türkiye

14:10-14:20 IAC-23/D1/IPB/80612
NANOSATELLITE ATTITUDE ESTIMATION WITH UNCERTAIN PROCESS AND MEASUREMENT NOISE USING NONTRADITIONAL FILTERING
Chingiz Hajiyev, Istanbul Technical University, Türkiye

14:20-14:30 IAC-23/D1/IPB/80615
IN-ORBIT ESTIMATION OF MAGNETOMETER BIASES AND SCALE FACTORS VIA NONLINEAR TWO-STAGE KALMAN FILTER
Chingiz Hajiyev, Istanbul Technical University, Türkiye

14:30-14:40 IAC-23/C4/IPB/77794
TOOLKIT FOR LIQUID ROCKET PROPULSION SYSTEM DESIGN
Nijat Abdulla, National Aviation Academy - Azerbaijan, Azerbaijan

14:40-14:50 IAC-23/E6/IPB/76107
421-DAY PILOTED EXPEDITION TWO TRAVELERS TO MARS AND BACK.
Oleg Aleksandrov, Private individual www.oleg.space, United States

Thursday 5 October 2023

13:30-13:40 IAC-23/C2/IPB/76567
INVESTIGATING THE NEUROPSYCHOLOGICAL IMPACT OF THE OVERVIEW EXPERIMENT USING VIRTUAL REALITY
Sahba El-Shawa, Jordan Space Research Initiative (JSRI), Jordan

BUSINESS MODELS WITHIN THE SATELLITE SERVICES AND APPLICATIONS SECTOR
Filippo Papamarenghi, Italy

14:00-14:10 IAC-23/C1/IPB/76781
A DECENTRALIZED APPROACH FOR MULTI-SPACECRAFT MISSION PLANNING
Junhui Zhou, School of Aerospace Engineering, Beijing Institute of Technology, China

14:00-14:10 IAC-23/E9/IPB/80078
MODEL-BASED SYSTEMS ENGINEERING SIMULATION TOOL FOR THE DESIGN AND PERFORMANCE ANALYSIS OF MODULAR LUNAR ROVERS
Majid Alhajeri, University of Glasgow, United Kingdom

14:30-13:40 IAC-23/B3/IPB/76108
THE DESIGN AND PERFORMANCE ANALYSIS OF MODULAR LUNAR ROVERS
Nijat Abdulla, National Aviation Academy - Azerbaijan, Azerbaijan

14:30-14:40 IAC-23/B6/IPB/77173
FROM SPACE TO EARTH: BRIDING THE SPACE-NON-SPACE DIVIDE THROUGH RAISING AWARENESS AND ESTABLISHING MUTUAL UNDERSTANDING
Katsiaryna Rutkouskaya, Stichting dotSPACE, The Netherlands

14:30-14:40 IAC-23/C4/IPB/80624
GRAPHENE-BASED LASER PROPULSION FOR SPACE APPLICATION
Omnia Khattab, Khalifa University of Science and Technology (KUST), United Arab Emirates

14:30-14:40 IAC-23/B1/IPB/77505
OPTIMIZING OBJECT DETECTORS WITH KNOWLEDGE DISTILLATION FOR ON-BOARD EARTH OBSERVATION
Lingyu Gu, School of Aerospace, Tsinghua University, Beijing, China

14:30-14:40 IAC-23/B6/IPB/76108
SHARJAH-SAT-3 MISSION DESIGN ANALYSIS WITH STK SOFTWARE: ORBIT DETERMINATION, LIFETIME ANALYSIS, AND POWER GENERATION
Amel Alhannadi, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

14:30-14:40 IAC-23/A6/IPB/78859
ADVANCEMENTS IN PAYLOAD HOSTING OPERATIONS FOR NEW SPACE: ADDRESSING CHALLENGES, STREAMLINING PROCESSES, ENHANCING ECONOMIC VIABILITY, AND DEMONSTRATING EFFICACY THROUGH EMPIRICAL EVIDENCE
Fakhri Babayev, GomSpace ApS, Luxembourg

14:30-14:40 IAC-23/E6/IPB/76107
421-DAY PILOTED EXPEDITION TWO TRAVELERS TO MARS AND BACK.
Oleg Aleksandrov, Private individual www.oleg.space, United States

14:30-14:40 IAC-23/C4/IPB/80859
TECHNOLOGIES PAVING THE WAY TOWARD SPACE DEBRIS OBSERVATION NETWORK IN SUPPORT OF SPACE TRAFFIC MANAGEMENT
Emiliano Cordelli, GMV, Space Debris Office (SDO), ESA/ESOC, Germany

14:30-14:40 IAC-23/A3/IPB/77794
IN-ORBIT ESTIMATION OF MAGNETOMETER BIASES AND SCALE FACTORS VIA NONLINEAR TWO-STAGE KALMAN FILTER
Chingiz Hajiyev, Istanbul Technical University, Türkiye

14:30-14:40 IAC-23/C2/IPB/77794
TOOLKIT FOR LIQUID ROCKET PROPULSION SYSTEM DESIGN
Nijat Abdulla, National Aviation Academy - Azerbaijan, Azerbaijan

14:30-14:40 IAC-23/E5/IPB/77752
OPTIMIZING OBJECT DETECTORS WITH KNOWLEDGE DISTILLATION FOR ON-BOARD EARTH OBSERVATION
Lingyu Gu, School of Aerospace, Tsinghua University, Beijing, China

13:30-14:00 IAC-23/B1/IPB/77516
A EUROPEAN SPACE POLICY BRIDGE WITH CHINESE CHARACTERISTICS
Andrew Thomas, The British Interplanetary Society, United Kingdom

13:30-14:00 IAC-23/B3/IPB/77505
APPLICATIONS SECTOR
13:30-14:00 IAC-23/B6/IPB/77794
IN-ORBIT ESTIMATION OF MAGNETOMETER BIASES AND SCALE FACTORS VIA NONLINEAR TWO-STAGE KALMAN FILTER
Chingiz Hajiyev, Istanbul Technical University, Türkiye

13:30-14:00 IAC-23/A1/IPB/75667
INVESTIGATING THE NEUROPSYCHOLOGICAL IMPACT OF THE OVERVIEW EXPERIMENT USING VIRTUAL REALITY
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13:30-14:00 IAC-23/A1/IPB/75667
INVESTIGATING THE NEUROPSYCHOLOGICAL IMPACT OF THE OVERVIEW EXPERIMENT USING VIRTUAL REALITY
Sahba El-Shawa, Jordan Space Research Initiative (JSRI), Jordan
Thursday 5 October 2023

14:00-14:10 IAC-23/B4/IPB/75666
COLLISION RISK ASSESSMENT: AUTONOMY LEVELS FOR AI-BASED AUTONOMOUS COLLISION AVOIDANCE
Salman Ali Thepdawala, Universität der Bundeswehr München, Germany

14:10-14:20 IAC-23/E3/IPB/77123
THE IMPORTANCE OF NUCLEAR ENERGY GOVERNANCE IN ESTABLISHING SUSTAINABLE LUNAR SETTLEMENTS
Héloïse Vertadier, Open Lunar Foundation, New Zealand

14:30-14:40 IAC-23/C1/IPB/77447
BOUNDARY-VALUE PROBLEM OF TISSERAND-LEVERAGING TRANSFERS
Jin Cheng Hu, Nanjing University of Aeronautics and Astronautics, China

14:40-14:50 IAC-23/E3/IPB/80428
THE INSTITUTIONAL ENVIRONMENT OF THE ALCANTARA LAUNCH CENTER
Leticia Morosino, Brazilian Space Agency (AEB), Brazil

13:30-13:40 IAC-23/E1/IPB/76567
THE ACHIEVED ACADEMY, ACCESSIBLE SPACE EDUCATION INITIATIVE LAUNCHED BY THE SPACE GENERATION ADVISORY COUNCIL
Maria Casanovas Crespo, Space Generation Advisory Council (SGAC), Spain

14:00-14:10 IAC-23/E1/IPB/80232
ESTABLISHMENT OF SPACE EDUCATION RESEARCH LAB: A NOVEL INITIATIVE FOR PROMOTING SPACE SCIENCE, TECHNOLOGY AND ITS APPLICATIONS
Najam Naqvi, Institute of Space Technology (IST), Pakistan

14:20-14:30 IAC-23/C1/IPB/78741
METHODS FOR DYNAMIC STUDIES OF CLOSE ENCOUNTERS AND APPLICATION TO REAL CASES
Nicolo’ Stronati, Cranfield University, United Kingdom

14:40-14:50 IAC-23/E2/IPB/80341
A STUDENT APPROACH FOR THERMAL MODELLING, VALIDATION AND TESTING OF THE 6S CUBESAT
Davide Scalettari, Politecnico di Milano, Italy

13:30-13:40 IAC-23/C2/IPB/78182
INFLUENCE OF POST-BUCKLING BEHAVIOR AND MANUFACTURING ERRORS ON THE ACCURACY OF SPACE-TENSIONED THIN-FILM ANTENNA
Xiaotao Zhou, Xi’an Institute of Space Radio Technology, China

14:00-14:10 IAC-23/C2/IPB/78023
AN EFFICIENT STRUCTURAL ANALYSIS OF NARITCUBE-1 SATELLITE
Chinathip Narongphun, National Astronomical Research Institute of Thailand (NARIT), Thailand

ADVANCED ROOM TEMPERATURE PROPELLANTS FOR ROCKETS AND SPACECRAFTS
Ansh Jaipuria, SRM Institute of Science and Technology, India

13:50-14:00 IAC-23/E6/IPB/80696
REDUCING DEATHS IN TRAFFIC ACCIDENTS WITH SPACE RESEARCH AND ARTIFICIAL INTELLIGENCE.
Ali Mammadov, Azerbaijan

14:00-14:10 IAC-23/A4/IPB/78059
ENHANCING SPECTRAL SENSITIVITY THROUGH INTELLIGENT TARGETING
Anushka Sharad Kumavat, [unlisted], India

14:30-14:40 IAC-23/C4/IPB/75797
RESEARCH ON THE ACOUSTIC CHARACTERISTICS OF FLOW DISTRIBUTION PLATE IN LOX/KEROSENE STAGED COMBUSTION ROCKET ENGINE
chen cao, Xian Aerospace Propulsion Institute, China

14:40-14:50 IAC-23/C4/IPB/75810
REVIEW ON THE TECHNOLOGY OF LIQUID OXYGEN KEROSENE ENGINE FOR THE BOOSTER STAGE OF LONG MARCH 5
Chen Jianhua, Xian Aerospace Propulsion Institute, China

A HYBRID APPROACH TO REAL-TIME SPACECRAFT OPERATIONS IN THE GROUND SEGMENT
Doug Smith, University of Colorado Boulder, United States

14:00-14:10 IAC-23/C3/IPB/77544
CHARACTERIZING THE DIRECTIONAL INTENSITIES OF ION IMPACTS ON THE MOON AND THEIR IMPACT ON SPACE WEATHER
Sarah Raj Nadarajan Syamala, Amity University, Dubai, United Arab Emirates

14:20-14:30 IAC-23/C3/IPB/77917
THE IMPORTANCE OF NUCLEAR ENERGY GOVERNANCE IN ESTABLISHING SUSTAINABLE LUNAR SETTLEMENTS
Héloïse Vertadier, Open Lunar Foundation, New Zealand

14:00-14:10 IAC-23/E1/IPB/75720
SPACE EDUCATION AS A TOOL SUPPORTING THE ASSIMILATION OF REFUGEE YOUTH.
Agnieszka Bajtyngier, ESERO Poland, Poland

13:50-14:00 IAC-23/A3/IPB/77123
THE FOLDABLE WHEEL OF THE LUNAR ROVER.
TaeYoung Lee, Unmanned Exploration Laboratory (UEL), Korea, Republic of

14:00-14:10 IAC-23/C3/IPB/78706
NON-GPS POSITIONING SYSTEM FOR LUNAR EXPLORATION ROVER.
TaeYoung Lee, Unmanned Exploration Laboratory (UEL), Korea, Republic of

14:00-14:10 IAC-23/A4/IPB/78059
ENHANCING SPECTRAL SENSITIVITY THROUGH INTELLIGENT TARGETING
Anushka Sharad Kumavat, [unlisted], India

14:30-14:40 IAC-23/C4/IPB/75797
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14:40-14:50 IAC-23/C4/IPB/75810
REVIEW ON THE TECHNOLOGY OF LIQUID OXYGEN KEROSENE ENGINE FOR THE BOOSTER STAGE OF LONG MARCH 5
Chen Jianhua, Xian Aerospace Propulsion Institute, China

13:30-13:40 IAC-23/C2/IPB/78117
SAFETY FACTOR OF CRITICAL STRUCTURAL COMPONENTS IN GLASS-FIBER REINFORCED PLASTIC SOUNDING ROCKETS
Hasel Ramírez Cortés, Instituto Politécnico Nacional, Mexico

14:10-14:20 IAC-23/A3/IPB/80488
QUANTIFYING CARBON DEPLETION IN THE MARTIAN ATMOSPHERE THROUGH ULTRAVIOLET RADIATION ANALYSIS: INSIGHTS FROM EMIRATES MARS MISSION (EMM) DATA ON CARBON MONOXIDE (CO) LEVELS
Sarah Raj Nadarajan Syamala, Amity University, Dubai, United Arab Emirates

14:20-14:30 IAC-23/A3/IPB/77544
TARGETING ENHANCING SPECTRAL SENSITIVITY THROUGH INTELLIGENT TARGETING
Anushka Sharad Kumavat, [unlisted], India

13:30-13:40 IAC-23/C2/IPB/78217
THE STUDY OF CHANGES IN H+ ION CONCENTRATION CONSTITUTING THE AURORAL FORMATION IN MARS USING EMM, MAVEN & THEMIS
Sarah Raj Nadarajan Syamala, Amity University, Dubai, United Arab Emirates

14:30-14:40 IAC-23/B1/IPB/75933
THE ROLE OF SATELLITE IMAGERY IN WAR CRIME INVESTIGATIONS: AN OVERVIEW OF ITS USE AS EVIDENCE
Sarah Raj Nadarajan Syamala, Amity University, Dubai, United Arab Emirates
Thursday 5 October 2023

SCREEN #30

13:30-13:40  IAC-23/B1/IPB/78645
BRINGING BARE SOIL DETECTION ON-BOARD INTUITION-1 THROUGH EXPLOITING DATA-LEVEL DIGITAL TWINS
Jakub Nalepa, KP Labs, Poland

CONSTRAINED UNSCENTED KALMAN FILTERING WITH IMPROVED RELIABILITY FOR SMALL CELESTIAL BODY RELATIVE NAVIGATION
Mingzhen Che, Beijing Institute of Technology, China

13:50-14:00  IAC-23/A3/IPB/77330
COORDINATIVE NAVIGATION METHOD FOR LUNAR BASE EQUIPMENT BASED ON MULTI-SOURCE INFORMATION FUSION
Chengyu Cai, Beijing Institute of Technology, China

14:00-14:10  IAC-23/A6/IPB/77297
LARGE-SCALE RAPID EVALUATION FOR THE COLLISION RISK OF MEGA CONSTELLATIONS
Zhengyu Pan, School of Aerospace Engineering, Beijing Institute of Technology, China

14:10-14:20  IAC-23/A6/IPB/77191
SPACECRAFT COMPONENTS DETECTION METHOD BASED ON RANDOMIZED IMAGE ENHANCEMENT
Ai Gao, Beijing Institute of Technology, China

14:20-14:30  IAC-23/A3/IPB/77214
MULTI-TYPE TERRAIN DETECTION AND EVALUATION ON PLANET SURFACE BASED ON DEEP LEARNING
Ting Song, Northwestern Polytechnical University, China

14:40-14:50  IAC-23/A3/IPB/78285
DEFINITION AND TESTING OF A SATELLITE-TO-USER RANGING AND COMMUNICATION SIGNAL FOR A MARTIAN NAVIGATION SYSTEM
Andrea Manganiello, Argotec, Italy

SCREEN #31

MARKET CONSOLIDATION IN THE EARTH OBSERVATION SECTOR
Dimitra Stefoudi, International Space University (ISU), United States

14:00-14:10  IAC-23/B4/IPB/79917
CONTROL APPROACH FOR REACTION WHEEL DEVELOPMENT IN LAB ENVIRONMENT
Salah Eddine Bentata, Agence Spatiale Algérienne (ASAL), Algeria

SCREEN #32

13:30-13:40  IAC-23/B1/IPB/80163
SPACE APPLICATIONS FOR DEVELOPING NATIONS: SERIES OF CASE STUDIES
Christopher Richardson, International Space University (ISU), United States

14:20-14:30  IAC-23/C1/IPB/78893
APPROXIMATION FOR GRAVITATIONAL FIELD OF A SMALL CELESTIAL BODY BY A TRIPLE OF UNIFORM BALLS
Anna Guerman, Centre for Mechanical and Aerospace Science and Technologies (C-MAST), Portugal

SCREEN #33

13:30-13:40  IAC-23/E1/IPB/76624
THE SENSES AND CREATIVITY THAT CAN BE ACHIEVED BY BRINGING ENTERTAINMENT IN SPACE
Taiko Kawakami, ASTRAX, Inc., Japan

TECHNOLOGY, PROBLEMS, AND SOLUTIONS FOR SPACE TRAVEL MEALS AS REPRESENTED BY YAKITORI, GRILLED CHICKEN
Taiko Kawakami, ASTRAX, Inc., Japan

13:50-14:00  IAC-23/E5/IPB/76637
THE POSSIBILITY OF DEVELOPING JAPANESE CULTURE THROUGH “NATTO” IN SPACE
Taiko Kawakami, ASTRAX, Inc., Japan

14:00-14:10  IAC-23/C4/IPB/78625
NUMERICAL SIMULATION OF A DETONATION ENGINE
Evgeniya Skryleva, Lomonosov Moscow State University, Russia

14:10-14:20  IAC-23/A6/IPB/77191
SPACECRAFT COMPONENTS DETECTION METHOD BASED ON RANDOMIZED IMAGE ENHANCEMENT
Ai Gao, Beijing Institute of Technology, China

14:20-14:30  IAC-23/A3/IPB/77214
MULTI-TYPE TERRAIN DETECTION AND EVALUATION ON PLANET SURFACE BASED ON DEEP LEARNING
Ting Song, Northwestern Polytechnical University, China

14:40-14:50  IAC-23/A3/IPB/78285
DEFINITION AND TESTING OF A SATELLITE-TO-USER RANGING AND COMMUNICATION SIGNAL FOR A MARTIAN NAVIGATION SYSTEM
Andrea Manganiello, Argotec, Italy

SCREEN #34

IN-FLIGHT CONNECTIVITY FOR ENHANCED PASSENGER EXPERIENCE
Samrudhi Inamdar, United Kingdom

14:30-14:40  IAC-23/B4/IPB/76942
APPROXIMATION FOR GRAVITATIONAL FIELD OF A SMALL CELESTIAL BODY BY A TRIPLE OF UNIFORM BALLS
Anna Guerman, Centre for Mechanical and Aerospace Science and Technologies (C-MAST), Portugal

SCREEN #35

13:30-13:40  IAC-23/E5/IPB/80342
TECHNICAL PROBE AND RUDIMENTARY ANALYSIS OF THE DIANA LUNAR BASE SITE
Prishit Modi, University of Stuttgart, Germany

13:40-14:00  IAC-23/B5/IPB/76634
TECHNOLOGY, PROBLEMS, AND SOLUTIONS FOR SPACE TRAVEL MEALS AS REPRESENTED BY YAKITORI, GRILLED CHICKEN
Taiko Kawakami, ASTRAX, Inc., Japan

14:00-14:10  IAC-23/C4/IPB/78625
NUMERICAL SIMULATION OF A DETONATION ENGINE
Evgeniya Skryleva, Lomonosov Moscow State University, Russia

14:10-14:20  IAC-23/A6/IPB/77191
SPACECRAFT COMPONENTS DETECTION METHOD BASED ON RANDOMIZED IMAGE ENHANCEMENT
Ai Gao, Beijing Institute of Technology, China

SCREEN #36

13:30-13:40  IAC-23/E1/IPB/80224
THE NEED OF CURRICULUM DESIGN FOR SCHOOL & COLLEGE: AN EMERGING NEED FOR SPACE POPULARIZATION FROM GRASSROOTS LEVEL
Muhammad Aqib Khan, Institute of Space Technology (IST), Pakistan

13:40-14:00  IAC-23/C4/IPB/77285
NUMERICAL SIMULATION OF A DETONATION ENGINE
Evgeniya Skryleva, Lomonosov Moscow State University, Russia
Thursday 5 October 2023

SCREEN #37

14:00-14:10 IAC-23/C1/IPB/79602
SATELLITE CHARACTERIZATION USING THE THEORY OF FUNCTIONAL CONNECTIONS AND NELDER-MEAD ALGORITHM
Allan Kardes de Almeida Junior, Instituto de Telecomunicações (Portugal), Portugal

14:20-14:30 IAC-23/B5/IPB/76191
CLASSIFICATION OF INCOMING RADIO DATA FROM A SOLAR RADIO SPECTROMETER
Aisha Alowais, Sharjah Academy for Astronomy, Space Sciences and Technology (SAAST), United Arab Emirates

14:40-14:50 IAC-23/C2/IPB/77114
CLEANUP ACCURACY ANALYSIS AND METHOD RESEARCH BASED ON MULTI-CLOSED-LOOP TRUSS ANTENNA UNIT
Di Wu, Nanjing University of Aeronautics and Astronautics, China

SCREEN #38

TOWARDS A ROBUST AND EXPLAINABLE RISK-REWARD MULTI-OBJECTIVE DECISION ARCHITECTURE
Gonzalo Montesino Valle, University of Strathclyde / Computer Science, United Kingdom

14:20-14:30 IAC-23/C2/IPB/80417
APPLIED ELECTRIC FIELD ON IMPROVED SMART OPTICAL MATERIAL (SOM), ALUMINUM-DOPED ZINC OXIDE (AZO), CHARACTERIZED BY MODIFIED VARIABLE ANGLE SPECTROSCOPIC ELLIPSMETER (VASE) AND INFRARED (IR) CAMERA FOR SPACE APPLICATIONS - PART II
John Patrick Harris, Norfolk State University, United States

SCREEN #39

13:30-13:40 IAC-23/A6/IPB/78758
TOWARDS AN ALL-ORBIT OPTICAL DATA SERVICE PROVISIONING BASED ON ARIANEGROUP GEOTRACKER SYSTEM
Pyaanet Marine, ArianetGroup SAS, France

14:00-14:10 IAC-23/A1/IPB/79642
ELECTRONIC COMPONENTS FOR ANALOG EVA SPACE SUIT: DESIGN AND PERFORMANCE ANALYSIS.
Arwa Bin tareef, [unlisted], Jordan

SCREEN #40

14:00-14:10 IAC-23/C3/IPB/80736
DETERMINATION OF THERMAL CONTACT RESISTANCE IN THERMO-VACUUM CHAMBER EXPERIMENTS
Václav Lazar, Brno University of Technology, Czech Republic

14:10-14:20 IAC-23/D2/IPB/75568
OPERATION PROCEDURES OF LAUNCH COMPLEX IN NARO SPACE CENTER FOR KSLV-II FLIGHT TEST
Sunil Kang, Korea Aerospace Research Institute (KARI), Korea, Republic of

14:40-14:50 IAC-23/A3/IPB/80744
THE TUMBLEWEED R-SELECTED MARS ROVER SWARM TASKED WITH DEPLOYING MEASUREMENT STATIONS AT SCALE
Matthias Frenzl, Space Forward Lab, Austria

SCREEN #41

SATELLITE AND DRONE IMAGES TO HELP CACAO FARMING IN PERU
Avid Roman-Gonzalez, [unlisted], Peru

13:50-14:00 IAC-23/D1/IPB/76231
AUTOMATED TESTING MODULE PROPOSAL FOR VALIDATING EEE SPACE COTS DEVICES
Avid Roman-Gonzalez, [unlisted], Peru

14:00-14:10 IAC-23/A3/IPB/79521
A ROVER PROPOSAL FOR MOON EXPLORATION DESIGNED AT UNTELS
Avid Roman-Gonzalez, [unlisted], Peru

14:10-14:20 IAC-23/E1/IPB/79894
AEROSPACE SCIENCE & HEALTH RESEARCH LABORATORY (INCAS-LAB) AS A TOOL FOR EDUCATION AND OUTREACH TASKS
Avid Roman-Gonzalez, [unlisted], Peru

14:20-14:30 IAC-23/B4/IPB/79944
PROPOSAL FOR A NATIONAL PROGRAM FOR THE INCURSION INTO THE SPACE INDUSTRY FOR DEVELOPING COUNTRIES
Avid Roman-Gonzalez, [unlisted], Peru

14:30-14:40 IAC-23/E1/IPB/78196
FIRST UNDERGRADUATE COURSE ON SPACE SYSTEMS IN PERUVIAN UNIVERSITIES
Avid Roman-Gonzalez, [unlisted], Peru

14:40-14:50 IAC-23/B1/IPB/79402
PROPOSAL FOR A SATELLITE, DRONE AND GROUND SENSOR INFORMATION FUSION APPLIED TO PUBLIC HEALTH
Avid Roman-Gonzalez, Image Processing Research Laboratory (INTI-Lab), Universidad de Ciencias y Humanidades - UCH, Peru

SCREEN #42

14:00-14:10 IAC-23/C1/IPB/78360
DETERMINATION OF THERMAL CONTACT RESISTANCE IN THERMO-VACUUM CHAMBER EXPERIMENTS
Václav Lazar, Brno University of Technology, Czech Republic

14:10-14:20 IAC-23/D2/IPB/75568
OPERATION PROCEDURES OF LAUNCH COMPLEX IN NARO SPACE CENTER FOR KSLV-II FLIGHT TEST
Sunil Kang, Korea Aerospace Research Institute (KARI), Korea, Republic of

14:40-14:50 IAC-23/A3/IPB/80744
THE TUMBLEWEED R-SELECTED MARS ROVER SWARM TASKED WITH DEPLOYING MEASUREMENT STATIONS AT SCALE
Matthias Frenzl, Space Forward Lab, Austria

SCREEN #43

13:30-13:40 IAC-23/C2/IPB/78292
TESTING OF METALGLASS THROUGH A COMPLIANT MECHANISM
Laura Guadalupe Guajardo Villarreal, Universidad Autonoma de Nuevo Leon, Mexico

13:50-14:00 IAC-23/E1/IPB/79517
ANALYSIS OF THE SCIENTIFIC PRODUCTION IN THE SPACE AREA INDEXED IN THE SCOPUS DATABASE IN SOUTH AMERICA
Natalia Indira Vargas-Cuentas, Image Processing Research Laboratory (INTI-Lab). Universidad de Ciencias y Humanidades - UCH, Peru

14:00-14:10 IAC-23/E5/IPB/79433
SATELLITE-BASED AIR POLLUTION MONITORING IN BOLIVIA DURING THE QUARantine OF COVID-19
Natalia Indira Vargas-Cuentas, Image Processing Research Laboratory (INTI-Lab). Universidad de Ciencias y Humanidades - UCH, Peru

SCREEN #44

SATELLITE AND DRONE IMAGES TO HELP CACAO FARMING IN PERU
Avid Roman-Gonzalez, [unlisted], Peru

13:50-14:00 IAC-23/D1/IPB/76231
AUTOMATED TESTING MODULE PROPOSAL FOR VALIDATING EEE SPACE COTS DEVICES
Avid Roman-Gonzalez, [unlisted], Peru

14:00-14:10 IAC-23/A3/IPB/79521
A ROVER PROPOSAL FOR MOON EXPLORATION DESIGNED AT UNTELS
Avid Roman-Gonzalez, [unlisted], Peru

14:10-14:20 IAC-23/E1/IPB/79894
AEROSPACE SCIENCE & HEALTH RESEARCH LABORATORY (INCAS-LAB) AS A TOOL FOR EDUCATION AND OUTREACH TASKS
Avid Roman-Gonzalez, [unlisted], Peru

14:20-14:30 IAC-23/B4/IPB/79944
PROPOSAL FOR A NATIONAL PROGRAM FOR THE INCURSION INTO THE SPACE INDUSTRY FOR DEVELOPING COUNTRIES
Avid Roman-Gonzalez, [unlisted], Peru

14:30-14:40 IAC-23/E1/IPB/78196
FIRST UNDERGRADUATE COURSE ON SPACE SYSTEMS IN PERUVIAN UNIVERSITIES
Avid Roman-Gonzalez, [unlisted], Peru

14:40-14:50 IAC-23/B1/IPB/79402
PROPOSAL FOR A SATELLITE, DRONE AND GROUND SENSOR INFORMATION FUSION APPLIED TO PUBLIC HEALTH
Avid Roman-Gonzalez, Image Processing Research Laboratory (INTI-Lab), Universidad de Ciencias y Humanidades - UCH, Peru

SCREEN #45

13:30-13:40 IAC-23/C2/IPB/78292
TESTING OF METALGLASS THROUGH A COMPLIANT MECHANISM
Laura Guadalupe Guajardo Villarreal, Universidad Autonoma de Nuevo Leon, Mexico

13:50-14:00 IAC-23/E1/IPB/79517
ANALYSIS OF THE SCIENTIFIC PRODUCTION IN THE SPACE AREA INDEXED IN THE SCOPUS DATABASE IN SOUTH AMERICA
Natalia Indira Vargas-Cuentas, Image Processing Research Laboratory (INTI-Lab). Universidad de Ciencias y Humanidades - UCH, Peru

14:00-14:10 IAC-23/E5/IPB/79433
SATELLITE-BASED AIR POLLUTION MONITORING IN BOLIVIA DURING THE QUARantine OF COVID-19
Natalia Indira Vargas-Cuentas, Image Processing Research Laboratory (INTI-Lab). Universidad de Ciencias y Humanidades - UCH, Peru

SCREEN #46

13:30-13:40 IAC-23/C1/IPB/78049
DISTRIBUTED COOPERATIVE SPACECRAFT SURROUNDING CONTROL WITH INPUT SATURATION AND COLLISION AVOIDANCE
Yanning Guo, Nanjing University of Aeronautics and Astronautics, China

H-ADAPTATIVE PSEUDOSPECTRAL CONVEX OPTIMIZATION FOR MARS PINPOINT LANDING
Pyanet Marine, ArianeGroup SAS, France

SCREEN #47

14:00-14:10 IAC-23/C2/IPB/78360
DETERMINATION OF THERMAL CONTACT RESISTANCE IN THERMO-VACUUM CHAMBER EXPERIMENTS
Václav Lazar, Brno University of Technology, Czech Republic

14:10-14:20 IAC-23/D2/IPB/75568
OPERATION PROCEDURES OF LAUNCH COMPLEX IN NARO SPACE CENTER FOR KSLV-II FLIGHT TEST
Sunil Kang, Korea Aerospace Research Institute (KARI), Korea, Republic of

14:40-14:50 IAC-23/A3/IPB/80744
THE TUMBLEWEED R-SELECTED MARS ROVER SWARM TASKED WITH DEPLOYING MEASUREMENT STATIONS AT SCALE
Matthias Frenzl, Space Forward Lab, Austria
Thursday 5 October 2023

13:30-13:40  IAC-23/C1/IPB/79590  
TWO-IMPULSE ORBITAL TRANSFER BASED ON THE SOLUTION OF LAMBERT PROBLEM WITH OPTIMAL FLIGHT TIME  
Vadim Kravchenko, Research Institute of Applied Mechanics and Electrodynamics (RIAME), MAI, Russian Federation

14:00-14:10  IAC-23/B1/IPB/75748  
ASSESSING THE IMPACT OF ILLEGAL BUILDINGS USING HIGH-RESOLUTION SATELLITE IMAGERY  
Gumru Sharafkhanova, NASA, Azerbaijan

14:40-14:50  IAC-23/E1/IPB/79125  
ENABLING SPACE WORKFORCE DEVELOPMENT THROUGH SYSTEMS THINKING  
Grecia Olano O’Brien, Concordia University, Canada

SCREEN #48

PIVOTING STRATEGIES IN THE SPACE ECONOMY: A MULTIPLE CASE STUDY APPROACH  
Claudio Loporcaro, Politecnico di Bari, Italy

14:00-14:10  IAC-23/C1/IPB/77475  
MISSION TO THE TRANS-NEPTUNIAN OBJECT SEDNA: A POSSIBLE NEXT STEP OF HUMANITY TOWARDS STARS  
Andrey Belyaev, Bauman Moscow State Technical University, Russian Federation

SCREEN #49

CONJUNCTION ASSESSMENT OF LEO SATELLITE FOR FUTURE SPACE TRAFFIC MANAGEMENT  
Okchul Jung, Korea Aerospace Research Institute (KARI), Korea, Republic of

14:00-14:10  IAC-23/D2/IPB/79355  
DISTRIBUTED DATA ACQUISITION ARCHITECTURE WITH PRECISE TIME SYNCHRONIZATION FOR CONTROL AND MONITORING PROCESS PARAMETERS DURING STRUCTURAL TESTING OF CRYOGENIC PROPELLANT TANKS  
Chippy V, ISRO Propulsion Complex, Mahendragiri, India, India

14:40-14:50  IAC-23/A6/IPB/78715  
MANEUVERING DETECTION OF SPACE NON-COOPERATIVE TARGETS BASED ON TIME SEQUENCE INFORMATION  
Shaotian Gao, Northwestern Polytechnical University, China

SCREEN #50

TOWARDS AN AUTONOMOUS MICRO ROVER WITH NIGHT SURVIVABILITY FOR LUNAR EXPLORATION  
Adam Dabrowski, DFKI GmbH, Robotics Innovation Center, Germany
6 Technical Papers by Symposium

Technical Papers as of September 2023.
Please check the IAF App to get the latest updates on the Technical Papers.

A1. IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM

Co-ordinator(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;


October 2 2023, 15:15 — BCC B6
Co-Chair(s): Gro M. Sandal, University of Bergen, Norway; Floris Wuyts, University of Antwerp, Belgium;
IAC-23.A1.1.1 (unconfirmed)
PROCESS-BASED COGNITIVE BEHAVIOURAL INTERVENTIONS FOR ENHANCING THE PERFORMANCE, MENTAL HEALTH, TEAM COHESION AND AUTONOMY OF THE ANALOG ASTRONAUTS, FLIGHT CONTROLLERS AND SUPPORT STAFF IN THE AMADEE20 MISSION SIMULATION.
Karoly Schlosser, Institute of Management Studies, Goldsmiths, United Kingdom
IAC-23.A1.1.2
CROSSING BOUNDARIES IN SPACE EXPLoration MULTITEAM SYSTEMS: INSIGHTS FROM SIRIUS-21 MISSION
Noshir Contractor, Northwestern University, United States
IAC-23.A1.1.3
HUMAN FACTORS & PSYCHOLOGY STUDY IN EMMiHS MOONBASE CAMPAIGNS
Celio Avela-Rauch, ILEWG "EuroMoonMars", Germany

A1.2. Human Physiology in Space

October 3 2023, 10:15 — BCC B6
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;
Rapporteure(s): Alain Mailllet, MEDES - IMPS, France; Angelique Van Ombergen, European Space Agency (ESA), The Netherlands;
IAC-23.A1.1.2.1
A 5-DAY “DRY” IMMERSION: INFLUENCE ON THE REPRODUCTIVE SYSTEM OF WOMEN
Elena Gorbocheva, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation
IAC-23.A1.1.2.2
ADAPTIVE CHANGES IN HEART RATE VARIABILITY AND CARDIAC FUNCTION DURING LONG-TERM SPACEFLIGHT: INSIGHTS FROM WEARABLE DEVICES
Paniz Balali, Université Libre de Bruxelles, Belgium
IAC-23.A1.1.2.4
THE RUSSIAN SYSTEM OF COUNTERMEASURE TO NEGATIVE EFFECTS OF WEIGHTLESSNESS PROVIDES A SUFFICIENT LEVEL OF PERFORMANCE FOR A MARTIAN EXPEDITION
Elena Fomina, State Scientific Center of Russian Federation, Institute of Biomedical Problems, Russian Academy of Sciences, Russian Federation
IAC-23.A1.1.2.5
CORRELATION OF CHANGES IN AORTIC STIFFNESS WITH OTHER PARAMETERS OF CARDIOVASCULAR HEALTH AFTER 60-DAY HEAD-DOWN BED REST
Jeremy Rabineau, Université Libre de Bruxelles, Belgium
IAC-23.A1.1.2.6 (unconfirmed)
EVALUATION OF THE EFFECT OF 21-DAY HEAD-DOWN BED REST ON THE CARDIOVASCULAR SYSTEM BY BLOOD PROTEIN COMPOSITION, INCLUDING MARKERS SST2, NT-PROBNP AND D-DIMER
Daria Kashirina, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation
IAC-23.A1.1.2.7
INTERPLAY OF MIRNAS AND DIFFERENTIALLY EXPRESSED GENES IN THE PSYCHOPATHOLOGY OF DEPRESSION UNDER SIMULATED COMPLEX SPACE ENVIRONMENT
Madiha Rasheed, Beijing Institute of Technology (BIT), China
IAC-23.A1.1.2.8
LONG-TERM ANALYSIS OF ELECTRO-MECHANICAL ACTIVITY DURING THE TWO ANALOG LUNAR MISSIONS EMMPOL 10 AND EMMPOL 11
Sarah Solbiati, Politecnico di Milano, Italy
IAC-23.A1.1.2.10
THE NEBULA PROJECT: EFFECT OF PREFLIGHT ENDURANCE AND RESISTANCE TRAINING AS A COUNTERMEASURE AGAINST MICROGRAVITY-INDUCED MUSCULOSKELETAL DECONDITIONING
Margot Issertine, University of Montpellier, France
IAC-23.A1.1.2.11 (unconfirmed)
THE VARIABILITY OF URINE PROTEOME AND COUPLED BIOCHEMICAL BLOOD INDICATORS IN COSMONAUTS WITH DIFFERENT PREFLIGHT AUTONOMIC STATUS
Luidmila Pastushkova, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation
IAC-23.A1.1.2.12 (unconfirmed)
PFEZ201 CHANNEL ACT AS A SPACE ENVIRONMENT
Yanan Zhang, Institute of Modern Physics, Chinese Academy of Sciences, China
### A1.3. Medical Care for Humans in Space

**October 3 2023, 15:00 — BCC B6**

**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): Hasen Birol Cotuk, Türkiye; Katrin Stang, DLR (German Aerospace Center), Germany;

**IAC-23.A1.3.1**
**NEW EXTRAVEHICULAR ACTIVITY’S SPACESUIT DESIGN TO ALLOW ACCESS TO EMERGENCY MEDICATIONS**
Carla Tamai, International Space University, France

**IAC-23.A1.3.2**
**DOES SEX INFLUENCE CARDIOVASCULAR AND AUTONOMIC RESPONSES TO CENTRAL HYPOVOLAEMIA?**
Nandu Goswami, Medical University of Graz, Austria

**IAC-23.A1.3.3**
**FAR INFRARED (FIR) RAY-EMITTING GARMENTS TO MITIGATE MUSCLE LOSS ONBOARD THE INTERNATIONAL SPACE STATION (ISS)**
Aya Hesham, Sigma Fit, United States

**IAC-23.A1.3.4**
**FEDERATED LEARNING FOR SPACE MEDICINE RESEARCH AND ITS APPLICATION FOR SPACEFLIGHT ASSOCIATED NEURO-OCCULAR SYNDROME (SANS)**
Scott Ritter, University of Bern, Switzerland

**IAC-23.A1.3.5**
**3D PRINTED BIOMIMETIC SCAFFOLDS FOR BONE-CELLS MICROGRAVITY RESPONSE**
Elenora Zenobi, Fondazione E. Amaldi, Italy

**IAC-23.A1.3.6**
**AGING AND PUTATIVE FRAILTY BIOMARKERS ARE ALTERED BY SPACEFLIGHT**
Fathi Karouia, National Aeronautics and Space Administration (NASA), Ames Research Center / UCSF, United States

**IAC-23.A1.3.7**
**HEALING OF EX VIVO SUTURED WOUND MODELS IN HUMAN TISSUES EXPOSED TO SPACEFLIGHT**
Monica Monici, University of Firenze, Italy

**IAC-23.A1.3.9**
**COMBINED ELECTROMYOSTIMULATION MODE AS A POTENTIAL COUNTERMEASURE FOR FIGHTS TO THE MOON AND BACK**
Alina Saveko, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation

**IAC-23.A1.3.10**
**FACTORS INFLUENCING SURGICAL PROCEDURES IN SPACEFLIGHT ENVIRONMENTS**
KangSan Kim, Space Generation Advisory Council (SGAC), Korea, Republic of

**IAC-23.A1.3.13**
**MEASUREMENT SYSTEM OF MYOTUBE MORPHOLOGICAL PARAMETERS FOR SPACE LIFE EXPERIMENT MISSION ABOUT MUSCLE ATROPHY IN ASTRONAUTS**
Xinyu Wang, Shanghai Engineering Center for Microsatellites, Chinese Academy of Sciences (CAS), China

**IAC-23.A1.3.14**
**STUDY OF THE PLASMA COMPONENT OF THE HEMOSTASIS REGULATION SYSTEM IN HEALTHY SUBJECTS IN THE 240-DAY ISOLATION EXPERIMENT «SIRIUS-21»**
Alexey Kochergin, FSC RF-IMBP, Russian Federation

### A1.4. Medicine in Space and Extreme Environments

**October 4 2023, 15:00 — BCC B6**

**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-23.A1.4.1**
**THE WORLD-CLASS RESEARCH CENTER “THE PAVLO CENTER” - A COOPERATIVE PLATFORM FOR VERIFICATION OF HEALTHCARE TECHNOLOGIES ON THE BASIS OF SPACE MEDICINE ACHIEVEMENTS**
Anna Kussmaul, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation

**IAC-23.A1.4.2** (unconfirmed)
**“BEYOND EARTH: ADVANCEMENTS IN MEDICINE FOR SPACE AND EXTREME ENVIRONMENTS”**
Javidan Mammadov, Azerbaijan

**IAC-23.A1.4.4**
**AN OVERVIEW OF SPACE ANALOGUES IN PORTUGAL**
Joan Alabart, Portugal Space Agency, Portugal

**IAC-23.A1.4.5**
**AN ARTIFICIAL INTELLIGENCE METHOD FOR AUTONOMOUS MONITORING OF THE RETINA FOR MEDICAL APPLICATIONS IN SPACE AND EXTREME ENVIRONMENTS**
Scott Ritter, University of Bern, Switzerland

**IAC-23.A1.4.6**
**BRAIN OXYGENATION MONITORING IN A PARABOLIC FLIGHT USING PORTABLE FUNCTIONAL NEAR-INFRARED SPECTROSCOPY**
Tomas Bothe, Charité Universitätsmedizin Berlin, Germany

**IAC-23.A1.4.7**
**PERIPHERAL COOLING AS A COUNTERMEASURE TO ORTHOSTATIC STRESS DURING PARABOLIC FLIGHT – THE COOLFLY EXPERIMENT**
Jennifer Stang, DLR, Germany

### A1.5. Radiation Fields, Effects and Risks in Human Space Missions

**October 5 2023, 10:15 — BCC B6**

**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-23.A1.5.1**
**FUZZY LOGIC TRIGGER IN THE DISTINCTION OF PIERRE AUGER OBSERVATORY’S SIGNALS FROM NEUTRINO-INDUCED SHOWERS - APPLICATION AND ANALYSIS IN THE STUDY OF ULTRA-HIGH-ENERGY COSMIC RAYS**
Diana Pawlicki, University of Lodz, Poland

**IAC-23.A1.5.2**
**RADIATION FIELDS, EFFECTS, AND RISKS IN HUMAN SPACE MISSIONS**
Debashri Mukherjee, India

**IAC-23.A1.5.3**
**IN-SITU INVESTIGATION OF MARS ATMOSPHERE AND IONIZING RADIATION ENVIRONMENT THROUGH A DISTRIBUTED NETWORK OF TUMBLEWEED MEASUREMENT STATIONS**
Abhimanyu Shanbhag, Team Tumbleweed, The Netherlands
IAC-23.A1.5.4
ARTIFICIAL RADIATION SHIELDING FOR SPACECRAFT - USING REBCO SUPERCONDUCTIVE MATERIAL
Raj krishnan Angusamy, Skyline Space, India

IAC-23.A1.5.5
EXPERIMENTAL ANALYSIS OF H-BNNT/SG/GRAPHENE/EPoxy WITH PHENOLIC RESIN FOR COTS AND SPACESUIT MATERIALS
Sanjeeviroja Thangavel, Singapore, Republic of

IAC-23.A1.5.6
INNOVATIVE SOLUTIONS FOR RADIATION SHIELDING
Eleonora Zenobi, Fondazione E. Amaldi, Italy

IAC-23.A1.5.7
ASSESSMENT OF DOSE-DEPENDENT ENDOCRINE AND IMMUNE RESPONSES TO SIMULATED IONIZING RADIATION
Carol Mitchell, Embry-Riddle Aeronautical University, United States

IAC-23.A1.5.8
SPACE RADIATION INDUCED BYSTANDER EFFECTS IN ESTIMATING THE CARCINOGENIC RISK: THE HEAVY NUCLEI CASE
Alessandro Bartonoli, National Institute of Nuclear Physics - INFN, Italy

IAC-23.A1.5.9
DESIGNING A NEURAL HELMET, MAPPING NEURAL PATTERNS IN AN ASTRONAUT'S BRAIN TO DETECT COGNITIVE PROBLEMS
Akshay Rajeshkhar Hiremath, Space Generation Advisory Council (SGAC), United States

IAC-23.A1.5.10
RADIATION SPECTROMETER HARDPIX
Robert Filgas, Czech Technical University In Prague (CTU), Czech Republic

A1.6. Astrobiology and Exploration

October 5 2023, 15:00 — BCC B6
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; Athena Coustenis, LESIA - Observatoire de Paris, France;
Rapporteur(s): Fathi Karouia, National Aeronautics and Space Administration (NASA), Ames Research Center / UCSF, United States; Tetyana Milojevic, University of Orléans, France;

IAC-23.A1.6.1
SUSTAINABLE EXPLORATION OF GIANT PLANETS’ Icy Moons
Athena Coustenis, LESIA - Observatoire de Paris, France

IAC-23.A1.6.3
EXPLORING THE CO- EVOLUTION OF EARTH-MOON SYSTEM THROUGH LUNAR MINERALOGY AND METEORITE IMPACTS
Akanksha Bhagat, India

IAC-23.A1.6.4
SIMLE STARDUST: HOW AN EXPERIMENT EVOLVED FROM STUDENT TINKERING TO A STRATOSPHERIC RESEARCH PLATFORM
Marcin Jasiukowicz, Gdansk University of Technology, Poland

IAC-23.A1.6.5
A NEW APPROACH FOR THE SEARCH OF BIO-SIGNATURES AND ASSESSMENT OF HABITABILITY ON MARS USING A SWARM OF WIND-DRIVEN MOBILE IMPACTORS
Abhimanyu Shanbhag, Team Tumbleweed, The Netherlands

IAC-23.A1.6.6
PRELIMINARY SCIENTIFIC RESEARCH ON ENZYMATIC ACTIVITY DURING SUBORBITAL ROCKET FLIGHT - AMBER PROJECT
Bartosz Rybicki, Gdansk University of Technology, Poland

A1.7. Life Support, habitats and EVA Systems

October 6 2023, 10:15 — BCC B6
Co-Chair(s): Oliver Opitz, Center for Space Medicine Berlin (ZWMB), Germany; Khalid Badri, Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates; Pierre-Alexis Joumel, Airbus Defence and Space, Germany;
Rapporteur(s): Hong Liu, Beihang University, China; Gisela Detrell, Institute of Space Systems, University of Stuttgart, Germany;

IAC-23.A1.7.1
STUDIES ON MONITORING THE USE OF CLOTHES, UNDERWEAR AND PERSONAL HYGIENE MEANS IN 17-DAYS, 120-DAYS AND 240-DAYS ISOLATION EXPERIMENTS UNDER THE SIRIUS PROJECT
Irina Shumilina, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation

IAC-23.A1.7.2
IRMA PROJECT – STANDARDIZATION OF A MICROBIAL CULTURE ON AGAR MEDIA AND PAYLOAD OPERATIONS FOR MINIMIZING ASTRONAUT’S MANIPULATION RISKS AND OPTIMIZING SAMPLE RETURN.
Camilo Andres Reyes Mantilla, Space Generation Advisory Council (SGAC), Qatar

IAC-23.A1.7.4 (unconfirmed)
CHLORELLA VULGARIS AND EXTREMOPHILE BACILLUS SPP. GROWTH WITH HYDRAZINE
Reut Sorek Abramovich, The Dead Sea-Arava Science Center (DSASC), Israel

IAC-23.A1.7.5
DEVELOPMENT STATUS OF A CARBON DIOXIDE REDUCTION SYSTEM “SPDU” FOR THE ISS
Kogan Ioann, NIICHIMMASH, Russian Federation

IAC-23.A1.7.6
DESIGN AND DEVELOPMENT OF AN AUTONOMOUS CAPILLARY-BASED HYDROPONIC SYSTEM FOR PLANT GROWTH FOR DEEP SPACE MISSIONS
Tanmay Sharma, Dayananda Sagar University, India

IAC-23.A1.7.7
HYGENE WATER PROCESSING ABOARD PROSPECTIVE SPACE STATIONS
Nikolay Salnikov, NIICHIMMASH, Russian Federation

IAC-23.A1.7.8
UMIDE
Umide Macnunlu, Azerbaijan State University of Economics, Azerbaijan

IAC-23.A1.7.9
STRUCTURAL AND ARCHITECTURAL DESIGN OF THE PHAXSI LUNAR ANALOGUE HABITAT IN SALAR DE UYUNI, OVER ENVIRONMENTS SIMILAR TO THE MOON
Bernarda Loretto Sanjines, Universidad Privada Boliviana (UPB), Bolivia

IAC-23.A1.7.10
MEeva. A SMART SYSTEM TO ESTIMATE AND MITIGATE STRESS EFFECTS DURING ANALOGUE ASTRONAUTS EVAS.
Davide Scalettarì, Politecnico di Milano, Italy

IAC-23.A1.7.11
RECONSTRUCT EARTH’S KARST CAVES TO SIMULATE HUMAN LIFE IN EXTRATERRESTRIAL CAVE BASES
Gengxin Xie, Center of Space Exploration, Ministry of Education (COSE), China

IAC-23.A1.7.12
SPACE HABITAT DORMANCY TRANSITIONS: A SIMULATION-BASED INVESTIGATION OF ASSOCIATED CHALLENGES AND DESIGN CONSIDERATIONS
Luca Vaccino, Purdue University, United States

IAC-23.A1.7.13
DISRUPTIVE MATERIAL TECHNOLOGIES TO ADDRESS MICROBIAL HAZARDS FOR SPACE HUMAN EXPLORATION
Eleonora Zenobi, Fondazione E. Amaldi, Italy
A1.8. Biology in Space

October 6 2023, 13:45 — BCC B6

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-23.A1.8.1
DIFFERENTIAL EXPRESSION OF GENES ENCODING ADHESION AND CELL-TO-CELL INTERACTION MOLECULES IN BONE MARROW NICHE UNDER SIMULATED MICROGRAVITY
Danilo Yakubets, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation

IAC-23.A1.8.2
ER STRESS IS ACTIVATED AND INVOLVED IN DISUSE-INDUCED MUSCLE ATROPHY
Xiaoqing Chen, China Astronaut Research and Training Center, China

IAC-23.A1.8.3
LUNAR GRAVITY IS SUFFICIENT TO PREVENT SKELETAL MUSCLE ATROPHY, BUT NOT MUSCLE MYOFIBER TYPE TRANSITION IN MICE.
Takuto HARAYASHI, University of Tsukuba, Japan

IAC-23.A1.8.4
Fathi Karouia, National Aeronautics and Space Administration (NASA), Ames Research Center / UCSF, United States

IAC-23.A1.8.5
REPAIR OF RADIATION INDUCED DNA DAMAGE IN SPACE - PREPARATION OF THE BIOLAB EXPERIMENT LUX-IN-SPACE

Pietro Rettberg, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

IAC-23.A1.8.6
INNOVATIVE ANTIOXIDANT THERAPIES FOR SPACE MEDICINE
Gianni Ciofani, Istituto Italiano di Tecnologia, Italy

A2. IAF MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM

Vice-Co-Chair(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

October 2 2023, 15:15 — BCC B7

Co-Chair(s): Gabriel Pont, Centre National d’Etudes Spatiales (CNES), France; Nickolay N. Smirnov, Lomonosov Moscow State University, Russian Federation;

IAC-23.A2.1.1
ACES: THE CLOCKS ABOVE AND BEYOND. IN-FLIGHT CALIBRATION
Michele Armano, ESA - European Space Agency, The Netherlands

IAC-23.A2.1.2
ATOMIC CLOCKS AND PLASMA CRYSTALS: ADVANCEMENTS IN TIMEKEEPING AND FUNDAMENTAL PHYSICS
Debarshi Mukherjee, India

IAC-23.A2.1.3
PLASMA CRYSTALS TO STUDY MICROGRAVITY EFFECTS AND THEIR POTENTIAL APPLICATIONS IN SPACE EXPLORATION
Sharry Kapoor, India

IAC-23.A2.1.4
NUMERICAL STUDY OF GRAVITATIONAL WAVE BEHAVIOR AMONG A SYSTEM OF MASSES
Abhay Kaushik Nudurupati, University of Petroleum and Energy Studies, India

IAC-23.A2.1.5
AN UPDATED FORMALISM FOR DEGRADATION OF NEUTRON STAR’S MAGNETIC FIELD.
Sonu Yadav, India

IAC-23.A2.1.6
QUANTUM ENTANGLEMENT AND COSMIC INFLATION: THE POTENTIAL OF A MULTIVERSE
HUDA MOHAMMAD, Jain University, India

IAC-23.A2.1.8 (unconfirmed)
THE THEORY OF THE ORIGIN OF THE COSMIC VACUUM AND ITS ENERGY, MATTER AND ANTIMATTER
Sabir Mammadov, Azerbaijan

A2.2. Fluid and Materials Sciences

October 4 2023, 10:15 — BCC B7

Co-Chair(s): Nickolay N. Smirnov, Lomonosov Moscow State University, Russian Federation; Antonio Viviani, Università degli Studi della Campania “Luigi Vanvitelli”, Italy;

IAC-23.A2.2.1
KEYNOTE: INVESTIGATION OF THE FLUIDS BEHAVIOR UNDER MICROGRAVITY CONDITIONS: CONDUCTING EXPERIMENTS, MATHEMATICAL MODELING AND NUMERICAL SIMULATIONS
Evgeniya Skryleva, Lomonosov Moscow State University, Russian Federation

IAC-23.A2.2.2 (unconfirmed)
INVESTIGATION OF PRESSURE DRIVEN MICROFLUIDIC FLOW IN MICROGRAVITY
Sanat Hegde, R V College of Engineering, Bengaluru, India

IAC-23.A2.2.3
INERTIAL MICROFLUIDIC MIXER FOR BIOLOGICAL CUBESATS MISSIONS
Adrianna Graja, Wroclaw University of Science and Technology, Poland
A2.3. Microgravity Experiments from Sub-Orbital to Orbital Platforms

October 4 2023, 15:00 — BCC B7

Co-Chair(s): Remi Canton, Centre National d’Etudes Spatiales (CNES), France; Evgeniya Skryleva, Lomonosov Moscow State University, Russian Federation;

IAC-23.A2.3.1
IOSLAB – IN ORBIT SERVICING LABORATORY FOR MICROGRAVITY EXPERIMENTS ON SPACE RIDER. USE CASES FOR SPACE BIOLOGY, NANOTECHNOLOGY AND TECHNOLOGY DEMONSTRATION.
Inna Uwarowa, S.A.B. Aerospace Srl, Czech Republic

IAC-23.A2.3.2
SUBORBITAL EXPRESS – SOUNDING ROCKET RIDE SHARE AT ITS BEST
Stefan Krämer, Swedish Space Corporation, Sweden

IAC-23.A2.3.3
MUSA SUBORBITAL FLIGHT: A MICROGRAVITY EXPERIMENT ON BOARD OF THE SUBORBITAL EXPRESS 3 OF THE SWEDISH SPACE CORPORATION TO VALIDATE THE CRITICAL SYSTEMS FOR A DUAL CULTURE IN SPACE OF TRICHODERMA HARZIANUM AND THE PANAMA DISEASE FUNGUS
Mauricio Rodríguez, Orbital Space Technologies, Costa Rica

IAC-23.A2.3.4
MANUFACTURING FIBER-REINFORCED COMPOSITES IN MICROGRAVITY
Lars Klingenstein, Experimental Raumfahrt-Interessen Gemeinschaft e.V., Germany

IAC-23.A2.3.5
CONCURRENT FLAME PROPAGATION OVER THE BURNING MATERIAL IN MICROGRAVITY
Lyuben Stamov, Scientific Research Institute for System Analysis, Russian Academy of Sciences (RAS), Russian Federation

IAC-23.A2.3.6
DROPPING KNOWLEDGE ON SPACE TRIBOLOGY: INSIGHTS INTO THE EFFECTS OF MICROGRAVITY ON SOLID LUBRICANTS FROM THE BREMEN TOWER DROP EXPERIMENT
Szymon Krawczuk, Gdańsk University of Technology, Poland

IAC-23.A2.3.7
STUDENT-LED SPACECRAFT: THE EDUCATIONAL VALUE OF EMPOWERING STUDENTS TO DEVELOP SPACE RESEARCH PAYLOADS
Owen Marr, SEDS, United States

IAC-23.A2.3.8
DROPWISE CONDENSATION IN MICROGRAVITY: DROPLET REMOVAL BY A SHEARING AIRFLOW
Alidad Amirfazli, York University, Canada

October 5 2023, 10:15 — BCC B7

Co-Chair(s): Nickolay N. Smirnov, Lomonosov Moscow State University, Russian Federation; Antonio Viviani, Università degli Studi della Campania “Luigi Vanvitelli”, Italy;

IAC-23.A2.4.1
A NUMERICAL ANALYSIS IN HYBRID CONTINUUM-MOLECULAR DYNAMICS OF MICROFLUIDIC FLOWS THROUGH FLUIDIC CARD GEOMETRIES
Vishal Hugar, R V College of Engineering, Bengaluru, India

IAC-23.A2.4.2
A NUMERICAL ANALYSIS OF THE XYLEM FLOW BIO-MIMIC BUBBLE REMOVAL TECHNIQUE
Shivayya Hiremath, R V College of Engineering, Bengaluru, India

IAC-23.A2.4.3
NUMERICAL SIMULATION OF SMALL FRAGMENT HYPERVERLOCITY IMPACT AGAINST FLUID FILLED ELEMENT IN THREE-MATERIAL STATEMENT
Lyuben Stamov, Scientific Research Institute for System Analysis, Russian Academy of Sciences (RAS), Russian Federation

IAC-23.A2.4.4
PREDICTION OF PERFORMANCE OF MESH PHASE SEPARATORS IN GEO SATELLITE CAPILLARY INTAKE DEVICES
Oleksandr Minai, Yuzhnoye State Design Office, Ukraine

IAC-23.A2.4.5
DEVELOPMENT OF MICROGRAVITY SIMULATOR AND ITS WORKING ALGORITHM
Shubham Das, R V College of Engineering, Bengaluru, India

IAC-23.A2.4.6
SIMULATED MICROGRAVITY INHIBITS VINCULIN EXPRESSION, INTENSIFYING MYOCARDIAL REMODELING AND HEART FAILURE
Mikhail Popov, Vladimirsky Moscow Regional Clinical Research Institute, Russian Federation

IAC-23.A2.4.7
DIFFERENTIAL CELLULAR RESPONSES AND PHYSIOLOGICAL EFFECTS OF CANCER CELLS TO SIMULATED MICROGRAVITY
Alisa Sokolovskaya, Research Institute of General Pathology and Pathophysiology / Russian Academy of Medical Sciences, Russian Federation

IAC-23.A2.4.8
THE BENEFITS OF GRAVITY FIELDS VARIATION ON FLUIDS AND MATERIALS: THE REVIEW
Ivy Mayor, Sweden

IAC-23.A2.4.9
OPTIMIZING SOYBEAN PRODUCTION WITH GROUND SENSOR TERMINAL-BASED MONITORING SYSTEM
Raihana Shams Islam Antara, BRAC University, Bangladesh
A2.5. Facilities and Operations of Microgravity Experiments

October 5 2023, 15:00 — BCC B7
Co-Chair(s): Evgeniya Skryleva, Lomonosov Moscow State University, Russian Federation; Remi Canton, Centre National d’Études Spatiales (CNES), France;

IAC-23.A2.5.1
TOWARDS A GROUND-BASED PARTIAL-GRAVITY PLATFORM AND BIG SCIENTIFIC DATA WITH THE GRAVITOWER BREMEN PRO
Merle Cornelius, ZARM Fab GmbH, Germany

IAC-23.A2.5.2
OPTIMAL DESIGN OF AN AIRBAG SYSTEM AS A CAPSULE DECELERATOR FOR LOW GRAVITY EXPERIMENT IN KOREA DROP TOWER
Youngsuk Jung, Korea Aerospace Research Institute (KARI), Korea, Republic of

IAC-23.A2.5.5 (unconfirmed)
DEVELOPING SPACELAB – A MINIATURISED AUTOMATED LABORATORY – FOR 2D AND 3D CELL CULTURES
Katie King, United Kingdom

IAC-23.A2.5.6
TRANSCRIPTOMIC RESPONSE OF BIOENGINEERED HUMAN CARTILAGE TO PARABOLIC FLIGHT MICROGRAVITY IS SEX DEPENDENT
Shankar Jha, University of Alberta, Canada

IAC-23.A2.5.7
MINI FLUORESCENCE MICROSCOPE: PROTOTYPE RESULTS AND FURTHER DEVELOPMENT
KLiira Tiensuu, Aboa Space Research Oy, Finland

IAC-23.A2.5.8
SPACE INNOVATION LABS: BRIDGING THE GAP BETWEEN EARTH, SPACE AND THE METAVERSE
Camilo Andres Reyes Mantilla, Space Generation Advisory Council (SGAC), Qatar

IAC-23.A2.5.9
DEVELOPMENT OF ASTRAX ZERO GRAVITY AIRCRAFT EDUCATION AND TRAINING SIMULATOR
Taichi Yamazaki, ASTRAX, Inc., Japan

A2.6. Microgravity Sciences on board of Space stations

October 6 2023, 10:15 — BCC B7
Co-Chair(s): Antonio Viviani, Università degli Studi della Campania “Luigi Vanvitelli”, Italy;

IAC-23.A2.6.1
MISSION MINERVA: THE ITALIAN SPACE AGENCY EXPERIMENTS OVERVIEW
Luca Di Fino, ASI - Italian Space Agency, Italy

IAC-23.A2.6.3
OPPORTUNITIES FOR MICROGRAVITY AND HYPERGRAVITY EXPERIMENTS UNDER THE UNITED NATIONS ACCESS TO SPACE FOR ALL INITIATIVE: ACHIEVEMENTS IN 2022-2023
Hazuki Mori, United Nations Office for Outer Space Affairs, Austria

IAC-23.A2.6.4
MICROGRAVITY AS A SERVICE AND ITS ROLE ON DEMOCRATIZING THE ACCESS TO SPACE
Olivia Borgue, Luxembourg

IAC-23.A2.6.5
PROJECT DAEDALUS: REVIEW OF THE DESIGN FOR THE CHALLENGE “A COMMON RESTRAINT AND MOBILITY AID SYSTEM MULTIPLE GRAVITY ENVIRONMENTS”
Guadalupe Zapata Castro, Instituto Politécnico Nacional, Mexico

IAC-23.A2.6.7
DATA GENERATION FOR SPACE DEBRIS ATTITUDE SIMULATION USING GLIDER PARABOLIC FLIGHT
Mohammad Iranmanesh, LIDE, Belgium

IAC-23.A2.6.8
AN OBSERVATIONAL CASE STUDY ON THE RESPONSE OF INSULIN-DEPENDENT DIABETES MELLITUS TO ALTERED GRAVITY CONDITIONS IN A HUMAN TEST SUBJECT
Andrew Ross Wilson, University of Strathclyde, United Kingdom

A2.7. Life and Physical Sciences under reduced Gravity

October 6 2023, 13:45 — BCC B7
Co-Chair(s): Remi Canton, Centre National d’Études Spatiales (CNES), France;

IAC-23.A2.7.1
VGM – A NOVEL CENTRIFUGE FOR PARTIAL GRAVITY EXPERIMENTS AND CELL SEEDING IN MICROGRAVITY
Tobias Niederwieser, University of Colorado Boulder, United States

IAC-23.A2.7.2
PAYLOAD PROPOSAL FOR EVALUATING THE EFFECT OF HYPERGRAVITY/MICROGRAVITY ON ANTIBIOTIC RESISTANCE
Avid Roman-Gonzalez, Business on Engineering and Technology S.A.C. (BE Tech), Peru

IAC-23.A2.7.3
PHARMACEUTICAL EXCIPIENT INGREDIENT STABILITY IN MICROGRAVITY CONDITIONS, PACKING AND STORING RECOMMENDATIONS IN DEEP SPACE MISSIONS
Sudarshan Pattrikukarni, Sri Jayachamarajendra College of Engineering, India

IAC-23.A2.7.4
CHALLENGES OF SURGICAL PROCEDURES IN REDUCED GRAVITY ENVIRONMENTS AND POTENTIAL SOLUTIONS UTILIZING ROBOTIC AND ARTIFICIAL INTELLIGENCE TOOLS
KangSan Kim, Space Generation Advisory Council (SGAC), Korea, Republic of

IAC-23.A2.7.5 (unconfirmed)
MANIPULATION OF BLOOD CIRCULATION BY EXTERNAL MAGNETIC FIELDS AND MAGNETIC NANOPARTICLES UNDER ZERO GRAVITY CONDITIONS
Kaan Vuštšihada, Azerbaijan

IAC-23.A2.7.6
CELLULAR RESPONSE IN THREE-DIMENSIONAL (3D) MICROENVIRONMENTS/CONSTRUCTS UNDER MICROGRAVITY
Daan Van Den Nieuwenhof, Radboud University Nijmegen, The Netherlands

IAC-23.A2.7.7
LIFE AND PHYSICAL SCIENCES UNDER REDUCED GRAVITY A DETAILED REVIEW
Akshat Mohite, India

IAC-23.A2.7.8
THE IMPACT OF MICROGRAVITY TO HUMAN BODY
Pervin Sharifzade, Azerbaijan State Pedagogical University (ASPU), Azerbaijan

IAC-23.A2.7.9
MICROGRAVITY AND ITS EFFECTS ON SLEEP AND PHYSICAL WELL-BEING ON LONG TERM SPACE MISSIONS
Astrid Juarez, Universidad Nacional Autónoma de México (UNAM), Mexico

IAC-23.A2.7.10
SPACEBIOMIMICRY: EVOLVING OCEANIC ORGANISMS IN SPACE FOR MIMICKING THEIR ADAPTATIONS FOR DEVELOPING NOVEL STRUCTURAL AND CONTROL SYSTEM
Riyabrata Mondal, TU Bergakademie Freiberg (TUBAF), Germany
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

October 2 2023, 15:15 — BCC B3
Co-Chair(s): Kathy Laurini, Osare Space Consulting Group, United States; Keyur Patel, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States; Rapporteur(s): Norbert Frischaufl, TU Graz, Austria; Masaki Fujimoto, Japan Aerospace Exploration Agency (JAXA), Japan;

IAC-23.A3.1.1
NASA’S MOON TO MARS ARCHITECTURE UPDATES
Nujoud Merancy, National Aeronautics and Space Administration (NASA), United States

IAC-23.A3.1.2
A PERSPECTIVE FROM THE NEXT GENERATION: BUILDING A SUSTAINABLE, DIVERSE AND INCLUSIVE FUTURE FOR SPACE EXPLORATION
Emanuele Tomassi, Politecnico di Milano, Italy

IAC-23.A3.1.3
THE RISE OF THE LUNAR ECONOMY: COMMERCIAL APPLICATIONS ENABLED BY LUNAR COMMUNICATION AND NAVIGATION
Christian Walter, European Space Agency (ESA), United Kingdom

IAC-23.A3.1.4
COSPAR PLANETARY PROTECTION POLICY: RECENT ADVANCES
Athena Coustenis, LESIA - Observatoire de Paris, France

IAC-23.A3.1.8
CHASM: FOSTERING COLLABORATION AND RESEARCH ON EARTH FOR SPACE EXPLORATION WITH SPACE ANALOGUES
Eleanore Poll, University of Cambridge, Switzerland

IAC-23.A3.1.9
SUSTAINABILITY PRINCIPLES FOR SPACE OPERATIONS ACROSS THE CENTURY
Antonio Stark, United States

IAC-23.A3.1.10
ROBOTICS IN SPACE: A REVIEW
Jahnvi Danger, Lovely Professional University, India

IAC-23.A3.1.11
SPACE SCIENCE AND EXPLORATION IN ASIA PACIFIC: A COMPREHENSIVE REVIEW
Kaylee Li, Space Generation Advisory Council (SGAC), Australia

A3.2A. Moon Exploration – Part 1

October 3 2023, 10:15 — BCC B3
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 Jomuel, Airbus Defence and Space, Germany; Nadeem Ghafoor, Avalon Space, Canada;

IAC-23.A3.2A.1
SCIENCE HIGHLIGHTS OF KPLO GAMMA-RAY SPECTROMETER IN CRUISE AND THE LUNAR ORBIT
Kyeong Ja Kim, Korea Institute of Geoscience and Mineral Resources, Korea, Republic of

IAC-23.A3.2A.2
FROM QUEQIAO TO QUEQIAO-2: THE SUSTAINABLE DEVELOPMENT OF CHINESE LUNAR RELAY COMMUNICATIONS SATELLITE
Lihua Zhang, DFH Satellite Co., Ltd., China

IAC-23.A3.2A.3
VIPER: SYSTEMS INTEGRATION STATUS
Daniel Andrews, National Aeronautics and Space Administration (NASA), United States

IAC-23.A3.2A.4
ISRO’S LUNAR MISSIONS AND THE FUTURE IMPACT OF CHANDRAYAAN-3 ON THE INDIAN SPACE INDUSTRY
Darpan Byabhatri, R V College of Engineering, Bengaluru, India

IAC-23.A3.2A.5
PROJECT STATUS ON LUNAR POLAR EXPLORATION (LUPEX) MISSION
Hiroyasu Mizuno, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-23.A3.2A.6 (unconfirmed)
RUSSIAN PROGRAM OF LUNAR INVESTIGATIONS AND EXPLORATION
Lev Zelenyi, Space Research Institute (IKI), RAS, Russian Federation

IAC-23.A3.2A.7
SYNTHESIS OF PARALLEL STRUCTURE MOON ROVER
Javad Samadzade, National Aviation Academy - Azerbaijan, Azerbaijan

IAC-23.A3.2A.8
TAIWAN’S LUNAR PAYLOAD DEVELOPMENT FOR LUNAR EXPLORATION
Shin-Fa Lin, National Space Organization, Taipei

IAC-23.A3.2A.9
LUNAR GEOLOGY ORBITER: UPDATE ON MISSION DEFINITION AND STUDY PROGRESS
Petr Bohacek, TRL Space, Czech Republic

IAC-23.A3.2A.10
EURO2MOON: LEVERAGING LUNAR RESOURCES EXPLORATION TO FOSTER INTERNATIONAL COLLABORATION AND BENEFIT SUSTAINABILITY IN SPACE AND EARTH
Pierre-Alexis Jomuel, Airbus Defence and Space, Germany

IAC-23.A3.2A.11
JAXA’S ROADMAP AND CONCEPTS OF FUTURE LUNAR LANDING MISSIONS
Masaru Koga, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-23.A3.2A.12
A MULTI-ROBOT LUNAR AREA COVERAGE METHOD BASED ON REINFORCEMENT LEARNING
Qiming Liang, National Key Laboratory of Aerospace Flight Dynamics, Northwestern Polytechnical University, China

IAC-23.A3.2A.13
OFFWORLD’S CESLESTIAL AND TERRESTRIAL SWARM ROBOTIC AND ISR SYSTEM
Kyle Acierno, ispace, inc., Luxembourg

A3.2B. Moon Exploration – Part 2

October 3 2023, 15:00 — BCC B3
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 Jomuel, Airbus Defence and Space, Germany; Nadeem Ghafoor, Avalon Space, Canada;

IAC-23.A3.2B.1
THE MISSION AND SYSTEM DESIGN OF THE FIRST TURKISH LUNAR MISSION
Burak Yaglioglu, TUBITAK Uzay, Space Technologies Research Institute, Türkiye
A3.3A. Mars Exploration – missions current and future

October 4 2023, 10:15 — BCC B3
Co-Chair(s): Vincenzo Giorgio, Thales Alenia Space Italia, Italy; Pierre W. Bousquet, Centre National d’Études Spatiales (CNES), France; Rapporteur(s): Cheryl Reed, Northrop Grumman Innovation Systems, United States; Amalia Ercoli Finzi, Politecnico di Milano, Italy;

IAC-23.A3.3A.1
INTERNATIONAL MARS ICE MAPPER MISSION: A MULTILATERAL MODEL FOR FUTURE MARS EXPLORATION
Marilena Amorosa, Italian Space Agency (ASI), Italy

IAC-23.A3.3A.2
MARS EXPLORATION – SCIENCE, INSTRUMENTS AND TECHNOLOGIES
Raul Ijarzade, Azerbaijan

IAC-23.A3.3A.3
MARS SAMPLE RETURN AND THE CAPTURE, CONTAINMENT, AND RETURN SYSTEM NEW DESIGN AND PATH TO 2027 LAUNCH
Bruno Sarli, NASA GSFC, United States

IAC-23.A3.3A.4
THE PLANETARY PROTECTION STRATEGY OF MARS SAMPLE RETURN: EARTH RETURN ORBITER MISSION
Giuseppe Cataldo, National Aeronautics and Space Administration (NASA), Goddard Space Flight Center, United States
IAC-23.A3.3A.5
ROSALIND FRANKLIN MISSION RECOVERY OF EXOMARS 2022 MISSION
Vincenzo Giorgio, Thales Alenia Space Italy, Italy

IAC-23.A3.3A.6
DEVELOPING, VALIDATING AND VERIFYING A FLIGHT RATED AUTONOMOUS GNC SYSTEM FOR THE ROSALIND FRANKLIN ROVER: ACHIEVEMENTS AND LESSONS LEARNT
Duncan Hamill, Airbus Defence and Space, United Kingdom

IAC-23.A3.3A.7
WATER-RICH PERMAFROST ON MARS: FRENDS MAPPING DATA FROM ESA’S TGO
Igor Mitrofanov, Institute for Space Research, Russian Federation

IAC-23.A3.3A.8
DIVERSIFYING MARTIAN ENERGY SOURCES: THE ROLE OF THE MARTIAN ENERGY DOME IN SUSTAINABLE HUMAN PRESENCE
Sarath Raj Nadarajan Syamala, Amity University, Dubai, United Arab Emirates

IAC-23.A3.3A.9
TESTING OPERATIONAL DESIGNS FOR A FUTURE ROBOTIC MISSION TO A MARTIAN LAVA TUBE
Jennifer Blank, National Aeronautics and Space Administration (NASA), Ames Research Center /Blue Marble Space Institute of Science, United States

IAC-23.A3.3A.10
NEW METHODS FOR MARTIAN EXPLORATION
Kamran Mahmudov, Azerbaijan State Oil and Industry University (ASOIU), Azerbaijan

IAC-23.A3.3A.11
MARS EXPLORATION: CURRENT AND FUTURE MISSIONS
Debarshi Mukherjee, India

IAC-23.A3.3B.5
ROSALIND FRANKLIN MISSION RECOVERY OF EXOMARS 2022 MISSION
Vincenzo Giorgio, Thales Alenia Space Italy, Italy

IAC-23.A3.3B.6
DIURNAL VARIATION ON MARS: CHARACTERIZING CHANGES IN AEROSOL CONCENTRATIONS, SURFACE TEMPERATURE, AND CO2 ABSORPTIONS – COMPARISON WITH EMIRATES MARS MISSION AND CURIOSITY ROVER
Sarath Raj Nadarajan Syamala, Amity University, Dubai, United Arab Emirates

IAC-23.A3.3B.7
A COMPREHENSIVE GROUND-LEVEL MAP OF MARS CRUSTAL MAGNETISM GATHERED BY A SWARM OF WIND-DRIVEN SURFACE EXPLORATION MOBILE IMPACTORS
Luka Pikušić, Team Tumbleweed, The Netherlands

IAC-23.A3.3B.8
ROVING WITH THE BUZZARDS: A TRL5 AUTONOMY MARATHON
Róbert Marc, Airbus Defence and Space, United Kingdom

IAC-23.A3.3B.9
SYNTHESIS OF NEW LUNAR PARALLEL STRUCTURE ROBOTIC ROWERS
Nadir Atayev, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.A3.3B.10
ENABLING IN-SITU RESOURCES UTILISATION BY LEVERAGING COLLABORATIVE ROBOTICS AND ASTRONAUT-ROBOT INTERACTION
Fernando Gandía, GMV Aerospace & Defence SAL, Spain

IAC-23.A3.3B.11
EMIRATES MARS ULTRAVIOLET SPECTROMETER’S (EMUS) OBSERVATION OF THE MARTIAN THERMOSPHERE DEEPTHA GIRIDHAR, R V College of Engineering, Bengaluru, India

A.3.4A. Small Bodies Missions and Technologies (Part 1)

October 2023, 10:15 — BCC B3

Co-Chair(s): Cheryl Reed, Northrop Grumman Innovation Systems, United States; Stephan Ulamec, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;
Rapporteur(s): Norbert Frischau, TU Graz, Austria; Marc D. Rayman, NASA Jet Propulsion Laboratory, United States;

IAC-23.A3.4A.1
RECENT STATUS OF HAYABUSA2 EXTENDED MISSION
Yuya Mimasa, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-23.A3.4A.2 (unconfirmed)
LUCY STRONG: GETTING TO A SUCCESSFUL LAUNCH IN SPITE OF A ONCE-IN-A-LIFETIME PANDEMIC
Donya Douglas-Bradshaw, NASA Goddard Space Flight Center Greenbelt MD 20771, United States

IAC-23.A3.4A.3
DESTINY+: TECHNOLOGY DEMONSTRATION FROM THE EARTH TO DEEP SPACE AND EXPLORATION OF ASTEROID 3200 PHAETHON
Hiroshi Imanura, JAXA, Japan

IAC-23.A3.4A.4
DESIGN ROUNDUP OF MARTIAN MOONS EXPLORATION (MMX)
Takane Imada, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-23.A3.4A.5
THE MMX PHOBOS ROVER: SCIENTIFIC PAYLOAD INTEGRATION AND GETTING READY FOR LAUNCH
Stephan Ulamec, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

IAC-23.A3.4A.6
DEIMOS MOON INVESTIGATION THROUGH REMOTE AND IN SITU SCIENCE: THE TASTE MISSION
Michèle Lavagna, Politecnico di Milano, Italy
A3.4B. Small Bodies Missions and Technologies (Part 2)

October 6 2023, 10:15 — BCC B3
Co-Chair(s): Stephan Ulamec, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany; Cheryl Reed, Northrop Grumman Innovation Systems, United States;
Rapporteur(s): Marc D. Rayman, NASA Jet Propulsion Laboratory, United States; Norbert Frischauf, TU Graz, Austria;

IAC-23.A3.4B.1
THE ESA HERA MISSION TO THE NEAR-EARTH ASTEROID BINARY (65803) DIDYMOS: DOCUMENTATION OF THE NASA DART IMPACT AND FULL CHARACTERIZATION OF THE ASTEROID SYSTEM
Patrick Michel, University of Nice-Sophia Antipolis, CNRS, Observatoire de la Cote d’Azur, France

IAC-23.A3.4B.2
RAMSES – ESA’S STUDY FOR A SMALL MISSION TO APOPHIS
Patrick Michel, University of Nice-Sophia Antipolis, CNRS, Observatoire de la Cote d’Azur, France

IAC-23.A3.4B.3
TRAJECTORY AND GNC STRATEGY DESIGN FOR A FAST DEVELOPMENT MISSION TO APOPHIS – A LESSON IN THE RE-USE OF HERA
Mariella Graziano, GMV Aerospace & Defence SAU, Spain

IAC-23.A3.4B.4
DROID: INVESTIGATING 99942 APOPHIS OVER ITS 2029 APPROACH
Pierre W. Bousquet, Centre National d’Etudes Spatiales (CNES), France

IAC-23.A3.4B.5 (unconfirmed)
DESIGN OF A STABLE ASTEROID LANDER FOR A RELIABLE SAMPLE RETRIEVAL MISSION OF 99942 APOPHIS.
Apurva Gajbhiye, University of Petroleum and Energy Studies, India

IAC-23.A3.4B.6
ADAPTIVE CONTROL METHOD FOR FLEXIBLE LANDING OF ASTEROID WITH MULTIPLE CONSTRAINTS
Zhihui Sui, Beijing Institute of technology, China

A3.5. Solar System Exploration including Ocean Worlds

October 5 2023, 15:00 — BCC B3
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; Gabriel Pont, Centre National d’Etudes Spatiales (CNES), France;

IAC-23.A3.5.1
DECAMETRIC AND METRIC SPECTRAL SOLAR RADIO OBSERVATIONS USING THE LOW-FREQUENCY RADIO TELESCOPE IN SAASST
Mohammad Musharraf, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

IAC-23.A3.5.2
SINGLE SLS LAUNCHED DUAL OUTER PLANET MISSION TO URANUS AND TO NEPTUNE
Matthew Ziglar, Boeing Defense Space & Security, United States

IAC-23.A3.5.3
EUREKA: A LOW-COST FLYBY MISSION TO EUROPA
Andrei Kolin, Israel Aerospace Industries Ltd., Israel

IAC-23.A3.5.4
A MISSION ARCHITECTURE OF A ROBOTIC SPACEFLIGHT TO ENCELADUS FOR ENABLING EXPLORATION OF ITS SURFACE AND SUBGLACIAL OCEAN.
Olga Bannova, University of Houston, United States

IAC-23.A3.5.5
EPOPEA MISSION: ADDRESSING THE CHALLENGES OF ENCELADUS’ OCEAN WORLD EXPLORATION
Lucia Bianchi, Politecnico di Milano, Italy

IAC-23.A3.5.6
TITAN MISSION DESIGN OF A MULTI-USE SATELLITE STRUCTURE AND LANDER PLUS DRONE SYSTEM
Akshay Rajeshkar Hiremath, Space Generation Advisory Council (SGAC), United States

IAC-23.A3.5.7
A NOVEL CONCEPT FOR TITAN ROBOTIC EXPLORATION BASED ON SOFT MORPHING AERIAL ROBOTS
Fernando Ruiz Vincueria, University of Seville, Spain

IAC-23.A3.5.8
THE DRAGONFLY NEW FRONTIERS MISSION TO TITAN: ENVIRONMENT DEFINITION AND PRESENT STATUS
Ralph Lorenz, Johns Hopkins University Applied Physics Laboratory, United States

IAC-23.A3.5.9
DEVELOPMENT OF A GAS CHROMATOGRAPH FOR THE DRAGONFLY MISSION
Gabriel Pant, Centre National d’Etudes Spatiales (CNES), France

A4. 52nd IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) – The Next Steps

Coordinator(s): Mike Garrett, University of Manchester, United Kingdom; Andrew Siemion, Berkeley SETI Research Center, United States;

A4.1. SETI 1: SETI Science and Technology

October 3 2023, 10:15 — BCC B7
Co-Chair(s): Steve Croft, University California Berkeley, United States;

IAC-23.A4.1.1
KEYNOTE: “PESEK LECTURE” - EXPANDING THE SEARCH FOR ETI THROUGH WIDE-BAND AND BROADBAND PULSED SIGNALS
Vishal Gajjar, SETI Institute, United States

IAC-23.A4.1.2
NEW CONSTRAINTS ON TECHNOSIGNATURES FROM BREAKTHROUGH LISTEN ON THE GREEN BANK TELESCOPE
Steve Croft, University California Berkeley, United States
A5. 26th 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

October 4 2023, 10:15 — HAC Hall A

Co-Chair(s): Nadeem Ghafoor, Avalon Space, Canada; Greg Chavers, National Aeronautics and Space Administration (NASA), United States;

Rapporteur(s): Marc Haese, DLR, German Aerospace Center, Germany; Henrik Petersson, Swedish Space Corporation (SSC), Sweden;

IAC-23.A5.1.1
QUASI-SOLAR SYNCHRONOUS ORBIT AROUND THE MOON BASED ON SPATIAL DISTANT RETROGRADE ORBITS
Yuying Liang, ISAS, JAXA, China

IAC-23.A5.1.2
TECHNOLOGICAL AND LEGAL PERSPECTIVES FOR SUSTAINABLE HUMAN PRESENCE ON THE MOON
Veronika Stihler, International Space University (ISU), Australia

IAC-23.A5.1.3
A MISSION DESIGN FOR LUNAR ORBITAL MODULE DELIVERY AND IT’S USE TO SUPPORT “EARTH-MOON” TRANSPORTATION.
Dmitry Zarubin, Space Research Institute (IKI), Russian Academy of Sciences (RAS), Russian Federation

IAC-23.A5.1.4
MOBILE SYSTEM FOR WATER EXTRACTION FROM ICY REGOLITH USING A THERMAL METHOD
Iryna Husarova, Yuzhnoye State Design Office, Ukraine

IAC-23.A5.1.5
ADDITIVE MANUFACTURED PATCH ANTENNA DESIGN FOR LUNAR SURFACE TELEMETRY, TRACKING AND COMMAND LINK AND UPSTREAM.
Anand Nagesh, Big Dipper Exploration Technologies, India

IAC-23.A5.1.6
LUNAR REGOLITH SHRINKAGE CAUSED BY THE OF EXTRACTION OF WATER ICE
Nicholas Barnett, University of New South Wales, Singapore, Republic of

IAC-23.A5.1.7
FROM ABSTRACT TO MISSION: SELECTING AND IMPLEMENTING EXTERNAL PROJECTS INTO THE SIMULATED LUNAR MISSION CONDITIONS OF ASCLEPIOS III
Arnault Monoyer, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland

IAC-23.A5.1.8
RESEARCH OVERVIEW OF THE CHILL-ICE 2 CAMPAIGN, AUGUST 2022, HALLMUNDAHRHAUN, ICELAND
Marc Heemskerk, ESA BIC Prague, Norway

IAC-23.A5.1.9
LUNAR LAVA TUBE INFRASTRUCTURE AND INNOVATIVE TECHNOLOGIES TESTING THROUGH SPELEOLOGY ANALOG MISSION: THE SAPIENZA GEA PROJECT
Angelo Fabbrizi, Sapienza University of Rome, Italy

A4.2. SETI 2: SETI and Society

October 3 2023, 15:00 — BCC B7

Co-Chair(s): Kathryn Denning, York University, Canada;

IAC-23.A4.2.1
Lori Walton, Consultant, Canada

IAC-23.A4.2.2
THE SETI POST-DETECTION HUB: PREPARING HUMANITY FOR CONTACT
Kate Genevieve, University of Sussex, United Kingdom

IAC-23.A4.2.3
REVISING THE SETI POST-DETECTION PROTOCOLS FOR THE 2020S AND BEYOND: A REPORT ON WORK IN PROGRESS
Carol Oliver, University of New South Wales, Australia

IAC-23.A4.2.4
THE OCEAN CALLS - SETI, LUNAR ASTRONOMY AND SCENARIOS AT THE 21-CM HYDROGEN LINE
Kate Genevieve, University of Sussex, United Kingdom

IAC-23.A4.2.5
ASTROBIOLOGY AND SETI IN PERU: RECENT AND FUTURE ADVANCES
Paolo Musso, InCosmoCon Research Center, Italy

IAC-23.A4.2.6
INSIGHTS FOR SETI FROM LINGUISTICS STUDIES IN THE PERUVIAN AMAZON
Paolo Musso, InCosmoCon Research Center, Italy

IAC-23.A4.2.7
MOON FAR-SIDE PROTECTION FOR THE BENEFIT OF SETI, ASTROBIOLOGY, COSMOLOGY AND PLANETARY DEFENSE
Claudio Maccone, International Academy of Astronautics (IAA) and Istituto Nazionale di Astrofisica (INAF), Italy
**A5.2. Human Exploration of Mars**

**October 4 2023, 15:00 — HAC Hall A**

**Co-Chair(s):** Maria Antonietta Perino, Thales Alenia Space Italia, Italy; Mariella Graziano, GMV Aerospace & Defence SAU, Spain; 

**Rapporteur(s):** Nadeem Ghafoor, Avalon Space, Canada; 

**IAC-23.A5.2.1** HUMAN MARS EXPLORATION MISSION ARCHITECTURE AND THE CORRESPONDING SPACE TRANSPORTATION SYSTEM 
Xiaowei WANG, China Academy of Launch Vehicle Technology (CALT), China

**IAC-23.A5.2.2** IDENTIFICATION OF HUMAN LANDING SITES ON MARS WITH A SWARM OF WIND-DRIVEN MOBILE IMPACTORS 
Danny Tjokroselto, Delft University of Technology, The Netherlands

**IAC-23.A5.2.3** AN OUTPOST FOR THE FIRST HUMAN MARS MISSIONS 
Giancarlo Genta, Politecnico di Torino, Italy

**IAC-23.A5.2.5** HABITATION OVER MARS ENVIRONMENT: A CONCEPTUAL RESEARCH AND RESOURCE UTILIZATION 
SHAMBAHUI A S, Nitt Meenakshi Institute of Technology, India

**IAC-23.A5.2.6** SURFACE ENERGY PRODUCTION ISSUES FOR THE REFUELING OF STARSHIPS 
Jean-Marc Salotti, Laboratoire de l’Intégration du Matériau au Système, France

**IAC-23.A5.2.7** DEPLOYABLE HEAT SHIELD SOLUTIONS FOR A HUMAN MARS LANDER 
Stefano Coco, Politecnico di Torino - Thales Alenia Space Italia - ISAE Supaero Toulouse, Italy

**IAC-23.A5.2.8** MARTIAN MISSION CONTROL: A NOVEL CONCEPT FOR MANNED INTERPLANETARY MISSIONS: 
Paolo Mangili, Sasakawa International Center for Space Architecture, United States

**IAC-23.A5.2.10** FRAMEWORK FOR LOW-COST, LARGE-SCALE MARS ANALOG MISSIONS 
Madelyn Hoving, Massachusetts Institute of Technology (MIT), United States

**IAC-23.A5.2.11** (unconfirmed) POTENTIAL SPINOFFS FROM FUTURE MARTIAN TECHNOLOGY 
Niravkumar Patel, France

**IAC-23.A5.2.12** THE SEARCH FOR LIFE ON MARS 
Narmina Gahirmanova, Baku State University, Azerbaijan

**A6.21st IAA SYMPOSIUM ON SPACE DEBRIS**

Coordinator(s): Christophe Bonnal, Centre National d’Etudes Spatiales (CNES), France; Mark A. Skinner, The Aerospace Corporation, United States; Pierre Omaly, CNES, France;

**A6.1. Space Debris Detection, Tracking and Characterization - SST**

**October 6 2023, 13:45 — BCC A6**

**Co-Chair(s):** Mark A. Skinner, The Aerospace Corporation, United States; Vladimir Agapov, Russian Federation; 

**Rapporteur(s):** Thomas Schildknecht, SwissSpace Association, Switzerland;

**IAC-23.A6.1.1** FLAT FIELD CALIBRATION OF OPPORTUNISTIC SENSORS FOR IN-SPACE SITUATIONAL AWARENESS 
Ashling Dignam, Astroscale Ltd, United Kingdom
A6.3. Impact-Induced Mission Effects and Risk Assessments

October 4 2023, 10:15 — BCC A6

Co-Chair(s): Zizheng Gong, Beijing Institute of Spacecraft Environment Engineering, China Academy of Space Technology (CAST), China; Yukihito Kitazawa, Japan Aerospace Exploration Agency (JAXA), Japan;

Rapporteur(s): Jean-Claude Trainneau, Office National d’Etudes et de Recherches Aérospatiales (ONERA), France;

IAC-23.A6.3.1 KEYNOTE: PROGRESS IN CHINA’S SPACE DEBRIS PROTECTION RESEARCH-RETROSPECT AND PROSPECT
Zizheng Gong, Beijing Institute of Spacecraft Environment Engineering, China Academy of Space Technology (CAST), China

IAC-23.A6.3.2 RISK ASSESSMENT OF HYPERVELOCITY IMPACT-INDUCED ELECTRICAL ANOMALIES ON SPACECRAFT
Tayyar Shirinli, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.A6.3.3 INVESTIGATION ON SHOCK HUGONIOT OF POLYIMIDE VIA ALL-ATOM MOLECULAR DYNAMICS SIMULATION
Tao Liu, China

IAC-23.A6.3.4 AN OVERVIEW ON SMART BALLISTIC OPTIMIZATION FOR REPAIRING OF AEROSPACE EXOSTRUCTURES USING 3D PRINTED KEVLAR
Leonardo Barilaro, Malta

IAC-23.A6.3.5 SIMULATING IMPACT-INDUCED SATELLITE BREAKUPS WITH A DISCRETE ELEMENT METHOD
Noah Ledford, Fraunhofer EMI, Germany

IAC-23.A6.3.6 INVESTIGATION OF ALUMINIUM WHIPPLE SHIELD RESPONSE TO HYPERVELOCITY IMPACTS CLOSE TO BALLISTIC LIMIT BETWEEN 2.5 AND 5 KM/S
Lorenzo Olivieri, CISAS “G. Colombo” - University of Padova, Italy

IAC-23.A6.3.7 GLANCING IMPACT ON A PICO-SATellite MOCK-UP: TEST RESULTS
Lorenzo Olivieri, CISAS “G. Colombo” - University of Padova, Italy

IAC-23.A6.3.9 A STUDY ON THE HAZARDS OF SPACE DEBRIS FOR LUNAR MISSIONS: A REVIEW
Shreyansh Dubey, University of Petroleum and Energy Studies, India
IAC-23.A6.3.10 HYPERSONIC IMPACT CHARACTERISTICS OF MULTILAYER REACTIVE MATERIAL BUMPER SHIELD AGAINST LARGE SIZE PROJECTIONS
Zhiheng Gong, Beijing Institute of Spacecraft Environment Engineering, China Academy of Space Technology (CAST), China

A6.4. Mitigation - Tools, Techniques and Challenges - SEM

October 3 2023, 15:00 — BCC A6
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-23.A6.4.1 ADVANCES IN SPACEBORNE LED PAYLOADS ATTITUDE DETERMINATION AND AUTONOMOUS UNITS DESIGN FOR SPACE TRAFFIC MANAGEMENT
Pablo Marzioli, Sapienza University of Rome, Italy

IAC-23.A6.4.2 EVOLUTION OF SPACE DEBRIS MITIGATION PRACTICES IN ESA’S DEBRIS MITIGATION FACILITY
Vitali Braun, IMS Space Consultancy, Germany

IAC-23.A6.4.3 ESTABLISHMENT OF DEBRIS INDEX EVALUATION CRITERIA AND COMPARISON OF INDEX EFFECTS
Ryusuke Harada, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-23.A6.4.4 STATISTICAL LEARNING OF CONJUNCTION DATA MESSAGES THROUGH A BAYESIAN NON-HOMOGENEOUS POISSON PROCESS
Marta Guimaraes, Neurospace, Portugal

IAC-23.A6.4.5 IMPACT OF THE BALLISTIC COEFFICIENT ESTIMATION ON ORBITAL LIFETIME PREDICTIONS OF ROCKET BODIES
Lucia Ayala Fernández, Technische Universität Braunschweig, Germany

IAC-23.A6.4.6 POSSIBLE DISPOSAL STRATEGIES FOR THE O3B AND SKIF SATELLITE SYSTEMS
Sergey Ivanov, Bauman Moscow State Technical University, Russian Federation

IAC-23.A6.4.7 ON THE NEED TO ASSESS AND MITIGATE THE RISK FROM UNCONTROLLED RE-ENTRIES OF ARTIFICIAL SPACE OBJECTS IN VIEW OF THE CURRENT AND FUTURE DEVELOPMENTS IN SPACE ACTIVITIES
Carmen Pardini, ISTIT-CNR, Italy

IAC-23.A6.4.8 DISPOSAL AND FLIGHT SAFETY IN CISLUNAR SPACE: SHORTFALLS IN CURRENT GUIDELINES AND A WAY FORWARD
Joseph Gangstad, The Aerospace Corporation, United States

A6.5. Post Mission Disposal and Space Debris Removal 1 - SEM

October 5 2023, 10:15 — BCC A6
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 Francelloit, CNES, France;

IAC-23.A6.5.2 COSMIC (UK ADR) - TOWARDS THE REMOVAL OF 2 UK-OWNED DEFUNCT SATELLITES
Jason Forshaw, Astroscale Ltd, United Kingdom

IAC-23.A6.5.3 LOW-COST MISSION TO DE-ORBIT A SPENT STAGE OF A ROCKET USING 250-KG SPACECRAFT PLATFORM
Pranav Keskar, Bellatrix Aerospace Private Limited, India

IAC-23.A6.5.4 MISSION PLAN OF STARS-X MICRO SATELLITE FOR DEMONSTRATION OF SPACE TETHER TECHNOLOGY FOR DEBRIS CAPTURE
Masahiro Nohmi, Shizuoka University, Japan

IAC-23.A6.5.5 A NOVEL ADAPTIVE CAPTURE DEVICE AND CONTROL METHOD FOR SPACE DEBRIS
Jiale Chen, Northwestern Polytechnical University; National Key Laboratory of Aerospace Flight Dynamics, China

IAC-23.A6.5.6 A NON-SINGULAR FIXED-TIME COMPLIANCE CONTROL OF SPACE ROBOT WITH SDBD CAPTURING DEBRIS OPERATION
An Zhu, Fujzou University, China

IAC-23.A6.5.7 ANALYSIS OF THE SOLUTIONS PROPOSED FOR THE MULTI-TARGET ADR MISSION OPTIMIZATION PROBLEM
Dmitry Grishko, Bauman Moscow State Technical University, Russian Federation

IAC-23.A6.5.8 LIDAR-BASED NAVIGATION STRATEGIES FOR A NON-COOPERATIVE TARGET CONSIDERING RENDEZVOUS TRAJECTORY
Taisei Nishishita, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-23.A6.5.9 3D RECONSTRUCTION OF A SPACE DEBRIS FROM IN SITU INSPECTION EXPLOITING GUBESATS
Luca Lion, CISAS – “G. Colombo” Center of Studies and Activities for Space, University of Padova, Italy

IAC-23.A6.5.10 E. INSPECTOR: MULTI-SPECTRAL IMAGING THE VESPA DEBRIS IN PREPARATION TO ACTIVE REMOVAL
Michele Lavagna, Politecnico di Milano, Italy

A6.6. Post Mission Disposal and Space Debris Removal 2 - SEM

October 5 2023, 15:00 — BCC A6
Co-Chair(s): Marko Jankovic, Airbus Defence and Space, Germany; Dmitry Grishko, Bauman Moscow State Technical University, Russian Federation;
Rapporteur(s): Jason Forshaw, Astroscale Ltd, United Kingdom;

IAC-23.A6.6.1 BEYOND ELSA-D – DEVELOPING COMMERCIAL VIABILITY OF MULTI-CLIENT SERVICING WITH ELSA-M
Alex Godfrey, Astroscale Ltd, United Kingdom

IAC-23.A6.6.3 MULTISPECTRAL VISION-BASED RELATIVE NAVIGATION TO ENHANCE SPACE DEBRIS PROXIMITY OPERATIONS
Massimiliano Bussolino, Politecnico di Milano, Italy
A6.7. Operations in Space Debris Environment, Situational Awareness - SSA

October 2 2023, 15:15 — BCC A6

Co-Chair(s): Vincent Martinot, Thales Alenia Space France, France; T.S. Kelso, CelestTrak, United States;
Rapporteur(s): Noelia Sanchez Ortiz, Arribes Enlightenment, Spain;

IAC-23.A6.7.1
SENSITIVITY AND COMPARISON OF ORBITAL STATE-BASED MANEUVER DETECTION APPROACHES
Lorenzo Perugino, University of Naples “Federico II”, Italy

IAC-23.A6.7.2
FEASIBILITY ASSESSMENT OF AN AUTONOMOUS COLLISION AVOIDANCE SYSTEM FOR Satellites
Giulio Campiti, Politecnico di Bari, Italy

IAC-23.A6.7.3
ENABLING EFFICIENT SATELLITE MISSION DESIGN WITH RULE-BASED COLLISION AVOIDANCE
Simon Burgis, TU Darmstadt, Germany

IAC-23.A6.7.4
AUTONOMOUS ORBIT CONTROL FOR ON-BOARD COLLISION MANAGEMENT: ASTERIA
Jerome Thomassin, Centre National d’Etudes Spatiales (CNES), France

IAC-23.A6.7.5
PREDICTING THE POSITION UNCERTAINTY AT THE TIME OF CLOSEST APPROACH WITH DIFFUSION MODELS
Marta Guimaraes, Neuraspace, Portugal

IAC-23.A6.7.6
SPACECRAFT AUTONOMOUS DECISION-PLANNING FOR COLLISION AVOIDANCE: A REINFORCEMENT LEARNING-BASED APPROACH
Adam Abdin, CentraleSupélec, France

IAC-23.A6.7.7
ANALYSIS OF REQUIRED THRUST LEVEL AND WARNING TIME TO PERFORM COLLISION AVOIDANCE MANOEUVRES FOR LOW-THRUST SATELLITES
Frank de Veld, INRIA, France

IAC-23.A6.7.8
ADVANCED NUMERICAL OPTIMISATION ENVIRONMENT FOR OPERATIONAL COLLISION AVOIDANCE
Jack McHugh, GMV Aerospace & Defence SAU, United Kingdom

IAC-23.A6.7.9
COLLISION AVOIDANCE MANEUVERS OPTIMIZATION USING EVOLUTIONARY ALGORITHMS
Guilherme Neves, INPE - National Institute for Space Research, Brazil

IAC-23.A6.7.10
TOWARDS REINFORCEMENT LEARNING-BASED COLLISION AVOIDANCE IN LOW-EARTH ORBIT: AN INITIAL STUDY
Salma Al Thepdawala, Universität der Bundeswehr München, Germany

A6.8-E9.1. Policy, Legal, Institutional, Economic and Security Aspects of Debris Mitigation, Debris Remediation and STM

October 6 2023, 10:15 — BCC A6

Co-Chair(s): David Spencer, The Aerospace Corporation, United States; Andrea Capurso, LUISS Guido Carli University, Italy;
Rapporteur(s): Maruska Strah, Space Sustainability Rating, Switzerland;

IAC-23.A6.8-E9.1.1
ESA’S ZERO DEBRIS APPROACH: A RESPONSIBLE PATH TO MITIGATE SPACE DEBRIS IN VALUABLE ORBITS
Tiago Soares, European Space Agency (ESA), The Netherlands

IAC-23.A6.8-E9.1.2
ORBITAL DEBRIS MITIGATION IMPLEMENTATION BETWEEN THE U.S. AND INTERNATIONAL COMMUNITY
Aline McNaul, United States

IAC-23.A6.8-E9.1.3
SPACE ENVIRONMENTAL GOVERNANCE: A COMPREHENSIVE FRAMEWORK FOR ENSURING SECURITY, STABILITY AND SUSTAINABILITY OF SPACE ACTIVITIES
Hui Du, Institute of Spacecraft System Engineering, China Academy of Space Technology (CAST), China

IAC-23.A6.8-E9.1.4
FOSTERING MULTI-STAKEHOLDER COLLABORATION FOR SPACE SUSTAINABILITY THROUGH AN INCENTIVE-BASED MECHANISM
Emmanuelle David, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland

IAC-23.A6.8-E9.1.5
INTERNATIONAL APPROACH TO SPACE SITUATIONAL AWARENESS AND COLLISION AVOIDANCE
Diego Guerra, Blue Origin LLC, United States

IAC-23.A6.8-E9.1.10
TOWARDS A BOTTOM-UP APPROACH TO SPACE DEBRIS REMOVAL: ON THE ECONOMIC CONVENIENCE BEHIND DEBRIS MITIGATION STRATEGIES
Clelia Iacomino, SEE Lab - SDA Bocconi School of Management, Italy
**A7. IAF SYMPOSIUM ON ONGOING AND NEAR FUTURE SPACE ASTRONOMY AND SOLAR-SYSTEM MISSION SCIENCE MISSIONS**

Coordinator(s): Andrew Court, TNO, The Netherlands; Alessandra Di Cecco, Agenzia Spaziale Italiana (ASI), Italy;

**A7.1. Space Astronomy missions, strategies and plans**

October 5 2023, 10:15 — BCC Auditorium Balcony

Co-Chair(s): Eric Wille, ESA, The Netherlands; Alessandra Di Cecco, Agenzia Spaziale Italiana (ASI), Italy;

Rapporteur(s): Andrew Court, TNO, The Netherlands;

IAC-23.A7.1.1

THE ITALIAN PARTICIPATION TO THE CSES-1 AND CSES-2 MISSIONS: RECENT RESULTS AND FUTURE PERSPECTIVES

Pietro Ubertini, INAF, Italy

IAC-23.A7.1.2

GLADYScale: A STRATEGIC TOOL FOR ASSESSING SATELLITE IMPACT ON GROUND-BASED ASTROPHYSICS AND PLANNING FUTURE ASTROPHYSICS MISSIONS

Emma Louden, Yale University, United States

IAC-23.A7.1.4

ASTRONOMY FROM THE MOON: PERSPECTIVES AND PREPARATION

Bernard Foing, IESWG “EuroMoonMars”, The Netherlands

IAC-23.A7.1.5

BEYOND EARTH: INVESTIGATING THE MOONS OF JUPITER AND SATURN FOR SIGNS OF LIFE

Garima Saroj, Ajay Kumar Garg Engineering College, India

IAC-23.A7.1.6

PROPOSAL TO LAUNCH A CONSTELLATION OF HELIOCENTRIC INFRA-RED TELESCOPE SATELLITES (CHIRTS)

Matthew Ziglar, Boeing Defense Space & Security, United States

IAC-23.A7.1.7

A LIFE EXTENSION MISSION FOR THE JAMES WEBB SPACE TELESCOPE

Diego Saikin, Astroscale Ltd, Israel

IAC-23.A7.1.8

PROJECT FOR CONSTRUCTION OF COSMIC RELIC NEUTRINO TELESCOPE

Valli Huseynov, Institute of Physics of the Ministry of Science and Education of the Republic of Azerbaijan, Azerbaijan

**A7.2. Science Goals and Drivers for Future Exoplanet, Space Astronomy and Space Physics**

October 6 2023, 10:15 — BCC Auditorium Balcony

Co-Chair(s): Pietro Ubertini, INAF, Italy; Maria Cristina Falvella, Italian Space Agency (ASI), Italy;

IAC-23.A7.2.1

THE ROLE OF SPACE-BASED TELESCOPES IN UNRAVELING THE EXISTENCE OF DARK MATTER: (FROM HUBBLE TO NANCY GRACE ROMAN TELESCOPE)

Noora Alameri, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

IAC-23.A7.2.2

SUPERMASSIVE BLACK HOLE BINARIES AS TARGETS FOR PROSPECTIVE SPACEBORNE VLBI AND GRAVITATIONAL WAVE OBSERVATORIES

Leonid Gurvits, The Netherlands

IAC-23.A7.2.3

RECENT SURVEY ON BLACK HOLE-NEUTRON STAR MERGERS

Maryam Alqasimi, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

IAC-23.A7.2.4

COSMIC GOLD RUSH: AN INTERNATIONAL COLLABORATIVE AND ASTRONOMICAL EFFORT WITH GRANDMA

Nariman Ismayilov, Shamakhy Astrophysical Observatory, Azerbaijan

IAC-23.A7.2.5

A 1.4 GHZ SURVEY OF 46 GIANT RADIO SOURCES

Mohammad Musharrof, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

IAC-23.A7.2.6

A MISSION CONCEPT FOR UNVEILING EVIDENCE OF LIFE ON TRAPPIST-1E

HUDA MOHAMMAD, Jain University, India

IAC-23.A7.2.7

FIRST LIGHT OF SHARJAH-SAT-1: POTENTIAL TARGETS AND EARLY SCIENCE

Antonios Manousakis, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

IAC-23.A7.2.8 (unconfirmed)

CIRCUMSTELLAR ACTIVITY IN AE/BE HERBIG STARS: HD 31648 AND HD 53367

Bayram Rustomov, Baku State University, Azerbaijan

IAC-23.A7.2.9

SPECTRAL CLASSIFICATION OF SELECTED STELLAR X-RAY SOURCES IN THE SMALL MAGELLANIC CLOUD (SMC)

Fatima Alkhateri, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates
A7.3. Technology Needs for Future Missions, Systems, and Instruments

October 6 2023, 13:45 — BCC Auditorium Balcony
Co-Chair(s): Eric Wille, ESA, The Netherlands; Andrew Court, TNO, The Netherlands;
Rapporteur(s): Maria Cristina Falvella, Italian Space Agency (ASI), Italy;

IAC-23.A7.3.1
ADVANCING CRYOGENIC SYSTEMS FOR THE NEXT GENERATION OF ASTROPHYSICS DISCOVERIES
Hannah Rana, Harvard University, United States

IAC-23.A7.3.2
BLACK HOLE TARGET OBSERVATION MANAGER - A NEW TOOL FOR AUTOMATIC TIME-DOMAIN ASTRONOMY
Nariman Ismayilov, Shamakhy Astrophysical Observatory, Azerbaijan

IAC-23.A7.3.3
MAGNETOTELLURIC LOW-FREQUENCY SOUNDING OF THE LUNAR SUBSURFACE STRUCTURE (S1-10 MHZ) - METHODOLOGICAL AND EXPERIMENTAL POSSIBILITIES FOR DETERMINING THE THRESHOLD (NOISE) CHARACTERISTICS FOR LONG-WAVE RADIO ASTRONOMY ON THE LUNAR SURFACE
Yuri Ozorovich, Space Research Institute (IKI), RAS, Russian Federation

IAC-23.A7.3.4
REQUIRED TECHNOLOGIES FOR A MISSION OF A GAMMA RAY OBSERVATION BY FORMATION FLYING SPACECRAFT IN SEL2 HALO ORBIT: FF-LAGRAN
Tomoki Mochizuki, University of Tokyo, Japan

IAC-23.A7.3.5
QUALIFICATION OF 3D PRINTED POLYMERIC STRUCTURE IN HEPD-02 INSTRUMENT
Marianna Rinaldi, ASI - Italian Space Agency, Italy

IAC-23.A7.3.6
A FEASIBILITY ASSESSMENT FOR A LOW-COST FLIGHT AND SPACE SIMULATOR
Sara Trawneh, Jordan University of Science & Technology, Jordan

IAC-23.A7.3.7
DESIGN AND DEVELOPMENT OF A METAMORPHIC SPACE TELESCOPE BASED ON A 6U CUBESAT FOR ASTRONOMICAL OBSERVATIONS
Deep Anand, Vellore Institute of Technology, India

IAC-23.A7.3.8
CCD PHOTOMETER WITH 5 BAND FOR 235-MM TELESCOPE OF BAKU STATE UNIVERSITY
Gojalar Rashad, Baku State University, Azerbaijan

B1. IAF EARTH OBSERVATION SYMPOSIUM

Coordinator(s): Harry A. Cikanek, National Oceanic and Atmospheric Administration (NOAA), United States; Luís Ferreira, Airbus Defence and Space, Germany

B1.1. International Cooperation in Earth Observations

October 2 2023, 15:15 — BCC B1
Co-Chair(s): Mukund Kadursrinivas Rao, , India; José Gavira Izquierdo, European Space Agency (ESA), The Netherlands;
Rapporteur(s): Charles Wooldridge, National Oceanic and Atmospheric Administration (NOAA), United States;

IAC-23.B1.1.1
KEYNOTE: COMMITTEE ON EARTH OBSERVATION SATELLITES (CEOS): 2023 REPORT OF ACTIVITIES TO THE 74TH INTERNATIONAL ASTRONAUTICAL CONGRESS
Tanita Suepa, Geo-Informatics & Space Technology Development Agency (GISTDA), Thailand

IAC-23.B1.1.2
THE COPERNICUS SPACE COMPONENT COORDINATION MODEL, BETWEEN ADAPTABILITY AND RIGOR
Giancarlo Filippazzo, European Space Agency (ESA), Italy

IAC-23.B1.1.3
NASA’S EARTH SYSTEM OBSERVATORY FORMULATION PROGRESS
Karen St. Germain, National Aeronautics and Space Administration (NASA), United States

IAC-23.B1.1.4
GLOBAL EFFORT ON TURKEY KAHRAMANMARAS EARTHQUAKE AND EVALUATION OF SATELLITE IMAGING
Samir SFARNI, Technology Innovation Institute (TII), United Arab Emirates

IAC-23.B1.1.5
MICROSATELLITE CONSTELLATION-BASED HIGH-RESOLUTION EARTH OBSERVATION APPLICATION SYSTEM IN KOREA
Hyun-Ok Kim, Korea Aerospace Research Institute (KARI), Korea, Republic of

IAC-23.B1.1.6
THE ESA GLOBAL DEVELOPMENT ASSISTANCE INITIATIVE ON MARINE ENVIRONMENT & BLUE ECONOMY
Angelo Amadio, Planetek Italia, Italy

IAC-23.B1.1.7
DEVELOPMENT OF ONGOING COLLABORATIVE OPPORTUNITIES SURROUNDING EARTH OBSERVATION DATA IN AFRICA AND THE MIDDLE EAST
Kaitlyn Holm, University of Pennsylvania, United States

IAC-23.B1.1.8
OCEANS, RESOURCES, AND CLIMATE APPLICATIONS FROM SPACE: INTERNATIONAL GOVERNANCE AND DATA SHARING MODEL FOR EARTH OBSERVATION CONSTELLATION
Natalia Gorina, International Space University (ISU), The Netherlands

B1.2. Earth Observation Systems

October 3 2023, 15:00 — BCC B1
Co-Chair(s): Annamaria Nassisi, Thales Alenia Space Italia, Italy; Timo Stuffer, OHB System AG, Germany;
Rapporteur(s): Gunter Schreier, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;

IAC-23.B1.2.1
METEOSAT THIRD GENERATION (MTG) SPACE SEGMENT DEVELOPMENT PROGRESS INCLUDING MTG-I1 LAUNCH AND PERFORMANCE
Donny M.A. Aminou, ESA, The Netherlands

IAC-23.B1.2.2
MISSION STATUS AND PERFORMANCE OF THE SURFACE WATER AND OCEAN TOPOGRAPHY PROJECT FOR OCEANOGRAPHY AND HYDROLOGY
Parag Vaze, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States

IAC-23.B1.2.3
RADARSAT CONSTELLATION MISSION OVERVIEW AND STATUS
Guennadi Kroupnik, Canadian Space Agency, Canada

IAC-23.B1.2.4
CURRENT STATUS, APPLICATIONS AND BENEFITS OF THE JOINT POLAR SATELLITE SYSTEM
Satya Kalluri, NOAA/NESDIS, United States
B1.3. Earth Observation Sensors and Technology

October 4 2023, 10:15 — BCC B1

Co-Chair(s): Andrew Court, TNO, The Netherlands; Kate Becker, National Oceanic and Atmospheric Administration (NOAA), United States;

IAC-23.B1.3.1
MULTI-TERRAIN DRONES FOR END-TO-END OCEAN MONITORING AND PROTECTION
Md. Mahbub Ul Haque, BRAC University, Bangladesh

IAC-23.B1.3.2
CUBESAT-BASED HYPERSPECTRAL MISSION FOR MINING RESOURCE EXPLORATION: A PRELIMINARY STUDY
Iméné Taleb, Agence Spatiale Algérienne (ASAL), Algeria

IAC-23.B1.3.3
FROM PRISMA LEONARDO DERIVES A COMPACT HYPERSPECTRAL PAYLOAD “BEST-IN-CLASS” FOR ENVIRONMENTAL AND COMMERCIAL APPLICATIONS
Alessandro Fumagalli, Leonardo SpA, Italy

IAC-23.B1.3.4
THE ATMODEVICE: ALL-IN-ONE SOLUTION FOR EARTH MONITORING AND OBSERVATION
Federico Toson, CISAS “G. Colombo” - University of Padova, Italy

IAC-23.B1.3.5
THE ESA METEOSAT THIRD GENERATION LIGHTNING IMAGER PROVIDES KEY DATA FOR WEATHER NOWCASTING AND SAFETY OF AIR TRAFFIC
Enrico Suetta, Leonardo S.p.A., Italy

IAC-23.B1.3.6
MULTISPECTRAL INFRARED LARGE BAND SPACE CAMERA CORE FOR EARTH OBSERVATION
Sylvain Gatti, INSA, Canada

IAC-23.B1.3.7
TASK-BASED IMAGING – A NOVEL PARADIGM CHALLENGING THE TRADITIONAL PUSH BROOM CONCEPT
Uri Greisman Ran, Elbit Systems Aerospace Division, Israel

IAC-23.B1.3.8
CALIBRATION OF ON-ORBIT MAGNETOMETER DATA OBSERVED BY 6U CUBESAT KITSUME USING GENETIC ALGORITHM
Withanage Dulani Chamika, Kyushu Institute of Technology, Japan
B1.6. Assessing and Mitigating the Global Freshwater Crisis

October 6 2023, 10:15 — HAC Museum GA

Co-Chair(s): Ole Morten Olsen, Norwegian Space Agency (NOSA), Norway; Shmirit Maman, Ben-Gurion University of the Negev, Israel; Rapporteur(s): Patrick Castillon, Centre National d’Etudes Spatiales (CNES), France;

IAC-23.B1.6.3
CASE STUDY ON HOW TO USE HR SATELLITE IMAGERY TO MONITOR FRESHWATER
Sapar Satayev, China HEAD Aerospace Technology Co., France

IAC-23.B1.6.4
GLOBAL MEASUREMENTS OF FRESH WATER FROM THE SWOT MISSION
Shailen Desai, Jet Propulsion Laboratory - California Institute of Technology, United States

IAC-23.B1.6.5
EXPLORATION AND MAPPING OF WATER RESOURCES BY AEROSPACE METHODS. THE DEVELOPMENT OF SCIENCE AND TECHNOLOGY, THE INCREASE AND DAY-BY-DAY INTENSIFICATION OF FORMS OF HUMAN INTERFERENCE WITH NATURE MAKE THE RESEARCH AND ANALYSIS OF ENVIRONMENT NECESSARY.
Kamina Agayeva, National Aerospace Agency (NASA) of Azerbaijan Republic, Azerbaijan

IAC-23.B1.6.6
SPACE DATA APPLICATIONS IN PREDICTING, MONITORING AND MITIGATING CLIMATE CHANGE IN AFRICA
Babagana Babagana, KANURI DEVELOPMENT ASSOCIATION, Nigeria

IAC-23.B1.6.7
SPACEBORNE L-BAND SAR REMOTE SENSING FOR POTABLE WATER LEAK DETECTION: A NOVEL SOLUTION FOR ADDRESSING THE GLOBAL WATER CRISIS
Yuval Lorig, ASTerra, Israel

IAC-23.B1.6.8
DIMINISHING TERRESTRIAL AND SUB-TERRESTRIAL RESOURCES IN ZIMBABWE. A CASE STUDY OF ZIMBABWEAN FRESHWATER BODIES, PRESENT AND FUTURE
Beverly Chelsea Saungweme, Russian Federation

IAC-23.B1.6.9
APPLICATION OF RADAR REMOTE SENSING DATA FOR MONITORING OIL POLLUTION IN THE CASPIAN SEA
Elman Alaskaroy, Azercomos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.B1.6.10
DETECTING AND MONITORING POLLUTION IN THE CASPIAN SEA BY USING REMOTE SENSING TECHNOLOGIES
Chinar Badirkhanova, Azercomos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.B1.6.11
HIVE, A LAND SURFACE TEMPERATURE MONITORING MISSION, ADDRESSING THE SUSTAINABILITY OF WATER SUPPLY IN AGRICULTURE
Mohammad Iranmanesh, constellr GmbH, Belgium

B1.7. Earth Observations to address Earth’s Environment and Climate Challenges

October 6 2023, 15:00 — BCC B1

Co-Chair(s): Parag Vaze, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States; Elizabeth Seward, , United Kingdom;

Rapporteur(s): Chen Xiaoli, Beijing Institute of Space Mechanics & Electricity, China Academy of Space Technology (CAST), China;

IAC-23.B1.6.2
WATER SECURITY IN THE FACE OF CLIMATE CHANGE: THE ROLE OF SPACE ASSETS
Uma Cladellas Sanjuan, International Space University (ISU), Spain

IAC-23.B1.6.3
CASE STUDY ON HOW TO USE HR SATELLITE IMAGERY TO MONITOR FRESHWATER
Sapar Satayev, China HEAD Aerospace Technology Co., France

IAC-23.B1.6.4
GLOBAL MEASUREMENTS OF FRESH WATER FROM THE SWOT MISSION
Shailen Desai, Jet Propulsion Laboratory - California Institute of Technology, United States

IAC-23.B1.6.5
EXPLORATION AND MAPPING OF WATER RESOURCES BY AEROSPACE METHODS. THE DEVELOPMENT OF SCIENCE AND TECHNOLOGY, THE INCREASE AND DAY-BY-DAY INTENSIFICATION OF FORMS OF HUMAN INTERFERENCE WITH NATURE MAKE THE RESEARCH AND ANALYSIS OF ENVIRONMENT NECESSARY.
Kamina Agayeva, National Aerospace Agency (NASA) of Azerbaijan Republic, Azerbaijan

IAC-23.B1.6.6
SPACE DATA APPLICATIONS IN PREDICTING, MONITORING AND MITIGATING CLIMATE CHANGE IN AFRICA
Babagana Babagana, KANURI DEVELOPMENT ASSOCIATION, Nigeria

IAC-23.B1.6.7
SPACEBORNE L-BAND SAR REMOTE SENSING FOR POTABLE WATER LEAK DETECTION: A NOVEL SOLUTION FOR ADDRESSING THE GLOBAL WATER CRISIS
Yuval Lorig, ASTerra, Israel

IAC-23.B1.6.8
DIMINISHING TERRESTRIAL AND SUB-TERRESTRIAL RESOURCES IN ZIMBABWE. A CASE STUDY OF ZIMBABWEAN FRESHWATER BODIES, PRESENT AND FUTURE
Beverly Chelsea Saungweme, Russian Federation

IAC-23.B1.6.9
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Elman Alaskaroy, Azercomos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.B1.6.10
DETECTING AND MONITORING POLLUTION IN THE CASPIAN SEA BY USING REMOTE SENSING TECHNOLOGIES
Chinar Badirkhanova, Azercomos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.B1.6.11
HIVE, A LAND SURFACE TEMPERATURE MONITORING MISSION, ADDRESSING THE SUSTAINABILITY OF WATER SUPPLY IN AGRICULTURE
Mohammad Iranmanesh, constellr GmbH, Belgium

B1.7. Earth Observations to address Earth’s Environment and Climate Challenges

October 6 2023, 15:00 — HAC Museum GA

Co-Chair(s): Ole Morten Olsen, Norwegian Space Agency (NOSA), Norway; Shmirit Maman, Ben-Gurion University of the Negev, Israel; Rapporteur(s): Patrick Castillon, Centre National d’Etudes Spatiales (CNES), France;

IAC-23.B1.7.1
EVALUATION OF THE IMPACT OF ILLEGAL MINING ON VEGETATION IN THE VENEZUELAN AMAZON THROUGH MULTISPECTRAL IMAGERY
David Serrano, International Space University (ISU), France

IAC-23.B1.7.2
NOVEL APPROACH FOR CO2 AND CH4 MAPPING USING MICRO-LIDAR AND SMALL SATELLITE CONSTELLATION
Daria Stepanova, Germany

IAC-23.B1.7.3
UPPER TROPOSPHERE AND LOWER STRATOSPHERE CHARACTERIZATION FOR EXTREME SURFACE CLIMATE
Mikel Iituru, Spain

October 4 2023, 10:15 — BCC B2

Co-Chair(s): Robert D. Briskman, Sirius XM Radio, United States; Laszlo Bacsardi, Hungarian Astronautical Society (MANT), Hungary;

Rapporteur(s): Dunay Badirkhanov, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan;

IAC-23.B2.2.1
SATELLITE NETWORK DESIGN FOR EFFECTIVE INTEGRATION WITH FUTURE 6G TERRESTRIAL MOBILE COMMUNICATION SYSTEMS
Prasad Rathod, India

IAC-23.B2.2.2
TOWARD AUTONOMOUS COOPERATION IN HETEROGENEOUS NANOSATELLITE CONSTELLATIONS USING DYNAMIC GRAPH NEURAL NETWORKS
Joan Ruiz-de-Azu, i2CAT, Spain

IAC-23.B2.2.3
MAXIMIZING THE POTENTIAL OF SATELLITE NETWORKS IN COMBINATION WITH TERRESTRIAL NETWORKS FOR RELIABLE CONNECTIVITY
Gunhkan Ibrahimli, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.B2.2.4
NEXT GENERATION AUDIO BROADCAST SATELLITES
Robert D. Briskman, Sirius XM Radio, United States

IAC-23.B2.2.5
A STUDY ON ADOPTING NETWORK SLICING TO MULTILAYERED SATELLITE AND TERRESTRIAL INTERCONNECTED SYSTEMS
Mariko Sekiguchi, National Institute of Information and Communications Technology (NICT), Japan

IAC-23.B2.2.6
STRATEGIES TO MITIGATE WEATHER IMPACT ON LEO KA-BAND LINK AVAILABILITY FOR GSAAS OPERATORS
Nadia Lamara, Leaf Space s.r.l., Italy

IAC-23.B2.2.7
ENHANCING THROUGHPUT OF THE GEO SATELLITE AT C/KU BANDS
Ghulam JAFFER, University of Luxembourg, Luxembourg

IAC-23.B2.2.10
VIRTUAL SATELLITE NETWORK SIMULATOR (VSNES) - A SIMULATION ENGINE TO VIRTUALIZE NON-TERRESTRIAL NETWORKS
Joan Adrià Ruiz de Azua Ortega, i2CAT, Spain

IAC-23.B2.2.11
LINK BUDGET CONSIDERATIONS AND NETWORK ARCHITECTURE FOR VARIOUS APPLICATIONS OF CARRIER-IN-CARRIER TECHNIQUE IN SATELLITE COMMUNICATIONS
Bahruz Malikov, National Aviation Academy - Azerbaijan, Azerbaijan

IAC-23.B1.7.7
D’-BAND SAR SOIL MOISTURE MAPPING FOR CLIMATE RESILIENCY
Yuval Lorig, ASTERRA, Israel

IAC-23.B1.7.8
NOVEL MACHINE LEARNING METHODOLOGIES FOR DAMAGE DETECTION OF FLOOD EVENTS USING SATELLITE IMAGERY
Bakhtiyar Babashli, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.B1.7.9
L-BAND SAR SOIL MOISTURE MAPPING FOR CLIMATE RESILIENCY
Yuval Lorig, ASTERRA, Israel

IAC-23.B1.7.10
NOVEL MACHINE LEARNING METHODOLOGIES FOR DAMAGE DETECTION OF FLOOD EVENTS USING SATELLITE IMAGERY
Bakhtiyar Babashli, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

B2. IAF SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM

Coordinator(s): Rita Lollock, The Aerospace Corporation, United States; Morio Toyoshima, National Institute of Information and Communications Technology (NICT), Japan;

B2.1. Advances in Space-based Navigation Technologies

October 3 2023, 15:00 — BCC B2

Co-Chair(s): Peter Buist, European Union Agency for the Space Programme (EUSPA), The Netherlands; Joe M. Straus, The Aerospace Corporation, United States; Morio Toyoshima, National Institute of Information and Communications Technology (NICT), Japan;

Rapporteur(s): Sanat K Biswas, IIIT Delhi, India;

IAC-23.B2.1.1
KEY BENEFITS OF EGNOS FOR AZERBAIJAN
Huseyn Babayev, National Aviation Academy - Azerbaijan, Azerbaijan

IAC-23.B2.1.2
DEEP LEARNING BASED APPROACH FOR VISION-BASED SPACECRAFT NAVIGATION AND GUIDANCE FOR ASTEROID EXPLORATION MISSIONS
May Hammad, Deep Space Initiative, Canada

IAC-23.B2.1.3
AUTONOMOUS ONE-WAY TIME TRANSFER ON THE LUNAR SOUTH POLE SURFACE USING HIGH SENSITIVE GNSS RECEIVER
Carmine Di Lauro, Thales Alenia Space Italia, Italy

IAC-23.B2.1.4
EXPLORING ALTERNATIVE SPACE-BASED NAVIGATION SYSTEMS FOR UAVS OTHER THAN GNSS
Sarkhan Aghadashdov, National Aviation Academy - Azerbaijan, Azerbaijan

IAC-23.B2.1.6
MODEL-BASED VISUAL 3D POSE TRACKING OF NON-COOPERATIVE SPACECRAFT IN CLOSE RANGE
Chang Liu, Chinese Academy of Sciences, China

IAC-23.B2.1.7
TIME-TRANSFER AND CLOCK-SYNCHRONIZATION TECHNIQUE FOR MICROSATELITES IN THE LUNAR REGION
Ludovica Bozzoli, Argotec, Italy

IAC-23.B2.1.8
ANGLES-ONLY RELATIVE NAVIGATION IN NEAR-GEOSTATIONARY ORBITS CONSIDERING PERIODIC CORRECTIONS OF LUNISOLAR PERTURBATIONS
JIAWEI WU, Beijing Institute of technology, China

IAC-23.B2.1.9
SPACE QUALIFIED VPU BENCHMARKING OF CRATER MATCHING ODTS SOLUTIONS BASED ON CONVOLUTIONAL NEURAL NETWORKS
Federica Biancucci, Thales Alenia Space, Italy
B2.3. Advances in Space-based Communication Systems and Services, Part 2

October 4 2023, 15:00 — BCC B2

Co-Chair(s): Otto Koudelka, Joanneum Research, Austria; Morio Toyoshima, National Institute of Information and Communications Technology (NICT), Japan;
Rapporteur(s): Paul Serra, Massachusetts Institute of Technology (MIT), United States;
IAC-23.B2.3.1 (unconfirmed)
KEYNOTE: OPTICAL AND QUANTUM COMMUNICATION – BRIDGING THE FINAL FRONTIERS TO SPACE. WHERE WE ARE AND WHERE WE MIGHT BE GOING
Christopher Vasko, European Space Agency (ESA), The Netherlands

IAC-23.B2.3.2
NANOCRYPTO - QUANTUM-BASED OPTICAL CRYPTOGRAPHIC KEY AND DATA DISTRIBUTION SYSTEM
Marek Krawczyk, EXATEL SA, Poland

IAC-23.B2.3.3
HIGH-SPEED SOURCE FOR SATELLITE QUANTUM KEY DISTRIBUTION
Federico Berra, University of Padova, Italy

IAC-23.B2.3.5
SECURE CUBESAT-TO-CUBESAT COMMUNICATION USING QUANTUM KEY DISTRIBUTION FOR INFORMATION UPDATES AND RISK ALERTS
Priyank Dubey, University of Luxembourg, Luxembourg

IAC-23.B2.3.6
IMPLEMENTATION OF A PROTOCOL STACK WITH DTN PROTOCOLS FOR IOT SERVICES DEPLOYED FROM NON-TERRESTRIAL NETWORKS
Joan Adrià Ruiz de Azua Ortega, i2CAT, Spain

IAC-23.B2.3.7
DEVELOPMENT OF A MODULARIZED SIMULATOR OF A LOW EARTH ORBIT RADIO-OPTICAL HYBRID COMMUNICATION SATELLITE CONSTELLATION FOR SYSTEM-LEVEL DESIGN STUDIES
Shunichiro Nomura, University of Tokyo, Japan

IAC-23.B2.3.8
RESULTS FROM THE CLICK-A LASER COMMUNICATION EXPERIMENT
Paul Serra, Massachusetts Institute of Technology (MIT), United States

IAC-23.B2.3.10
PROSPECTIVE ONBOARD NETWORKS FOR NEW-GENERATION SPACECRAFT
Valentin Olenev, Saint Petersburg State University of Aerospace Instrumentation, Russian Federation

IAC-23.B2.3.12
DEPLOYMENT OF NB-IOT NTN CORE NETWORK FUNCTIONS ON SOFTWARE DEFINED RADIO (SDR) NANOSATELLITES: APPROACH AND PERFORMANCE ASSESSMENT
Victor Montilla Gispert, i2CAT, Spain

B2.4. Advances in Space-based Communication Systems and Services, Part 3

October 5 2023, 10:15 — BCC B2

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 AlMaeeni, Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates;
IAC-23.B2.4.1
CALIBRATION AND PERFORMANCE MEASUREMENTS FOR THE NASA DEEP SPACE NETWORK LUNAR EXPLORATION UPGRADE (DLEU)
Remi LaBelle, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States

IAC-23.B2.4.2
HIERARCHICAL COMMUNICATION ARCHITECTURE AND NETWORK PROTOCOL FOR CISLUNAR CONSTELLATION
Jionghui Li, Beijing Institute of Spacecraft System Engineering, China

IAC-23.B2.4.3
UNSUPERVISED ANOMALY DETECTION THROUGH MULTI-MODEL ENSEMBLE METHOD
Armando La Rocca, AIKO s.r.l., Italy

IAC-23.B2.4.4
DEVELOPMENT OF A MODULAR HALF-DUPLEX FREQUENCY-AGILE X-BAND TRANSCIEVER FOR CUBESATS AND ROBOTIC SPACECRAFT
Robin Bonny, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland

IAC-23.B2.4.7 (unconfirmed)
A COMPREHENSIVE APPROACH TO SPECTRUM ALLOCATION FOR DOMESTIC SPACE LAUNCH IN AUSTRALIA: INTERNATIONAL PERSPECTIVES ON LICENSING LAUNCH VEHICLE TRANSMISSIONS
Eamon Lawson, Australia

IAC-23.B2.4.8
CAVE ENVIRONMENT WAVEGUIDE-BASED SYSTEM FOR LUNAR EXPLORATION WIRELESS TELECOMMUNICATION
Alessia Di Giacomo, Sapienza University of Rome, Italy

IAC-23.B2.4.9
HIGH SENSITIVITY CRYOGENICALLY COOLED ULTRAFAST DETECTORS FOR OPTICAL AND NEAR-INFRARED COMMUNICATIONS RECEIVERS
Philip Mauskopf, Arizona State University, United States

B2.5. Advances in Space-based Communication Technologies, Part 1

October 5 2023, 15:00 — BCC B2

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-23.B2.5.1
VDES - CHALLENGES AND APPLICATIONS OF THE NEXT GENERATION MARITIME NARROWBAND SATELLITE COMMUNICATION SYSTEM
Jinhui Zhao, China HEAD Aerospace Technology Co., China

IAC-23.B2.5.2
THE NOVEL DESIGN AND DEVELOPMENT OF INTER SATELLITE LINK SUBSYSTEM FOR LOW EARTH ORBIT SATELLITES.
Somaiya Mohamed, Egyptian Space Agency (EqSA), Egypt

IAC-23.B2.5.4 (unconfirmed)
SATELLITE TELE-COMMAND TRANSFER FRAME LENGTH OPTIMIZATION METHODOLOGY FOR IMPROVING SPACE UPLINK EFFICIENCY
Bosung Kim, Korea Aerospace Industries, Ltd, Korea, Republic of

IAC-23.B2.5.5
DRIFT RATE ANALYSIS OF THE KPSO X-BAND CENTER FREQUENCY
Hyeon-Chool Lee, Korea Aerospace Research Institute (KARI), Korea, Republic of

IAC-23.B2.5.6
BENCHMARKING SPACE-GRADE AND COTS HIGH-PERFORMING, LOW-MASS, AND LOW-COST COMPUTING PRODUCED AT SCALE FOR DEEP SPACE TUMBLEWEED SCIENCE MISSIONS
Mithir Kapadia, Team Tumbleweed, The Netherlands
B2.6. Advances in Space-based Communication Technologies, Part 2

October 6 2023, 10:15 — BCC B2

Co-Chair(s): Elemér Bertényi, Canadian Aeronautics and Space Institute, Canada; Enrique Pacheco Cabrera, Incomspace, Mexico; Critchley-Marrows, The University of Sydney, Australia; Raptorre(s): Joshua Rapporteur(s): Norbert Frischauf, TU Graz, Austria; Joshua Critchley-Marrows, The University of Sydney, Australia;

IAC-23.B2.6.1
KEYNOTE: X-BAND PLASMA-BASED REFLECTIVE SURFACE
Mirko Magarotto, University of Padova, Italy

IAC-23.B2.6.4
ANTENNA PLACEMENT AND ARCHITECTURE FOR A WIND-DRIVEN, SPHEROID TUMBLEWEED ROVER ON MARS
Felix Abel, Germany

IAC-23.B2.6.5
NOVEL X-BAND ACTIVE ANTENNA DESIGN ENHANCES LEO TO GROUND COMMUNICATION
Antonino Tobia, Airbus Defence & Space, Italy

IAC-23.B2.6.7
CONCEPTUAL DESIGN OF A COMMUNICATION NANOSATELLITE MODEL WITH A NEW GENERATION LASER BEAM CONTROL AND ACTIVE TRANSPONDER SYSTEM
Nadir Atayev, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.B2.6.8
ARCHITECTURAL DEFINITION OF ON-BOARD ANTENNA ARRAYS FOR DIVERSE BEAM-HOPPING ILLUMINATION SCHEMES IN 5G/6G NTN SCENARIOS
Ramón Martínez Rodríguez-Osorio, Universidad Politécnica de Madrid, Spain

IAC-23.B2.6.9
DEEP LEARNING BASED SPACECRAFT ATTITUDE DETERMINATION AND CONTROL SYSTEM
Gautam Ramachandra, Bellatrix Aerospace Private Limited, India

IAC-23.B2.6.10
A NOVEL SPACE MISSION PLANNING AND NAVIGATION METHODOLOGY UTILIZING RADIO SIGNAL CLASSIFICATION AND ARTIFICIAL INTELLIGENCE PRATIYAKSHA SHETTY, India

IAC-23.B2.6.11
LASER RELAY SATELLITE NETWORK FOR REAL-TIME MISSION OPERATION ON MOON, MARS AND BEYOND!
Anand Nagesh, Big Dipper Exploration Technologies, India

PERFORMANCE OF MULTI-ANTENNA TERRRESTRIAL RECEIVERS IN LEO SATELLITE BASED OFDM TRANSMISSION SYSTEMS
Aimal Siraj, Void inc., Japan

B2.7. Advances in Space-based Navigation Systems, Services, and Applications

October 3 2023, 10:15 — BCC B2

Co-Chair(s): Raj Thilak Rajan, Technical University of Delft, The Netherlands; Giovanni B. Palmerini, Sapienza University of Rome, Italy; Rapporteur(s): Norbert Frischauf, TU Graz, Austria; Joshua Critchley-Marrows, The University of Sydney, Australia;

IAC-23.B2.7.1
IONSOPHERIC EFFECTS TOWARDS GBAS STATION AT KUALA LUMPUR INTERNATIONAL AIRPORT, MALAYSIA
Brelveenraj Kaur Rajwant Singh, Universiti Sains Malaysia, Malaysia

IAC-23.B2.7.2
ASSESSING THE USABILITY OF GNSS ON THE WAY TO THE MOON: GETTING THE LUGRE PAYLOAD READY TO FLY
Andrea Nardin, Politecnico di Torino, Italy

IAC-23.B2.7.5
AUTONOMOUS ORBIT DETERMINATION USING GNSS RECEIVER FOR ORBITAL RANDEZVOUS
Carmine Di Lauro, Thales Alenia Space Italia, Italy

IAC-23.B2.7.6
SIMULATION OF DEEP-SPACE AUTONOMOUS LINE-OF-SIGHT NAVIGATION USING SYNTHETIC IMAGES IN THE LOOP
Stefano Casini, TU Delft, The Netherlands

IAC-23.B2.7.7
SATELLITE CLOCK SYNCHRONIZATION PROTOCOL FOR SCHEDULER-RELATED DELAYS
Aarya Chaumal, College of Engineering Pune, India

IAC-23.B2.7.8
A NAVIGATION ENHANCEMENT TECHNOLOGY BASED ON COMMUNICATION SATELLITE
Peng Lyu, Tianjin 764 Communication Navigation Technology Co., Ltd., China

IAC-23.B2.7.9
RECENT RESULTS ON A RUBIDIUM PULSED OPTICALLY PUMPED CLOCK FOR SPACE APPLICATIONS
Enrico Suetta, Leonardo S.p.A., Italy

IAC-23.B2.7.10
A NEW ORIENTATION METHOD BASED ON SINGLE SHORT BASELINE OF NAVIGATION SATELLITE SIGNAL
Hua Zhang, Jiuquan Satellite Launch Center, China

IAC-23.B2.7.11
CONVOLUTIONAL NEURAL NETWORK BASED STAR TRACKER FOR HIGH-PRECISION SPACECRAFT NAVIGATION
Farid Guliyev, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.B2.7.12
A TRACKING SOLUTION VIA A NETWORK OF BEACONS ON THE SURFACE OF MARS USING THE TUMBLEWEED MOBILE IMPACTORS
Elemer Bertenyi, Canadian Aeronautics and Space Institute, Canada; Enrique Pacheco Cabrera, Incomspace, Mexico; Co-Chair(s):

K.R. Sridhara Murthi, NIAS, India; Steven Shumsky, Millennium Space Systems, A Boeing Company, United States;
B2.8-GTS.3. Space Communications and Navigation Global Technical Session

October 2 2023, 15:15 — BCC B5
Co-Chair(s): Kevin Shortt, Airbus Defence & Space, Germany; Joshua Critchley-Marrows, The University of Sydney, Australia;
IAC-23.B2.8-GTS.3.2
THE WORLD FIRST DTN COMMUNICATIONS EXPERIMENT IN THE LUNAR ORBIT USING KOREAN PATHFINDER LUNAR ORBITER (DANURI)
Byoungh-Sun LEE, Electronics and Telecommunications Research Institute (ETRI), Korea, Republic of
IAC-23.B2.8-GTS.3.3
RECEIVING TESTS OF NEW THREE DIMENSIONAL PHASED ARRAY ANTENNA
Nobuyuki Kaya, Kobe University, Japan
IAC-23.B2.8-GTS.3.4
ANALYZING A MULTI-SATELLITE QUANTUM COMMUNICATION NETWORK
Barnabas Ifkovics, Budapest University of Technology and Economics, Hungary
IAC-23.B2.8-GTS.3.5
REPORT ON THE FIRST HUNGARIAN SHORT RANGE FREE SPACE QKD LINK
Laszlo Bacsardi, Hungarian Astronautical Society (MANT), Hungary
IAC-23.B2.8-GTS.3.6
INNOVATIVE TDOA-BASED LAUNCHER TRACKING WITH SOFTWARE-DEFINED TECHNOLOGIES AND SYNCHRONIZATION: AN ANALYTICAL STUDY
Silvia Urbinati, University of Rome “La Sapienza”, Italy
IAC-23.B2.8-GTS.3.7
DEVELOPMENT OF RELIABLE AND EFFICIENT GROUND SEGMENT FOR PICOSATELLITE-AGRICULTURE TECHNOLOGY: A CASE STUDY OF SPACEIN SDN BHD
Muhammad Aizzat Iqbal Abd Rashid, SpaceIn Sdn Bhd, Malaysia
IAC-23.B2.8-GTS.3.9
ANOMALOUSLY HIGH AMPLITUDE SCINTILLATION OBSERVED FROM GLONASS SATELLITES DURING LOW SOLAR ACTIVITY
Manor Abusirdaneh, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates
IAC-23.B2.8-GTS.3.10
VIBRATION SUPPRESSION OF A THREE-AXIS FLEXIBLE SATELLITE USING COMPOSITE CONTROL
jalal eddine Benmansour, Agence Spatiale Algérienne (ASAL), Algeria

B3. IAF HUMAN SPACEFLIGHT SYMPOSIUM

Co-Chair(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;
Rapporteur(s): Antonio Fortunato, European Space Agency (ESA), Germany;
IAC-23.B3.1.1
KEYNOTE: IMPLEMENTING AN INCLUSIVE DEEP SPACE ECOSYSTEM
James (Jim) Free, National Aeronautics and Space Administration (NASA), United States
IAC-23.B3.1.2
JAXA’S ACCOMPLISHMENTS AND CHALLENGES FOR HUMAN SPACE FLIGHTS PROGRAM
Hirosi Sasaki, Japan Aerospace Exploration Agency (JAXA), Japan
IAC-23.B3.1.3 (unconfirmed)
NASA’S PLAN FOR CONTINUITY IN LOW-EARTH ORBIT
Ken Bowseros, National Aeronautics and Space Administration (NASA), United States
IAC-23.B3.1.4
TERRAE NOVAE: AN UPDATE AND OUTLOOK ON ESA’S HUMAN EXPLORATION PROGRAMME
Daniel Neuenschwander, European Space Agency (ESA), France
IAC-23.B3.1.6
ARTEMIS I: TEST FLIGHT BUYS DOWN RISK FOR HUMANITY’S RETURN TO THE MOON
Michael Sarasfin, National Aeronautics and Space Administration (NASA), United States
IAC-23.B3.1.7
ARTEMIS III AND BEYOND
Steve Creech, National Aeronautics and Space Administration (NASA), United States
IAC-23.B3.1.8
GATEWAY PROGRAM DEVELOPMENT PROGRESS
Sean Fuller, National Aeronautics and Space Administration (NASA), Johnson Space Center, United States
IAC-23.B3.1.9 (unconfirmed)
LUNAR GATEWAY ESFR FEATURES, STATUS AND OUTLOOK
Luca Stagnaro, ESA - European Space Agency, The Netherlands
IAC-23.B3.1.10
NASA’S HUMAN LANDING SYSTEM: A SUSTAINING PRESENCE ON THE MOON
Kent Choijna, NASA Marshall Space Flight Center, United States

B3.2. Commercial Human Spaceflight Programmes

October 3 2023, 10:15 — BCC A7
Co-Chair(s): Sergey K. Shaveich, Khrunichev State Research & Production Space Center, Russian Federation; Kevin D. Foley, The Boeing Company, United States; Michael E. Lopez Alegria, MLA Space, LLC, United States;
IAC-23.B3.2.1
NASA’S CAPABILITIES AND RESOURCES POTENTIALLY NEEDED IN COMMERCIAL LOW-EARTH ORBIT DESTINATIONS (CLDS) FACILITIES
Camille Alleyne, NASA, United States
IAC-23.B3.2.3
FEASIBILITY STUDY OF A EUROPEAN COMMERCIAL SPACE STATION IN LOW EARTH ORBIT
Alessandro Peluso, Politecnico di Torino - Thales Alenia Space Italia - ISAE Supaero Toulouse, Italy
IAC-23.B3.2.4
NASA SUPPORT FOR COMMERCIAL CREW LAUNCH CAPABILITIES
Rajiv Doreswamy, NASA, United States
IAC-23.B3.2.6
COMMERCIAL HUMAN SPACE FLIGHT TRAINING
Glenn King, The National Aerospace Training And Research Center (THE NASTAR CENTER), United States
IAC-23.B3.2.7
VAST SPACE: NEAR-TERM DEVELOPMENT OF CREWED ARTIFICIAL GRAVITY STATIONS
Molly McCormick, Vast Space, United States
B3.3. Utilization & Exploitation of Human Spaceflight Systems

October 3 2023, 15:00 — BCC A7
Co-Chair(s): Eleanor Morgan, Lockheed Martin Space Systems, United States; Kayva K. Manyapu, Department of Space Studies, University of North Dakota, United States; Thomas A.E. Andersen, Danish Aerospace Company A/S, Denmark;

IAC-23.B3.3.1
ARTIFICIAL GRAVITY ORBITAL STATION (AGOS)-THE SIMULATION OF GRAVITY IN A ROTATING SPACE STATION
Werner Grundl, Space Renaissance International, Austria

IAC-23.B3.3.2
BIONIC DESIGN OF A SOFT ROBOTIC ARM FOR IMPROVED SERVICES AND MAINTENANCE IN THE SPACE STATION CABIN
Ke Ma, School of aeronautics and astronautics, Sun Yat-Sen University, Guangzhou, China

IAC-23.B3.3.3
DEVELOPING PAYLOADS FOR GATEWAY
Nadine Boersma, European Space Agency (ESA), The Netherlands

IAC-23.B3.3.4
EFFORTS TOWARD REALIZATION OF MHI’S LUNAR SOCIETY CONCEPT
Koichi Abe, Mitsubishi Heavy Industries, Ltd., Japan

IAC-23.B3.3.5
DESIGN OF MOLECULAR SCREEN GENERATING ULTRA-HIGH VACUUM FOR PRODUCTION OF SEMICONDUCTOR MATERIALS USING MOLECULAR BEAM EPITAXY TECHNOLOGY ON THE CHINESE SPACE STATION
Hao Liu, Tsinghua University, China

IAC-23.B3.3.6
PARADIGM CHANGE IN SPACE UTILIZATION: CONCEPTUAL DESIGN STUDY OF A LUNAR SPACE STATION FOR IN-SPACE MANUFACTURING
Nadim Maraqten, University of Stuttgart, Germany

B3.4-B6.4. Flight & Ground Operations aspects of Human Spaceflight - Joint Session of the IAF Human Spaceflight and IAF Space Operations Symposia

October 4 2023, 10:15 — BCC A7
Co-Chair(s): Annamaria Piras, Thales Alenia Space Italia, Italy; Thomas A.E. Andersen, Danish Aerospace Company A/S, Denmark;

IAC-23.B3.4-B6.4.1
NASA DEEP SPACE NETWORK SUPPORT DURING ARTEMIS I MISSION OPERATIONS
Kathleen Harmon, Jet Propulsion Laboratory - California Institute of Technology, United States

IAC-23.B3.4-B6.4.3
AUTOMATED AND MANUAL APPROACH TO RUSSIAN ORBITAL STATION: REASONABLE COMPROMISE
Nikita Chudinov, Rocket Space Corporation Energia, Russian Federation

IAC-23.B3.4-B6.4.5
ENHANCED METHOD TO PERFORM CREW EARTH OBSERVATION ONBOARD THE ISS WITH USE OF RELOCATABLE CAMERAS
Sergey Bronnikov, S.P. Korolev Rocket and Space Corporation Energia, Russian Federation

IAC-23.B3.4-B6.4.6
ESA CREW CONFERENCE OPERATIONS DURING THE COVID-19 PANDEMIC
Daniel Feeney, GMV Innovating Solutions, Germany

IAC-23.B3.4-B6.4.7
DMS-MOD: MODERNISING THE DATA MANAGEMENT SUBSYSTEM IN THE COLUMBUS MODULE OF THE ISS
Matej Poliacek, Space Generation Advisory Council (SGAC), Slovak Republic

IAC-23.B3.4-B6.4.8
FLIGHT MODE DESIGN METHOD OF MULTI-CONFIGURATION COMBINATION BASED ON COMPLEX MISSION
LIU MIN, China Academy of Space Technology (CAST), China

IAC-23.B3.4-B6.4.9
APICES (ASTROLAND PROJECT INSIDE CAVES FOR EARTH-BASED SPACE EXPLORATION): A 130-HOUR SUBSURFACE ANALOGUE ASTRONAUT MISSION
Aditi Sathe, ATG Europe B.V., The Netherlands

IAC-23.B3.4-B6.4.10
OPERABILITY AS AN EARLY STAGE DESIGN METRIC FOR HUMAN SPACEFLIGHT VEHICLES
Srinivasa Bhattaru, Blue Origin LLC, United States

B3.5. Astronaut Training, Accommodation, and Operations in Space

October 4 2023, 15:00 — BCC A7
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; Keiji Murakami, Japan Aerospace Exploration Agency (JAXA), Japan; Andrea Boyd, European Space Agency (ESA), Germany;

IAC-23.B3.5.1
EXPERIMENTAL RESEARCH OF TECHNOLOGIES OF COSMONAUT PROFESSIONAL ACTIVITY CARRIED OUT DURING THE IMPLEMENTATION OF A MANNED EXPEDITION TO MARS
Maksim Kharlamov, Gagarin Cosmonaut Training Center, Russian Federation

IAC-23.B3.5.2
A QUANTITATIVE HUMAN SPACECRAFT DESIGN EVALUATION MODEL FOR ASSESSING CREW ACCOMMODATION AND UTILIZATION
Akshat Mohite, India

IAC-23.B3.5.4 (unconfirmed)
EXTREME UNDERWATER SPACE TRAINING
Guadalupe Espinazo Gastelum, International Institute for astronautical Sciences (IIAS), United States

IAC-23.B3.5.5
DEVELOPMENT OF THE COSMONAUT REMOTE TRAINING TECHNOLOGY USING LIMITED COMMUNICATION FACILITIES WITH THE SIMULATION OF WORK IN LONG-DURATION INTERPLANETARY FLIGHTS
Anna Kittina, Gagarin Cosmonaut Training Center, Russian Federation

IAC-23.B3.5.7
ASTRONAUTS WITH DISABILITIES: RESEARCH AND EXPERIMENT ON THE DISABILITY INCLUSION IN THE HUMAN SPACE PROGRAM
Tania Gres, Space Generation Advisory Council (SGAC), Italy

IAC-23.B3.5.8
OPTIMIZING ALGORITHMS FOR VISUAL AND INSTRUMENTAL OBSERVATIONS TAKEN BY THE CREW OF THE RUSSIAN SEGMENT OF THE INTERNATIONAL SPACE STATION
Pavel Borovikhin, Korolev RSC Energia, Russian Federation
B3.6-A5.3. Human and Robotic Partnerships in Exploration - Joint session of the IAF Human Spaceflight and IAF Exploration Symposia

October 5 2023, 10:15 — BCC A7

Co-Chair(s): Pierre-Alexis Joumel, Airbus Defence and Space, Germany; Mark Hempell, The British Interplanetary Society, United Kingdom;
Rapporteur(s): Jan Marius Bach, DLR (German Aerospace Center), Germany; Scott Ritter, University of Bern, Switzerland;

IAC-23.B3.6-A5.3.8
CEREBELLUM-INSPIRED TRACKING CONTROL OF UNKNOWN MODELS FOR SPACE IN-CABIN SERVICE ROBOTS WITH DUAL CONTINUUM ARMS
Hui Wang, School of aeronautics and astronautics, Sun Yat-Sen University Guangzhou, China

IAC-23.B3.6-A5.3.9
A BIO-INSPIRED 3D OLFATORY NAVIGATION ALGORITHM APPLIED TO THE SPACE STATION
Qin Lin, School of aeronautics and astronautics, Sun Yat-Sen University Guangzhou, China

IAC-23.B3.6-A5.3.10
EMOTIONALLY INTELLIGENT ROBOTS: ADVANCEMENTS IN SOCIAL AND COGNITIVE COMPUTING TOWARDS IMPROVING HUMAN-ROBOT INTERACTION IN SPACE
Faith Tng, Space Generation Advisory Council (SGAC), Singapore, Republic of

B3.7. Advanced Systems, Technologies, and Innovations for Human Spaceflight

October 5 2023, 15:00 — BCC A7

Co-Chair(s): Michele Gates, NASA Headquarters, United States; Sebastien Barde, Centre National d’Etudes Spatiales (CNES), France; Mauro Augelli, UK Space Agency, United Kingdom;
Rapporteur(s): Gi-Hyuk Choi, Korea Aerospace Research Institute (KARI), Korea, Republic of;

IAC-23.B3.7.1
A DIGITAL ENGINEERING APPROACH TO ASSESSING THE MOON TO MARS ARCHITECTURE
Alanna Carnevale, The Aerospace Corporation, United States

IAC-23.B3.7.2
DIGITAL TWIN SIMULATIONS OF CHINA SPACE STATION
Suquan Ding, Beijing Space Quest Ltd., China

IAC-23.B3.7.4
ROSAS – THE FUTURE OF HUMAN SPACEFLIGHT
Jateen Rathod, R V College of Engineering, Bengaluru, India

IAC-23.B3.7.6
CONCEPTUAL DESIGN FOR THE ADVANCEMENT OF MECHANICAL COUNTER PRESSURE SPACESUITS
Michelle Kostin, Imperial College London, United Kingdom

IAC-23.B3.7.7
RESEARCH ON THE PRACTICE AND EFFICIENCY IMPROVEMENT OF THE EXTRAVEHICULAR ACTIVITY MISSION SUPPORTED BY CHINA SPACE STATION MANIPULATOR
CHAO ZHU, China Academy of Space Technology (CAST), China

IAC-23.B3.7.8
REDUCTION OF LOSS OF TIME IN SPACE USING INNOVATIVE TECHNOLOGIES
Fidan Azimova, National Aviation Academy - Azerbaijan, Azerbaijan

IAC-23.B3.7.9
NEW WORLDS
Mehemmed Rehimov, Azerbaijan Technical University, Azerbaijan

IAC-23.B3.7.10
POTENTIAL OF ARTIFICIAL INTELLIGENCE CENTAURS FOR MEDICAL DIFFERENTIAL DIAGNOSIS IN HUMAN SPACEFLIGHT
KongSan Kim, Space Generation Advisory Council (SGAC), Korea, Republic of

IAC-23.B3.7.11
THE IMPROVEMENT OF THE CARDIOPULMONARY RESUSCITATION METHOD IN MICROGRAVITY BASED ON AN INNOVATIVE CONSTRUCTION CMRS - MOBILE MEDICAL MODULE (MMM) - AND THE SIMULATION IN NEUTRAL BUOYANCY.
Arkadiusz Trzos, Jagiellonian University, Poland
B.4. 30th 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;
Rapporteur(s): Danielle Wood, Massachusetts Institute of Technology (MIT), United States; Pierre Molette, , France;
Co-Chair(s): Rhoda Shaller Hornstein,
Support(s):

B.4.1. 24th Workshop on Small Satellite Programmes at the Service of Developing Countries

October 3 2023, 10:15 — BCC A2

Co-Chair(s): Sias Mostert, Space Commercial Services Holdings (Pty) Ltd, South Africa; Nathalie RICARD, United Nations Office for Outer Space Affairs, Austria; Taiwo Raphael Tejumola, International Space University, France;
Rapporteur(s): Danièle Wood, Massachusetts Institute of Technology (MIT), United States; Pierre Molette, , France;
IAC-23.B4.1.1
OPPORTUNITIES FOR CUBESAT-RELATED CAPACITY-BUILDING UNDER THE UNITED NATIONS ACCESS TO SPACE FOR ALL INITIATIVE: ACHIEVEMENTS IN 2022-2023
Hazuki Mori, United Nations Office for Outer Space Affairs, Austria

IAC-23.B4.1.2
ON-ORBIT RESULTS AND LESSONS LEARNED FROM SEVEN YEARS OF ALSAT-1N OPERATIONS
Abdelmajid Lassakeur, Agence Spatiale Algérienne (ASAL), Algeria

IAC-23.B4.1.3
INITIATIVES OF THE PERUVIAN SPACE AGENCY (CONIDA) TO BOOST THE GROWTH OF THE PERUVIAN AEROSPACE ECOSYSTEM
George Steve Fajardo Soria, Agencia Espacial del Peru (CONIDA), Peru

IAC-23.B4.1.5
INSTITUTIONALIZING UPSTREAM SPACE TECHNOLOGY DEVELOPMENT FROM THE UNIVERSITY TO THE PHILIPPINE SPACE AGENCY
Julie Ann Banatoa, Philippine Space Agency, The Philippines

IAC-23.B4.1.6
SPACE SCIENCE AND TECHNOLOGY CAPACITY BUILDING THROUGH INDIGENOUS AI-BASED MULTISPECTRAL CAMERA PAYLOAD DESIGN
Raihana Shams Islam Antara, BRAC University, Bangladesh

IAC-23.B4.1.7
THE DEVELOPMENT OF SURYA SATELLITE-1: PIONEERING INDONESIA NANOSATELLITE
Wahyudi Hasbi, Research Center for Satellite Technology, National Research and Innovation Agency (BRIN), Indonesia

IAC-23.B4.1.8
ASEAN MULTINATION COLLABORATION PROJECT: CRAFTING INDIGENOUS SPACE PROGRAM IN MALAYSIA
Mohamad Huzaimy Jusoh, Universiti Teknologi MARA (UiTM), Malaysia

IAC-23.B4.1.9 (unconfirmed)
PROPOSAL FOR A SMALL SATELLITE CONSTRUCTION PLATFORM USED FOR ACADEMIC PURPOSES
Lídia Nkula, Angola

IAC-23.B4.1.10
A SMALL SATELLITE PLATFORM PROPOSAL FOR STUDIES ON THE ASPARAGUS FARMING
Avid Roman-Gonzalez, Business on Engineering and Technology S.A.C. (BE Tech), Peru

IAC-23.B4.1.11
BLUCSAT—IOT SATELLITE MONITORING FOR COMBATING ILLEGAL WILDLIFE HUNTING IN NON-SERVICE AREAS IN JORDAN: SAFEGUARDING BIODIVERSITY THROUGH INNOVATIVE TECHNOLOGY
Tetsuhito Fuse, Kyushu Institute of Technology, Japan

IAC-23.B4.1.12
OPEN-SOURCING OF CUBESAT BUS FOR CAPACITY BUILDING AIMED TO ACQUIRE INDIGENOUS SPACE DEVELOPMENT CAPABILITY
Paolo Marzioli, Sapienza University of Rome, Italy

IAC-23.B4.1.13
SPACE CAPACITY BUILDING PROGRAMMES IN DOMINICAN REPUBLIC AND PANAMA: LESSONS LEARNED FROM THE FIRST NANO-SATELLITE DESIGN AND MISSION CONTROL CENTER DEVELOPMENT

B.4.2. Small Space Science Missions

October 2 2023, 15:15 — BCC A2

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, Antwerp Space, The Netherlands;

IAC-23.B4.2.1
AN ESA NANOSATELLITE CONSTELLATION TO MONITOR SPACE WEATHER EFFECTS
Steve Eckersley, Surrey Satellite Technology Ltd (SSTL), United Kingdom

IAC-23.B4.2.2
HELIOSPHERE PIONEER FOR SOLAR AND INTERPLANETARY THREATS DEFENCE (HENON) MISSION: SPACE WEATHER MONITORING AND FORECASTING
Lorenzo Proemiali, Argotec, Italy

IAC-23.B4.2.3
DEEP SPACE MISSION REMEC FOR GCR MONITORING
Robert Filipas, Czech Technical University in Prague (CTU), Czech Republic

IAC-23.B4.2.4
A NANOSATELLITE OPERATING IN THE VAN ALLEN BELT: THE LESSON LEARNED FROM THE ASTROBIO CUBESAT MISSION
Stefano Carletta, Sapienza University of Rome, Italy

IAC-23.B4.2.5
MEC – MAGNETOSPHERE MONITORING BY HETEROGENEOUS CONSTELLATION DESIGN
Davide Russo, Politecnico di Milano, Italy
B4.3. Small Satellite Operations

October 3 2023, 15:00 — BCC A2

Co-Chair(s): Andreas Hornig, AerospaceResearch.net, Germany; Nijn Jose Thiykathu, Science and Technology Facilities Council, United Kingdom; Stephan Roemer, Antwerp Space, Belgium;

Rapporteur(s): Lynette Tan, Singapore Space and Technology LTD (SSTL), Singapore, Republic of;

IAC-23.B4.3.1
DEVELOPMENT OF SUSTAINABLE AUTONOMY OF SMALL SATELLITE CONSTELLATIONS FOR CILSPURAN SPACE
Mohammed Irfan Rashed, Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of

IAC-23.B4.3.2
LESSONS LEARNED FROM THE GREENCUBE 3U CUBESAT OPERATIONS IN MEDIUM EARTH ORBIT
Paolo Marzioli, Sapienza University of Rome, Italy

IAC-23.B4.3.3
STREAMLINING OF THE ROUTINE TASKS OF SPHERE-1 EYE OPERATION REALIZED BY ITS FLIGHT SOFTWARE FUNCTIONS
Yutarou Ito, University of Tokyo, Japan

IAC-23.B4.3.4
A HIERARCHICAL MODE CONCEPT TO ENABLE AUTONOMY FOR SMALL SPACECRAFT
Mario Starke, Technische Universität Berlin, Germany

IAC-23.B4.3.5
AN INNOVATIVE BUSINESS MODEL OF JILIN-1 SATELLITE CONSTELLATION IN FIXED ASSET INVESTMENT STATISTICS
YuanXiu Zhou, Chang Guang Satellite Technology Co., Ltd., China

IAC-23.B4.3.6
ACTIVE SPECTROMETER FOR SMALL SATELLITES (ASTROSS)
Samuel Cano, University of Arkansas, United States

IAC-23.B4.3.7
DEEP REINFORCEMENT LEARNING FOR UNDER-ACTUATED SATELLITE ATTITUDE CONTROL AND REACTION WHEEL DESATURATION USING SOLAR RADIATION PRESSURE
Alessandro Balossino, Argotec, Italy

IAC-23.B4.3.8
ON-ORBIT SERVICER DESIGN USING MANIPULATOR ARM FOR POWER ENHANCEMENTS
Arnon Spitzer, Astroscale Ltd, Israel

IAC-23.B4.3.10
REVOLUTIONIZING SMALL SATELLITE TECHNOLOGY WITH ADVANCED DEPLOYABLE STRUCTURAL SYSTEMS
ISHITA SHARMA, University of Swansea, United Kingdom

B4.4. Small Earth Observation Missions

October 4 2023, 10:15 — BCC A2

Co-Chair(s): Carsten Toeben, European Space Agency (ESA), The Netherlands; Larry Paxton, The John Hopkins University Applied Physics Laboratory, United States; Eugene D Kim, Satrec Initiative, Korea, Republic of;

Rapporteur(s): Werner R. Balogh, European Space Agency (ESA), France; Marco Gomez Jenkins, , United Kingdom;

IAC-23.B4.4.1
HYPERSCOUT; STATE OF THE ART HYPER SPECTRAL IMAGER DEMONSTRATING IMAGE PROCESSING IN SPACE, AND ITS FUTURE IN ADDRESSING CLIMATE AND ENVIRONMENTAL CHANGES
James Harpur, Cosine Remote Sensing B.V., The Netherlands

IAC-23.B4.4.2
THE PAST AND THE FUTURE OF SMALLSAT CONSTELLATIONS - A SUCCESS STORY
Rene Griesbach, Planet Labs Germany GmbH, Germany

IAC-23.B4.4.3
EARTHNEXT: A VERY LOW EARTH ORBIT CUBESAT MISSION FOR MULTISPECTRAL EARTH OBSERVATION
Giuseppe Lecese, ASI - Italian Space Agency, Italy

IAC-23.B4.4.4
DEVELOPMENT OF THE HYDROGNSS MISSION, INSTRUMENT AND SCIENCE OBJECTIVES WITHIN THE NEWSPACE ESA SCOUT PROGRAMME
Alex da Silva Curiel, Surrey Satellite Technology Ltd (SSTL), United Kingdom

IAC-23.B4.4.5
THE FEASIBILITY STUDY OF BUILDING A SUSTAINABLY NATIONAL SPACE TECHNOLOGY THROUGH EDS THEOS-3 MISSION LIKHIT WARANON, Geo-Informatics and Space Technology Development Agency (Public Organization), Thailand

IAC-23.B4.4.6
THE FIRE LOCALISATION AND MITIGATION FOR EMERGENCIES SATELLITES (FLAMES), A CONSTELLATION OF CUBESATS IN LEO FOR MONITORING WILDFIRES IN NEAR REAL-TIME.
Benjamin Verbeek, Uppsala University, Sweden

IAC-23.B4.4.7
THE BALKAN CONSTELLATION - COPERNICUS CONTRIBUTION MISSION WITH REGIONAL IMPACT
Viktoriya Dimov, EnduroSat AD, Bulgaria

IAC-23.B4.4.8
THE TROLL: PRIVATELY FUNDED MISSION FOR INNOVATIVE SATELLITE INTEGRATION, HYPER SPECTRAL SENSING AND LIDAR IN-ORBIT DEMONSTRATION
Jakub Zíka, TRL Space, Czech Republic

IAC-23.B4.4.9
VULCAIN: A SMALL SAT FORMATION FLYING MISSION FOR VOLCANOES SURVEY AND MONITORING WITH MULTISPECTRAL OBSERVATIONS
Michèle Lavagna, Politecnico di Milano, Italy

IAC-23.B4.4.10
THE WORLD’S LIGHTEST OPERATIONAL IN-ORBIT 0.5M SATELLITE: GF04
Xiaoran Xu, Chang Guang Satellite Technology Co., Ltd., China

IAC-23.B4.4.12
DESIGN AND TEST OF A DEPLOYABLE BROADBAND ANTENNA FOR LOW FREQUENCY SYNTHETIC APERTURE INTERFEROMETRIC RADIMETRY FROM SMALL SATELLITES
Lewis Raymond Williams, University of Oslo, Norway
B.4.5. Access to Space for Small Satellite Missions

October 4 2023, 15:00 — BCC A2

Co-Chair(s): Yves Gerard, Airbus Defence & Space, France; Philip Davies, Surrey Satellite Technology Ltd (SSTL), United Kingdom;
Rapporteur(s): Jeff Emdee, The Aerospace Corporation, United States; Carlos Niederstrasser, Northrop Grumman Corporation, United States;
IAC-23.B4.5.2
DO NOT ABANDON YOUR CUBESATS!
Marta Ceccaroni, Cranfield University, United Kingdom

IAC-23.B4.5.3
INVESTIGATION OF DIFFERENT STRATEGIES FOR ACCESS TO SPACE OF SMALL SATELLITES ON A DEFINED LEO ORBIT
Francesco Barato, University of Padova – DI/CTISAS, Italy

IAC-23.B4.5.4 (unconfirmed)
ION SERVICE FOR UNIVERSITIES: ENABLING AFFORDABLE AND RELIABLE ACCESS TO SPACE FOR EDUCATIONAL CUBESATS
MATTEO ZENI, Politecnico di Milano, Italy

IAC-23.B4.5.5
SMALLSAT LAUNCH SERVICES IN THE ASIA PACIFIC: TRENDS, CHALLENGES, AND FUTURE OPPORTUNITIES
Sindhu Belki, The University of Alabama, United States

IAC-23.B4.5.6
MARKET COMPETITIVENESS ANALYSIS FOR AIR LAUNCH SYSTEMS IN THE ASIA-PACIFIC SMALLSAT LAUNCH SECTOR
KangSan Kim, Space Generation Advisory Council (SGAC), Korea, Republic of

IAC-23.B4.5.7
OPENING NEW FRONTIERS: SMALLSATEL Launch IN ASIA-PACIFIC
ISHITA SHARMA, University of Swansea, United Kingdom


October 5 2023, 15:00 — BCC A2

Co-Chair(s): Jeff Emdee, The Aerospace Corporation, United States; Arnau Pons Lorente, Space Generation Advisory Council (SGAC), United States;
Rapporteur(s): Elena Toson, Space Generation Advisory Council (SGAC), Italy; Vito Salvatore, CIRA Italian Aerospace Research Center, Capua, Italy;
IAC-23.B4.5A-C4.8.5
UNISAT-8: A STABLE SATELLITE FORMATION USING ELECTRIC PROPULSION
Filippo Graziani, G.A.U.S.S. Srl, Italy

IAC-23.B4.5A-C4.8.7
STUDY, DEVELOPMENT, IMPLEMENTATION AND TESTING OF A WATER RESISTOJET PROPULSION SYSTEM FOR CUBESATS
Federico Larizza, Sapienza University of Rome, Italy

QUALIFICATION CAMPAIGN FOR A CENTRE-TRIGGERED PULSED CATHODIC ARC THRUSTER
Patrick Neumann, Australia

B.4.6A. Generic Technologies for Small/Micro Platforms

October 6 2023, 13:45 — BCC A2

Co-Chair(s): Philip Davies, Surrey Satellite Technology Ltd (SSTL), 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-23.B4.6A.1
FINAL RESULTS OF THE NOVEL ACS DEVELOPMENT PROJECT FERRAC
Manfred Ehresmann, Institute of Space Systems, University of Stuttgart, Germany

IAC-23.B4.6A.2
COMMERCIAL DATA RELAY SERVICES IN THE CIS-LUNAR ENVIRONMENT WITH LUNAR PATHFINDER
Philip Davies, Surrey Satellite Technology Ltd (SSTL), United Kingdom

IAC-23.B4.6A.3
A SOFTWARE DEFINITION SATELLITE ARCHITECTURE BASED ON POWERFUL COMPUTING PLATFORM
Lianxiang Jiang, China Academy of Space Technology (CAST), China

IAC-23.B4.6A.5 (unconfirmed)
DEVELOPMENT OF MINIORIZED INTEGRATED AVIONICS PACKAGE FOR SMALL SATELLITES
Harshit Kumar, U R RAO SATELLITE CENTRE (URSC), India

IAC-23.B4.6A.6
RESEARCH ON LIGHTWEIGHT SLAM ALGORITHM FOR AUTONOMOUS SENSING OF ON-ORBIT-SERVICE ROBOT
Zhihao Zhang, National Key Laboratory of Aerospace Flight Dynamics, Northwestern Polytechnical University, Xi’an, China

IAC-23.B4.6A.7
TETHER-BASED SOFT RENDEZVOUS AND DOCKING FOR MICRO SATELLITES: DESIGN, CONTROL AND EXPERIMENT
Mingyue Zheng, Zhejiang University, China

IAC-23.B4.6A.8
RESEARCH ON AN INNOVATIVE HIGH-RELIABILITY ATTITUDE MEASUREMENT UNIT OF MICRO/NANOSATELLITE
Xiaozhou Yu, Dalian University of Technology (DUT), China

IAC-23.B4.6A.9
TECHNOLOGY CHALLENGES OF VERY HIGH RESOLUTION IMAGING FROM A SMALL SATELLITE MISSION
Robert Elliott, Surrey Satellite Technology Ltd (SSTL), United Kingdom

IAC-23.B4.6A.10
XPANCIION: MODULAR SATELLITE PLATFORM DESIGN FOR SCALABLE AND ADAPTIVE PRODUCTION
Lian Ming Goh, Clyde Space Ltd., United Kingdom

IAC-23.B4.6A.11
IMPLEMENTATION OF THE GALILEO HIGH ACCURACY SERVICE ON AN ACCURATE GNSS RECEIVER FOR LEO
Sergiu-Stefan Milhau, Romanian InSpace Engineering SRL, Romania

IAC-23.B4.6A.12
STRATEGY AND LESSON LEARNED IN INTEGRATION SUBSYSTEM TESTING: THE HERMES CUBESAT IN-OFFICE TEST CASE
Ivan Troisi, Politecnico di Milano, Italy
### B4.6B. Generic Technologies for Nano/Pico Platforms

**October 5 2023, 10:15 — BCC A2**

**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;

**IAC-23.B4.6B.1** DEVELOPMENT OF AN EMBEDDED SOFTWARE PLATFORM FOR THE GW-SAT CUBESAT ADCS 
Giancarlo Vargas-Villegas, Instituto Tecnológico de Costa Rica (TEC), Costa Rica

**IAC-23.B4.6B.2** (unconfirmed) DEMONSTRATING THE FEASIBILITY OF A 500 MHZ SYNTHETIC APERTURE INTERFEROMETRIC RADIOMETER ONBOARD A CUBESAT PLATFORM TO RETRIEVE SEA SURFACE SALINITY MEASUREMENTS OVER THE ARCTIC REGIONS Marco Grasso, University of Oslo, Norway

**IAC-23.B4.6B.3** NEURAL NETWORK BASED FAULT DETECTION IN CUBESAT TELEMETRY - A LUNAR EXPLORATION CASE STUDY 
Angelo Cervone, Delft University of Technology (TU Delft), The Netherlands

**IAC-23.B4.6B.4** FEASIBILITY STUDY ON ENABLING TECHNOLOGIES FOR DESIGNING A SYNTHETIC APERTURE RADAR PAYLOAD ON A NANOSATELLITE FOR MONITORING WATER LEVELS IN FLOOD PRONE AREAS OF NIGERIA. 
Maren Mashor, University of Osmania, India

**IAC-23.B4.6B.5** A COTS BASED SPACE ENVIRONMENT INSTRUMENT FOR CUBESATS 
Bernhard Seifert, FOTEC Forschungs- und Technologietransfer GmbH, Austria

**IAC-23.B4.6B.6** REMOTE SYSTEM-ON-CHIP RECONFIGURATION FRAMEWORK FOR FLEXIBLE UPDATE AND REPAIR OF NANOSATELLITE HARDWARE IN-ORBIT 
Víctor Eduardo Vásquez-Ortiz, OroraTech, Germany

**IAC-23.B4.6B.7** A FLAT-SAT PLATFORM FOR THE DEVELOPMENT AND TESTING OF THE 3U HERMES CONSTELLATION SATELLITES 
Stefano Silvestrini, Politecnico di Milano, Italy

**IAC-23.B4.6B.8** IN-ORBIT THERMAL CHARACTERIZATION OF A 3U CUBESAT AND VALIDATION OF AN IN-HOUSE DEVELOPED TOOL FOR THERMAL ANALYSIS 
Luís Sá Mello, Politecnico di Torino, Italy

**IAC-23.B4.6B.9** INTERNET-OF-THINGS SENSOR APPLICATIONS ON THE SAPIENZA SSLAB CUBESATS: FROM WILDLIFE MONITORING TO INTER-SATELLITE LINK RESEARCH 
Pablo Marzioli, Sapienza University of Rome, Italy

**IAC-23.B4.6B.10** LONG-TERM IN-ORBIT TESTING OF PEROVSKITE SOLAR CELLS ON A 1U CUBESAT: AN OPEN-SOURCE DESIGN APPROACH 
Alessio Proserpi, Politecnico di Milano, Italy

**IAC-23.B4.6B.11** VERSATILE CUBESAT PLATFORM AS A SOLUTION FOR CHALLENGING EO AND SATCOM MISSIONS 
Julian Schernagl, EnduroSat AD, Germany

### B4.7. Constellations and Distributed Systems

**October 5 2023, 15:00 — BCC A2**

**Chairman(s):** Rainer Sendzu, International Academy of Astronautics (IAA), Germany; Michele Grassi, University of Naples “Federico II”, Italy; Co-Chair(s): Jaime Esper, National Aeronautics and Space Administration (NASA), United States; Maria Daniela Graziano, University of Naples “Federico II”, Italy; Rapporteur(s): Giuseppe Leccese, ASI - Italian Space Agency, Italy

**IAC-23.B4.7.1** BISS CUBESAT FOR A BI-DIRECTIONAL INTERNET OF THINGS SATELLITE SERVICE: AN OVERVIEW OF THE DEVELOPMENT STATUS 
Giancarlo Vargas-Villegas, Instituto Tecnológico de Costa Rica (TEC), Costa Rica

**IAC-23.B4.7.2** REINFORCEMENT LEARNING FOR PLANNING AND TASK COORDINATION IN A SWARM OF CUBESATS: OVERCOMING PROCESSOR LIMITATION CHALLENGES 
Mohammadamin Aalali, University of Luxembourg, Luxembourg

**IAC-23.B4.7.3** A NOVEL FEMTO-SATELLITE SENSOR ARRAY FOR DECONVOLVING TIME AND SPACE MEASUREMENTS OF TRANSIENT PHENOMENON IN EARTH ORBIT 
Christopher Toole, School of Engineering, University of Glasgow, United Kingdom

**IAC-23.B4.7.4** A FEMTO-SAT SWARM MISSION IN LEO: DIFFERENTIAL DRAG CONTROL UNDER POWER AND COMMUNICATION CONSTRAINTS 
Shamil Biktimirov, Technology Innovation Institute (TII), Russian Federation

**IAC-23.B4.7.5** INITIATIV FORMULATION OF A TIME VARYING DYNAMIC GRAPH DECENTRALIZED OPTIMIZATION FRAMEWORK FOR SCALED SATELLITE NETWORK INFRASTRUCTURE OPERATIONS 
Vincenzo Messina, Technische Universität München, Germany

**IAC-23.B4.7.6** OPTIMAL ORBITAL CONFIGURATIONS OF SPACEBORNE OPTICAL SENSORS CONSTELLATIONS FOR SPACE SURVEILLANCE 
Antonio D’Amabile, Cranfield University, United Kingdom

**IAC-23.B4.7.7** MODELING AND CONTROL OF INTER-SATELLITE GEOCENTRIC ANGLE BOUNDARY FOR MEGA CONSTELLATION REGIONAL COVERAGE 
Yun Xu, Zhejiang University, China

**IAC-23.B4.7.8** OBSERVATION CONFIGURATION CONSTRAINED PREDICTIVE COLLISION AVOIDANCE GUIDANCE FOR LOW THRUST MEGA-SATELLITE CONSTELLATION 
Kun Xu, Beijing Institute of Technology, China

**IAC-23.B4.7.9** SUMMARY OF A PHASE D/A STUDY REPORT FOR A COMMUNICATION SATELLITE CONSTELLATION FOR DIANA LUNAR INFRASTRUCTURE 
Denis Acker, University of Stuttgart, Germany

**IAC-23.B4.7.10** A SMALLSAT CONSTELLATION FOR F10.7 AND F30 CM SOLAR RADIO FLUX MEASUREMENTS 
Zina Abu-Shaar, Skolkovo Institute of Science and Technology, Russian Federation

**IAC-23.B4.7.11** CONNECTED NETWORK – A NON-TERRESTRIAL STANDARDISED COMMUNICATION ARCHITECTURE FOR NEW IOT BUSINESS MODELS 
Andre Guerra, SIMPLYCONNECTED Lda (CONNECTED), Portugal
B.4.8. Small Spacecraft for Deep-Space Exploration

October 6 2023, 10:15 — BCC A2

Co-Chair(s): Leon Alkalai, Mandala Space Ventures, United States; Rene Laufer, Luleå University of Technology, Sweden; Jaime Esper, National Aeronautics and Space Administration (NASA), United States;

Rapporteur(s): Sami Asmar, Jet Propulsion Laboratory - California Institute of Technology, United States

IAC-23.B4.8.1 DEEP SPACE NETWORK OBSERVATIONS DURING CISLUNAR AND DEEP SPACE CUBESATS SUPPORT
Sami Asmar, Jet Propulsion Laboratory - California Institute of Technology, United States

IAC-23.B4.8.2 LESSONS LEARNED FROM CUBESAT MOON LANDER OMOTENASHI
Tatsuaki Hashimoto, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-23.B4.8.3 INITIAL OPERATION RESULTS OF EQUULEUS ADCS: WHEEL UNLOADING STRATEGIES FOR A DEEP SPACE 6U CUBESAT
Hirotaka Sekine, University of Tokyo, Japan

IAC-23.B4.8.4 LUNAR PATHFINDER - A COMMERCIALLY-DRIVEN LUNAR DATA RELAY SATELLITE, 2 YEARS UNTIL LAUNCH
Philip Davies, Surrey Satellite Technology Ltd (SSTL), United Kingdom

IAC-23.B4.8.5 DESIGN, ANALYSIS AND VALIDATION OF THE ADCS FOR THE LUMIO MISSION
Felice Piccolo, Politecnico di Milano, Italy

IAC-23.B4.8.6 THE HIGH SENSITIVITY SELF-ADAPTIVE ACQUISITION METHOD FOR SMALL MOON MISSION
Jia Tian, China Academy of Space Technology (Xi’an), China

IAC-23.B4.8.7 FREQUENT DEEP-SPACE ACCESS STRATEGY FOR VENUS AERONOMICAL MISSION USING EARTH-SYNCHRONOUS ORBITS
Daichi Ito, The Graduate University for Advanced Studies, Japan

IAC-23.B4.8.8 MODEL PREDICTIVE TRAJECTORY GENERATION AND CONTROL FOR BALLISTIC LANDER DEPLOYMENT ON SMALL BODIES FROM SMALL-SAT PLATFORMS: THE TASTE MISSION CASE STUDY
Enrico Belloni, Politecnico di Milano, Italy
B5.1. Tools and Technology in Support of Integrated Applications

October 2 2023, 15:15 — BCC B2

Co-Chair(s): Jeanne Holm, City of Los Angeles, United States; Roberta Mugellesi-Dow, European Space Agency (ESA), United Kingdom;
Rapporteur(s): Marion Allayioti, European Space Agency (ESA), United Kingdom;
IAC-23.B5.1.1

INTELLECTUAL SYSTEM OF PROCESSING AEROSPACE DATA FOR MODERN MANAGEMENT AZERBAIJAN NATIONAL SPATIAL DATA
Sevda R. Ibrahimova, National Aviation Academy - Azerbaijan, Azerbaijan

IAC-23.B5.1.2

USE OF SPACE TO MITIGATE THE IMPACT OF CLIMATE CHANGE ON AERONAUTICS AND AVIATION
Alfonso Pagani, Associazione Italiana di Aeronautica e Astronautica (AIDAA), Italy

IAC-23.B5.1.3

CIVIL SECURITY AND CRISIS RESPONSE FROM SPACE
Christopher Topping, European Space Agency (ESA), The Netherlands

IAC-23.B5.1.4 (unconfirmed)

LEVERAGING THE DATA AND REASONING FABRIC FOR SPACE SITUATIONAL AWARENESS
Supreet Kaur, NASA Ames Research Center, United States

IAC-23.B5.1.5

DEVELOPING A TOOLKIT FOR EFFICIENT ANALYSIS OF CADI ONOSONDE DATA
Sultan Halawa, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

IAC-23.B5.1.6

THE SHARJAH VERY LONG RADIO INTERFEROMETER — A UNIQUE RADIO OBSERVATORY IN THE MENA REGION
Ilías Fernini, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

IAC-23.B5.1.7 (unconfirmed)

ASSESSMENT OF WATER SOIL EROSION USING GEOWEPP MODEL. CASE STUDY: JWILIN WATERSHED — SOUTH WEST SYRIA
Ahmad Yaghi, Germany

IAC-23.B5.1.8

PREPARATION OF PROJECT ON REGIONAL NETWORK OF GPS/GLONASS GROUND RECEIVERS IN THE TERRITORY OF THE REPUBLIC OF AZERBAIJAN

B5.2. Integrated Applications End-to-End Solutions

October 4 2023, 15:00 — BCC A5

Co-Chair(s): Boris Penne, OHB System AG, Germany; Roberta Mugellesi-Dow, European Space Agency (ESA), United Kingdom;
Rapporteur(s): Marion Allayioti, European Space Agency (ESA), United Kingdom;
IAC-23.B5.2.1

SAVING LIVES BY INTEGRATING SPACE-BASED SOLUTIONS
Tessa Buckley, Stichting dotSPACE, The Netherlands

IAC-23.B5.2.2

CREATING GLOBAL DIGITAL TWINS TO MODEL URBAN AIR MOBILITY
Jeanne Holm, City of Los Angeles, United States

IAC-23.B5.2.6

RECOGNITION AND LOCATION OF PEOPLE IN DANGEROUS SITUATIONS IN DISASTER AREAS FOR RESCUE TASKS USING EMERGING TECHNOLOGIES.
Erik Francisco-Agustín, Instituto Nacional de Astrofísica, Óptica y Electrónica, Mexico

IAC-23.B5.2.7

SPACE-BASED SOLUTIONS FOR SMART CITIES
Julian Rothenbuchner, Team Tumbleweed, The Netherlands

IAC-23.B5.2.8

SDG INDICATORS INDEXING AT VILLAGE GRANULARITY – HOW EO MAINSTREAMS WITH MANY OTHER DATASETS IN A DATA ANALYTICS APPROACH
Mukund Kadursrinivas Rao, India

IAC-23.B5.2.9

INSURTECH INNOVATION: NEW USE CASES ENABLED BY SPACE TECHNOLOGIES
Valerio Roscani, Fondazione E. Amaldi, Italy

IAC-23.B5.2.10

APPLICATION AND CASE OF MULTI-SOURCE SATELLITE COLLABORATIVE MONITORING TECHNOLOGY IN PINE WILT DISEASE
Wei Sun, China HEAD Aerospace Technology Co., France

IAC-23.B5.2.11

STUDY TO INTEGRATE DELAY-TOLERANT NETWORK PROTOCOLS IN IOT LEO CONSTELLATIONS FOR FLOOD PREVENTION
Joan Adrià Ruiz de Azúa Ortega, i2CAT, Spain

B5.3. Satellite Commercial Applications

October 5 2023, 10:15 — BCC A5

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;
IAC-23.B5.3.1

CONNECTING 4,000,000 PEOPLE TO SPACE-BASED SERVICES
Jeanne Holm, City of Los Angeles, United States
B6. IAF SPACE OPERATIONS SYMPOSIUM

Coordinator(s): Andreas Rudolph, European Space Agency (ESA), Germany; Otfrid 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

October 5 2023, 15:00 — BCC A5
Co-Chair(s): Sean Burns, EUMETSAT, Germany; Claude AUDOUY, Centre National d’Études Spatiales (CNES), France; Rapporteur(s): Keyur Patel, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States; Regina Mosenkis, Airbus Defence & Space, Germany;

IAC-23.B6.1.1 A UNIQUE MULTI-BANDS S-X-KA FEED COMPLIANT TO FUTURE EESS AND LUNAR STANDARDS
ARNAUD ROBERT, SAFRAN, France

IAC-23.B6.1.5 ERMES MISSION PLANNER: A MULTI-MISSION PLANNING SW Cristoforo Abbattista, Planeteck Italia, Italy

IAC-23.B6.1.6 PROJECT PRESENTATION FOR IMPLEMENTING THE NEW WAY OF OPERATING THE CNES NETWORK OPERATIONS CENTER Julie GUIRAUD, Centre National d’Études Spatiales (CNES), France

IAC-23.B6.1.7 WDRMS: WEB-BASED REAL-TIME DATA MONITORING SYSTEM FOR MULTI-SPACECRAFT Hoiyung Chu, China Academy of Space Technology (CAST), China

IAC-23.B6.1.8 JAXA 3-WAY DOPPLER SUPPORT TO ARTEMIS 1 MISSION Timothy Pham, Jet Propulsion Laboratory, United States


IAC-23.B6.1.10 OPEN-SOURCE GROUND SEGMENT AND SATELLITE COMMUNICATION EMPLOYING GNURADIO, LORA AND SDR TECHNOLOGIES João Pedro Polito Braga, Federal University of São João Del-Rei, Brazil

IAC-23.B6.1.11 SOUTH KOREA’S NEW SATELLITE OPERATION CENTER Eunghyun Kim, Korea Aerospace Research Institute (KARI), Korea, Republic of

IAC-23.B6.1.12 MODEL-BASED SYSTEM ENGINEERING TO LEVERAGE GROUND SEGMENT DEVELOPMENT OF SPACE MISSIONS. Antonio Cassiano Julio Filho, Instituto Nacional de Pesquisas Espaciais (INPE), Brazil

B6.2. Innovative Space Operations Concepts and Advanced Systems

October 6 2023, 10:15 — BCC A5
Co-Chair(s): Andreas Rudolph, European Space Agency (ESA), Germany; Mario Cardano, Thales Alenia Space France, Italy; Andreas Ohndorf, DLR (German Aerospace Center), Germany; Rapporteur(s): Yuichiro Nogawa, Japan Manned Space Systems Corporation (JAMSS), Japan; Jackelynne Silva-Martínez, NASA, United States;

IAC-23.B6.2.2 ONBOARD ADAPTIVE SPACECRAFT MODEL FOR OPTIMIZED SCHEDULING Johannes Bachmann, Universität der Bundeswehr München, Germany

IAC-23.B6.2.3 THE MOXIE FLATSAT: A GROUND-BASED ISRU OPERATIONAL TESTBED Shrvan Hariharan, Blue Origin LLC, United States

IAC-23.B6.2.4 AI-BASED SPACECRAFT OPERATIONS AND THE ISSUE OF LACING TRUST - FIRST RESULTS OF AN AI TRUSTABILITY SURVEY IN THE SPACE DOMAIN Maren Hülsmann, Universität der Bundeswehr München, Germany

IAC-23.B6.2.5 SPACE SETTLEMENTS AND THE ULTIMATE HUMAN-MADE ECOSYSTEM: A FOUNDAIONAL FRAMEWORK FOR CLOSED LOOP WASTE MANAGEMENT SYSTEMS FOR FUTURE LUNAR HABITATS Nadia Khan, Massachusetts Institute of Technology (MIT), United States

IAC-23.B6.2.7 TOWARD COMPREHENSIVE AI-BASED ONBOARD FDIR: SYSTEM DESIGN AND FIRST RESULTS Gianluca Mario Campagna, AIKO S.r.l., Italy

IAC-23.B6.2.8 COLLISION AVOIDANCE IN GEO: THE CHALLENGES OF ORBIT DETERMINATION FOR ELECTRIC PROPULSION SATELLITES VIA OPTICAL GROUND BASED OBSERVATIONS Antonio Vito Montalbò, Italian Ministry of Defense, Italy

IAC-23.B6.2.9 DEVELOPING AN IN-ORBIT SERVICING DEMO MISSION Maria Antonietta Perino, Thales Alenia Space Italy, Italy

IAC-23.B6.2.10 AI FOR SPACE OPERATIONS: THE NEXT GENERATION OF MISSION OPERATIONS FOR EARTH OBSERVATION CONSTELLATIONS Baptiste Schandeler, Airbus Defence & Space, France

IAC-23.B6.2.12 A LEARNING-BASED ROBOTIC REFUELLING CONTROL SYSTEM FOR ON-ORBIT SERVICE Yong Chun Xie, Beijing Institute of Control Engineering, China Academy of Space Technology (CAST), China
B6.3. Mission Operations, Validation, Simulation and Training

October 3 2023, 15:00 — BCC A5

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-23.B6.3.1
THE CDO: AN INNOVATIVE, FLEXIBLE AND MODERN OPERATIONS CONTROL CENTRE FOR EUROPE'S SPACEPORT, FRENCH GUIANA: GROUND SYSTEM ARCHITECTURE, RESILIENCE & OPERATIONAL EXCELLENCE
Sandra STEERE, Centre National d'Etudes Spatiales (CNES), French Guiana

IAC-23.B6.3.2
INTEGRATED GROUND SEGMENT FOR GREENHOUSE GAS EMISSIONS MONITORING CONSTITUTION
Igor Alonso Portillo, Kongsberg Satellite Services AS, Norway

IAC-23.B6.3.3
ROBUST PLAN EXECUTION STRATEGY WITH UNCERTAINTY FOR AUTONOMOUS ASTEROID PROBE
Shizhen Li, Beijing Institute of Technology, China

IAC-23.B6.3.4
METOP-SG MISSION ROUTINE DUMPS OPERATION PREPARATION
Nigar Mehraliyeva, HE Space Operations, Germany

IAC-23.B6.3.5
LOOK MA, NO GROUND TRUTH! ON BUILDING SUPERVISED ANOMALY DETECTION FROM OPS-SAT TELEMETRY
Jakub Nalepa, KP Labs, Poland

IAC-23.B6.3.6
PREPARATION AND TRAINING OF ASTRONAUTS AND GROUND FORCE AT BLUE ABYSS
John Vickers, Blue Abyss, United Kingdom

IAC-23.B6.3.7
ON-BOARD IN LOOP SIMULATOR DESIGN AND MISSION TESTING FOR GUIDANCE, NAVIGATION AND CONTROL (GNC) SYSTEM FOR LANDING MISSIONS
PRATIBHA SRIKASTAVA, Indian Space Research Organization (ISRO), India

IAC-23.B6.3.8
HIERARCHICAL REINFORCEMENT LEARNING BASED PLANNING METHOD WITH UNCERTAINTY IN LIMITED VISIONS FOR LUNAR ROVERS
Siyao Lu, Beijing Institute of Technology, China

IAC-23.B6.3.9 (unconfirmed)
INTERNATIONAL COOPERATION IN EARTH OBSERVATIONS: GAOFEN CENTRE GROUND STATIONS NETWORK
Lucas Liu, China HEAD Aerospace Technology Co., China

IAC-23.B6.3.10
MUNAL: AN OVERVIEW OF NEPAL'S FIRST HIGH-SCHOOL CUBESAT
Anuja Shrestha, Nepal Space Foundation, Nepal

B6.4-B3.4. Flight & Ground Operations of HSF Systems - A Joint Session of the IAF Human Spaceflight and IAF Space Operations Symposia

October 4 2023, 10:15 — BCC A7

Co-Chair(s): Annamaria Piras, Thales Alenia Space Italia, Italy; Dieter Sabath, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;
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-23.B6.4-B3.4.2
UNDERSTANDING ISS ANOMALIES IN THE FRAME OF DEVELOPING RELIABLE AND SUSTAINABLE SPACE STATIONS IN THE FUTURE
Rania Toukebrì, Airbus D&S, Germany

B6.5. Large Constellations & Fleet Operations

October 6 2023, 13:45 — BCC A5

Co-Chair(s): Zeina Mounzer, Telespazio VEGA Deutschland GmbH, Germany; Claude Audoüy, Centre National d’Etudes Spatiales (CNES), France; Simon Plum, European Space Agency (ESA-ESOC), Germany; Thomas Uhlig, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;
Rapporteur(s): Jim Volp, The Netherlands; Shawn Linam, Qwaltec, Inc., United States; Mario Cardano, Thales Alenia Space France, Italy;

IAC-23.B6.5.1
DARK AND QUIET SKIES: A PREDICTIVE TECHNIQUE TO MITIGATE THE IMPACT OF SATELLITE REFLECTIONS ON ASTRONOMICAL OBSERVATORIES
Mark A. Skinner, The Aerospace Corporation, United States

IAC-23.B6.5.2
RESULTS OF THE OPTICAL OBSERVATION AND CHARACTERIZATION OF APPARENT BRIGHTNESS OF THE DIFFERENT STARLINK SATELLITE GENERATIONS AND VERSIONS BY THEIR ORBITS, OPERATIONS, GEOMETRY AND MORE
Andreas Hornig, AerospaceResearch.net, Germany

IAC-23.B6.5.4
CONSIDERATIONS FOR SATELLITE CONSTELLATION DEPLOYMENT VIA MOMENTUM EXCHANGE TETHERS
Ben Campbell, University of Alabama in Huntsville, United States

IAC-23.B6.5.5
IDENTIFYING KEY NODES OF MEGA LEO SATELLITE NETWORK BASED ON NODE EMBEDDING AND MACHINE LEARNING
Yiwei Zou, Sun Yat-sen University (Zhuhai Campus), China

IAC-23.B6.5.6
THE CONSTELLATION FORMATION OPERATIONS PLANNING SOFTWARE: ENABLING SCALABLE FORMATION MANAGEMENT FOR SPACECRAFT FLEETS
Pouyan Tahmassebiour, Space Flight Laboratory, University of Toronto, Canada

IAC-23.B6.5.7
WHAT MASINT AND OSINT CAN TELL US ABOUT SATELLITE MEGA-CONSTELLATIONS
Andreas Hornig, AerospaceResearch.net, Germany

IAC-23.B6.5.8 (unconfirmed)
POTENTIAL ERROR ELLIPSOID ENVELOPE BASED MULTI-OBJECT OPTIMAL COLLISION AVOIDANCE MANEUVER FOR MEGA-CONSTELLATION
Haochen Tao, School of Aerospace Engineering, Beijing Institute of Technology, China

IAC-23.B6.5.9
TOWARDS AUTOMATED, CLEAR AND EFFICIENT RULE-BASED CONJUNCTION COORDINATION FOR CONSTELLATIONS
Esfandiar Farahvashi, OKAPI:Orbits GmbH, Germany

IAC-23.B6.5.10
ORBITAL ENVIRONMENT SHELL MODELS TO SUPPORT COMPLIANCE WITH UN SUSTAINABLE DEVELOPMENT GOALS
John Mackintosh, University of Manchester, United Kingdom
C1. IAF ASTRODYNAMICS SYMPOSIUM

Coordinator(s): Daniel Scheeres, Colorado Center for Astrodynamics Research, University of Colorado, United States; Vincent Martinot, Thales Alenia Space France, France;

C1.1. Attitude Dynamics (1)

October 3 2023, 15:00 — BCC B4
Co-Chair(s): Giovanni B. Palmerini, Sapienza University of Rome, Italy; Zhanfeng Meng, China Academy of Space Technology (CAST), China;
Rapporteur(s): Robert G. Melton, Pennsylvania State University, United States;
IAC-23.C1.1.1
ABSOLUTE VISUAL SERVOING FOR PRECISE EARTH TARGET POINTING ONBOARD SMALL SATELLITES
Ilham Mammadov, Zentrum für Telematik, Germany
IAC-23.C1.1.2
POINTING STABILITY OF HIZ-GUNDAM SATELLITE AFTER AGILE ATTITUDE MANEUVERS UNDER THE RATE BIAS ERROR OF FIBER OPTIC GYROS
Toshio Kamiya, Meisei University, Japan
IAC-23.C1.1.3
OPTIMAL ATTITUDE PATH PLANNING ALONG TORQUE EQUILIBRIUM POINTS USING AERODYNAMIC DATABASE FOR DEORBIRTING LARGE DEBRIS BY SMALL SATELLITES
Takahiro Sasaki, Japan Aerospace Exploration Agency (JAXA), Japan
IAC-23.C1.1.4
MULTI-OBJECTIVE OPTIMIZATION OF ATTITUDE MANEUVER PLANNING FOR FLEXIBLE ASTEROID LANDER USING POPULATION EVOLUTIONARY ALGORITHM
Zhe Zhu, Beijing Institute of Technology, China
IAC-23.C1.1.5
THE EFFECTS OF POINTING ERROR SOURCES ON ENERGY DELIVERY FROM ORBITING SOLAR REFLECTORS
Iain Moore, University of Glasgow, United Kingdom
IAC-23.C1.1.6
A FREE-FLOATING 3-AXIS ATTITUDE CONTROL TEST ENVIRONMENT WITH OPTICAL TRACKING FOR HIGH-PRECISION POINTING VERIFICATION OF CUBESATS
Ilham Mammadov, Zentrum für Telematik, Germany
IAC-23.C1.1.7
LIQUID-FILLED SPACECRAFT FINITE-TIME ATTITUDE MANEUVER CONTROL WITH ANGULAR AND VELOCITY CONSTRAINT
Yanning Guo, Harbin Institute of Technology, China
IAC-23.C1.1.8
ATTITUDE DYNAMICS OF SMALL SATELLITES IN CIRCULAR NEAR-EQUATORIAL LEO/VLEO
Dmitry A. Sizov, Nazarbayev University, Kazakhstan
IAC-23.C1.1.9
PRESCRIBED PERFORMANCE ADAPTIVE CONTROL WITH FAULT-TOLERANCE CAPABILITY FOR A SUN-POINTING SPACECRAFT ON HALO ORBIT
Srianish Vutukuri, Indian Institute of Science, India

C1.2. Attitude Dynamics (2)

October 4 2023, 10:15 — BCC B4
Co-Chair(s): Toshio Kamiya, Meisei University, Japan; Mikhail Ovchininkov, Keldysh Institute of Applied Mathematics, RAS, Russian Federation;
Rapporteur(s): Bang Hyochoong, Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of;
C1.4. Guidance, Navigation and Control (2)

October 5 2023, 10:15 — BCC B4

Co-Chair(s): Mai Bando, Kyushu University, Japan; Eberhard Gill, Delft University of Technology, The Netherlands;

Rapporteur(s): Hanspeter Schaub, Colorado Center for Astrodynamics Research, University of Colorado, United States;

IAC-23.C1.4.1
FORMATION KEEPING IN VERY LOW-EARTH ORBIT: THE VULCAIN MISSION CASE STUDY
Enrico Belloni, Politecnico di Milano, Italy

IAC-23.C1.4.2
MITIGATING FUEL SLOSHING DISTURBANCE IN ON-ORBIT SATELLITE REFUELING: AN EXPERIMENTAL STUDY
Mohammadamin Alandihallaj, University of Luxembourg, Luxembourg

IAC-23.C1.4.3
FTCESO-BASED PREDEFINED TIME CONTROL FOR SATELLITE SWARM RECONFIGURATION
Chuang Liu, Northwestern Polytechnical University, China

IAC-23.C1.4.4
DIGRAPHS BASED ALGORITHMS FOR FORMATION FLIGHT CONTROL
Sergey Shestakov, Keldysh Institute of Applied Mathematics of RAS, Russian Federation

IAC-23.C1.4.5
APPLICATION OF ELECTRODYNAMIC TETHERS FOR TETRAHEDRAL SATELLITE FORMATION CONTROL
Kirill Chernov, Keldysh Institute of Applied Mathematics, RAS, Russian Federation

IAC-23.C1.4.6
IN-ORBIT LARGE SPACE STRUCTURE ASSEMBLY USING REPULSIVE SPACECRAFT-ROBOT WITH MANIPULATORS
Danil Ivanov, Keldysh Institute of Applied Mathematics, RAS, Russian Federation

IAC-23.C1.4.7
VALIDATION OF CNN-BASED IMAGE PROCESSING ALGORITHM FOR THE HERA MISSION WITH MODEL-IN-THE-LOOP AND HARDWARE-IN-THE-LOOP TESTS
Aurelio Kaluathanirige, University of Strathclyde, United Kingdom

IAC-23.C1.4.8
ACTIVE DISTURBANCE REJECTION CONTROL FOR SPACECRAFT RELATIVE MOTION IN LIBRATION POINT ORBITS SUBJECT TO ACTUATOR SATURATION AND TIME-DELAYS
Wencho Li, Northwestern Polytechnical University, China

IAC-23.C1.4.9
MISSION ANALYSIS AND GUIDANCE AND CONTROL FOR THE SPEYE INSPECTION CUBESAT
Giacomo Borelli, Politecnico di Milano, Italy

IAC-23.C1.4.10
AEROdynamic coordinated control of ATTITUDE and relative position of a formation of microsatellites
Marco Sabatini, Sapienza University of Rome, Italy

C1.5. Guidance, Navigation & Control (3)

October 5 2023, 15:00 — BCC B4

Co-Chair(s): Jean de Lafontaine, NGC Aerospace Ltd., Canada; Yung Fu Tsai, National Cheng Kung University, Taiwan, China;

Rapporteur(s): Miguel Bello Mora, Deimos Space SLU, Spain;

IAC-23.C1.5.2
TRAJECTORY OPTIMIZATION, GUIDANCE AND CONTROL OF LOW-THRUST ORBIT TRANSFERS FROM THE LUNAR GATEWAY TO LOW LUNAR ORBITS
Mauro Pontani, Sapienza University of Rome, Italy

IAC-23.C1.5.3
THE EXTREMA AUTONOMOUS GUIDANCE ALGORITHM FOR LOW-THRUST INTERPLANETARY SPACECRAFT
Andrea Carlo Morelli, Politecnico di Milano, Italy

IAC-23.C1.5.4
ON THE DYNAMICS AND CONTROL OF A SPACECRAFT OBSERVING EXOPLANETS VIA THE SOLAR GRAVITATIONAL LENS
Denis Perepukhov, Keldysh Institute of Applied Mathematics, RAS, Russian Federation

IAC-23.C1.5.5
KAMNET – APPLYING MACHINE LEARNING TECHNIQUES FOR OPTICAL NAVIGATION IN EARTH OBSERVATION MISSIONS
Manuel Sanjurjo-Rivo, Universidad Carlos III de Madrid, Spain

IAC-23.C1.5.6
UNIVERSAL FUNCTION AND PRIMER VECTOR THEORY FOR FUEL-OPTIMAL LAMBERT PROBLEM
Xiaweili WANG, China Academy of Launch Vehicle Technology (CALT), China

IAC-23.C1.5.7
A NEW FORM OF OSCULATING KEPLERIAN APPROXIMATION OF N-BODY NON-KEPLERIAN MOTION FOR THE DESIGN OF GNC ALGORITHMS
Castello Leonardo Matonni, Politecnico di Torino, Italy

IAC-23.C1.5.8
OPNAV-ONLY STATION KEEPING ON NRHO USING STOCHASTIC PREDICTIVE CONTROL
Yuri Shimane, Georgia Institute of Technology, United States

IAC-23.C1.5.9
PARTICLE SWARM OPTIMIZATION BASED TRACKING WINDOW PLANNING FOR CISLUNAR ORBITERS PERFORMING AUTONOMOUS RADIOMETRIC NAVIGATION
Erdem Turan, Delft University of Technology (TU Delft), The Netherlands, The Netherlands

C1.6. Mission Design, Operations & Optimization (1)

October 6 2023, 10:15 — BCC B4

Co-Chair(s): Yury Razoumny, RUDN University, Russian Federation; Mauro Pontani, Sapienza University of Rome, Italy;

Rapporteur(s): Liang Tang, Beijing Institute of Control Engineering, CAST, China;

IAC-23.C1.6.1
DESIGN OF OPTIMAL SPATIAL LOW-ENERGY TRAJECTORIES TO NEAR-EARTH OBJECTS
Elena Fantino, Khalifa University of Science and Technology (KUST), United Arab Emirates
C1.6.2 Combined Trajectory Design and Navigation Analysis for Hera’s Very-Close Flyby of Dimorphos
Iasto Fodde, University of Strathclyde, The Netherlands

C1.6.3 DESTINY+: Trajectory Design and Operational Planning for Deep Space Exploration
Takayuki Yamamoto, Japan Aerospace Exploration Agency (JAXA), Japan

C1.6.4 Enceladus Moon in Situ Science: Preliminary Mission Analysis and GNC Design for the EPOPEA Mission
Matteo Lusvarghi, Politecnico di Milano, Italy

C1.6.5 Mission Strategy to Await Comets by Leveraging Manifolds and Low Thrust
Soi Yamaguchi, Kyushu University, Japan

C1.6.6 Europa Clipper Mission Analysis: Interplanetary Trajectory Design
Etienne Pellegrini, NASA Jet Propulsion Laboratory, United States

C1.6.7 Evaluation of Optimal Low-Thrust Interplanetary Trajectories with Collinear Libration Points Transitions
Sung Wook Yoon, Moscow Aviation Institute (National Research University), Moscow, Russia

C1.6.8 An Exploration of a Prospective Flight Scheme to Venus Associated with an Asteroid Flyby
Vladislav Zubko, Space Research Institute (IKI), Russian Academy of Sciences (RAS), Russian Federation

C1.6.9 Optimal Transfer Trajectories Between Relative Quasi-Satellite Orbits
Nishanth Pushparaj, University of Nottingham, United Kingdom

C1.7. Mission Design, Operations & Optimization (2)

October 6 2023, 13:45 — BCC B4
Co-Chair(s): Erick Lansard, Nanyang Technological University, Republic of Singapore; Richard Epenoy, Centre National d’Etudes Spatiales (CNES), France;

C1.7.1 Optimal Low-Thrust Earth-Moon Orbit Transfers Via Multiple-Arc Formulation and Implicit Costate Transformation
Mauro Pontani, Sapienza University of Rome, Italy

C1.7.2 Optimal Trajectory Design by Adam Under Stochastic Disturbing Acceleration
Shodai Hiyamizu, Kyushu University, Japan

C1.7.3 Multi-Objective Optimization of Lunar Communication/Navigation Constellations Based on LPOS and DROS
Yuchen He, BeiHang University, China

C1.7.4 Matryoshka Orbital Networks
Joshua Gribben, University of Strathclyde, United Kingdom

C1.7.5 Many-to-Many GEO On-Orbit Refueling Mission Optimization Under Time-Varying Fuel Demands Via Modified Differential Evolution
Chuanjiang Li, Harbin Institute of Technology, China

C1.7.6 Optimizing Launch Window Opportunities for ESA’s Comet Interceptor Mission Using Prime Vector Theory
Miguel Rebelo, ISAE-Supélec University of Toulouse, France

C1.7.7 Extended Perilune Rendezvous Method for Low Delta-V Transition to NRHO
Junji Kikuchi, Japan Aerospace Exploration Agency (JAXA), Japan

C1.7.8 Extremely Low Earth Orbit Imaging and Technology Explorer (ELITE): Pushing Earth Observation Boundaries
Erick Lansard, Nanyang Technological University, Singapore, Republic of Singapore

C1.8. Orbital Dynamics (1)

October 2 2023, 15:15 — BCC B4
Co-Chair(s): Yuichi Tsuda, Japan Aerospace Exploration Agency (JAXA), Japan; Elena Fantino, Khalifa University of Science and Technology (KUST), United Arab Emirates;
Rapporteur(s): Kathleen Howell, Purdue University, United States;

C1.8.1 Lunar Navigation Flying Invariant Under Zonal Harmonic Perturbations
Stefano Carletta, Sapienza University of Rome, Italy

C1.8.2 Analytical Approximations of Spatial Distinct Retrograde Orbits
Nuraddin Adigozalov, Keldysh Institute of Applied Mathematics, RAS, Russian Federation

C1.8.3 Vectorial Formulation for the Propagation of Average Dynamics Under Gravitational Effects
Juan Félix San-Juan, Universidad de La Rioja, Spain

C1.8.4 Jet Transport-Based Analysis of Spacecraft Absolute Reachable Domain Under a Single Impulse
Junhua Zhang, National Key Laboratory of Aerospace Flight Dynamic, Northwestern Polytechnical University, China

C1.8.5 Exact Separation of Long- and Short-Period Effects in the Computation of Mean Elements of Artificial Satellite Theory
Martin Lara, Universidad de La Rioja, Spain

C1.8.6 Exploring Solutions for Multi-Impulse Aided Low-Energy Moon-to-Moon Transfer
Limin Qin, Nanjing University of Aeronautics and Astronautics, China

C1.8.7 Precise Orbit Prediction of LEO Satellite via Physics-Informed Machine Learning
Toshio Kaniya, Meisei University, Japan
C. IAF MATERIALS AND STRUCTURES SYMPOSIUM

Coordinator(s): Jochen Albus, ArianeGroup, Germany; Alwin Eisenmann, IABG Industrieanlagen - Betriebsgesellschaft mbH, Germany;

C.2.1. Space Structures I - Development and Verification (Space Vehicles and Components)

October 2 2023, 15:15 — BCC A1

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-23.C2.1.1
SYNTHESIS OF DICARBOXYLATE DERIVATIVES WITH ANTIMICROBIAL PROPERTIES
Zahra Fataliyeva, Azerbaijan State Oil and Industry University (ASOIU), Azerbaijan

IAC-23.C2.1.2
WINDOWS FOR SPACE APPLICATIONS
Annamaria Piras, Thales Alenia Space Italia, Italy

IAC-23.C2.1.3
MORPHOLOGY OF POLYHEDRAL SPACE HABITAT MODULES - IDENTIFYING THE IDEAL FORM USING MULTI-CRITERIA ANALYSIS
Elliott Ruzicka, United States

IAC-23.C2.1.5
PASSIVE THERMAL EXPANSION COMPENSATION MECHANISM DESIGN USING FEM FOR OFF-AXIS OPTICAL PAYLOAD IN LOW EARTH ORBIT SMALL SATELLITE
Pearachad Chartsiriwattana, National Astronomical Research Institute of Thailand (NARIIT), Thailand

IAC-23.C2.1.6
EFFECT OF GEOMETRIC PARAMETERS OF CONSTITUENT MEMBERS ON THE STRUCTURAL BEHAVIOUR OF THE LATTICE TRUSS BEAM FOR SPACE APPLICATIONS
Litesh Subhewar, University of Glasgow, United Kingdom

IAC-23.C2.1.8
INVESTIGATION OF INTEGRATION OF ANNULAR FIN CONFIGURATION AND GEOMETRY FOR IMPROVED THERMAL MANAGEMENT OF ROCKET NOZZLES: DESIGN, ANALYSIS, AND OPTIMIZATION
Sriram Kamar, Sri Sairam Engineering College, India

IAC-23.C2.1.9
A PNEUMATIC SEPARATION SYSTEM FOR ROCKET SEPARATION
Aijhen Ming, CAS Space, China

IAC-23.C2.1.10
DESIGN OPTIMIZATION OF CUBIC IN SHAPE PRESSURANT TANK FOR CUBESAT’S PROPELLION SYSTEM
Georgy Shcheglov, Bauman Moscow State Technical University, Russian Federation

C.2.2. Space Structures II - Development and Verification (Deployable and Dimensionally Stable Structures)

October 3 2023, 10:15 — BCC A1

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-23.C1.8.1
LONG-TERM ORBITAL EVOLUTION SURROUNDING A BINARY ASTEROID SYSTEM
Pengfei Lu, Beihang University, China

IAC-23.C1.8.9
ANALYSIS OF GRAVITY PERTURBATIONS OVER LOW-THRUST TRAJECTORIES FOR DESTINY+ MISSION USING EQUINOCTIAL ELEMENTS
Josué Cardoso dos Santos, Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-23.C1.8.10
TETHER SYSTEMS FOR PHOBOS EXPLORATION
Vladimir S. Aslanov, Samara National Research University (Samara University), Russia;

IAC-23.C1.9.1
COMPUTATIONAL METHODOLOGIES FOR QUASI-PERIODIC ORBITS AND INVARIANT MANIFOLD CONNECTIONS IN NON-AUTONOMOUS PROBLEMS
Ruilong Li, National Key Laboratory of Aerospace Flight Dynamics, Northwestern Polytechnical University, Xi’an, China

IAC-23.C1.9.2
ANALYSIS OF TRANSFER TRAJECTORIES IN CISELUNAR SPACE USING SEQUENCES OF LOBE DYNAMICS
Naoki Hiroiwa, Kyushu University, Japan

IAC-23.C1.9.3
EXPLORATION OF NEAR RECTILINEAR HALO ORBITS AND THEIR TRANSFER TRAJECTORIES IN THE JUPITER-EUROPA SYSTEM
Pengfei Lu, Beihang University, China

IAC-23.C1.9.4
A NEW FAMILY OF PHOTOGRAVITATIONAL SUN-EARTH L3 HALO ORBITS TO ENABLE PLANETARY SUNSHADE
Catello Leonardo Matonti, Politecnico di Torino, Italy

IAC-23.C1.9.5
INFORMED DISTRIBUTED SPACE ASSETS DESIGN ON MULTI-BODY QUASI-PERIODIC TORI BY MEANS OF ENGINEERING PROPERTIES MAPPING TECHNIQUES
Daniele Barberi Spirito, Politecnico di Milano, Italy

IAC-23.C1.9.6
AN ESTABLISHMENT AND TRANSFER STRATEGY FOR FORMATION CONFIGURATIONS BASED ON OMEGA-U TORUS TOPOLOGICAL EQUIVALENT
Jixin Ding, School of Astronautics, Beihang University, China

IAC-23.C1.9.7
LOW-ENERGY LUNAR TRANSFER DESIGN USING HIGH- AND LOW-THRUST ON BALLISTIC CAPTURE TRAJECTORIES
Alexander Ivanukhin, Research Institute of Applied Mechanics and Electrodynamic (RIAME), MAI, Russian Federation

IAC-23.C1.9.8
SEMI-ANALYTICAL ESTIMATION OF THE PROBABILITY OF CAPTURE INTO GROUND-TRACK RESONANCES OF DAWN AROUND VESTA
Wail Boumicha, University of Strathclyde, United Kingdom

IAC-23.C1.9.9
CALLISTO-GANYMEDE-EUROPA TRIPLE-CYCLER TRAJECTORIES USING THE NEAR-RESONANCES
Limin Qin, Nanjing University of Aeronautics and Astronautics, China
C2.3. Space Structures - Dynamics and Microdynamics

October 3 2023, 15:00 — BCC A1

Co-Chair(s): Harijono Djojohardjo, Bandung Institut of Technology, Indonesia; Elcio Jeronimo de Oliveira, Associação Italiana di Aeronautica e Astronautica (AIDAA), Brazil;

Rapporteur(s): Ijar Da Fonseca, ITA-DCTA, Brazil; Paolo Gasbarri, University of Rome “La Sapienza”, Italy;

IAC-23.C2.3.1
KEYNOTE: 11TH PAOLO SANTINI MEMORIAL LECTURE - STRUCTURAL INTEGRITY OF SPACE VEHICLES AND STRUCTURES SUBJECT TO MOTION, THERMO-STRUCTURAL DYNAMICS AND ENVIRONMENTAL EFFECTS
Harijono Djojohardjo, Bandung Institut of Technology, Indonesia

IAC-23.C2.3.2
NONLINEARITIES AND HIGH ORDER EFFECTS ON MEMBRANES VIBRATION
Marianna Valente, Politecnico di Torino, Italy

IAC-23.C2.3.3
DEVELOPMENT OF REACTION WHEEL BALANCING PLATFORM FOR NANOSATELLITE APPLICATION
GUEDDACHE Brahim, Agence Spatiale Algérienne (ASAL), Algeria

IAC-23.C2.3.10
TIME-DELAY ESTIMATION BASED ADAPTIVE IMPEDANCE CONTROL OF A FREE-FLYING SPACE MANIPULATOR’S WRAP-AROUND ANTENNA
Tao Lin, Fuzhou University, China

IAC-23.C2.3.11
STUDY ON THE TRANSSONIC DISTRIBUTED AERODYNAMIC CHARACTERISTICS OF LARGE LENGTH SLENDER RATIO AIRCRAFT
Jing Ma, CAS Space, China

C2.4. Advanced Materials and Structures for High Temperature Applications

October 4 2023, 10:15 — BCC A1

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-23.C2.4.1
DESIGN OF A NOVEL INTEGRATED STRUCTURE CONSIDERING HEAT-TRANSPORT AND LOAD-BEARING CAPACITIES FOR HYPERSONIC VEHICLES
Jian-Jun Gou, Northwestern Polytechnical University, China

IAC-23.C2.4.2
HEAT-RESISTANT MOSi2 – NBSi2 AND CR-Ni COATINGS FOR ROCKET ENGINE COMBUSTION CHAMBERS AND RESPECTIVE VACUUM-ARC DEPOSITION TECHNOLOGY
Volodymyr Nadtocha, Yuzhnoye State Design Office, Ukraine
IAC-23.C2.4.3  THERMAL STABILITY OF POLYMER DERIVED ULTRA-HIGH TEMPERATURE CERAMIC MATRIX COMPOSITES
Luca Zoli, CNR - ISSMC, Italy

IAC-23.C2.4.4  ANISOTROPIC COMPOSITE HEAT-SHIELDING MATERIALS BASED ON GLASSY Carbon and PYROLYTIC GRAPHITE: ANALYZING EFFECTIVENESS IN CASE OF A RE-ENTRY MODULE OF A LUNAR PROBE
Victor Leonov, Bauman Moscow State Technical University, Russian Federation

IAC-23.C2.4.5  PROCESSING AND TESTING OF UHTCMCS FOR AEROSPACE APPLICATIONS
Diletta Sciti, CNR - ISSMC, Italy

IAC-23.C2.4.6  THE IMPORTANCE OF USING THERMAL BARRIER COATINGS IN AERO GAS TURBINE ENGINES. CERAMIC MATERIALS FOR THERMAL BARRIER COATINGS: A REVIEW AND CURRENT STATUS
Ibrahim Muradzade, National Aviation Academy - Azerbaijan, Azerbaijan

IAC-23.C2.4.7  UNLEASHING THE POTENTIAL OF CERAMIC MATRIX COMPOSITES FOR HYPERSONIC FLIGHT
Joyjit Barua, Concordia University, Canada

IAC-23.C2.4.8  2K02 REINFORCED ABLATIVE MATERIAL SUITABLE FOR THE THERMAL PROTECTION SYSTEM OF ULTRA-HIGH TEMPERATURE IN SOLID ROCKET MOTOR COMBUSTION CHAMBER
MengFei Guo, China

IAC-23.C2.4.9  CHALLENGES AND SOLUTIONS FOR HIGH-TEMPERATURE APPLICATIONS IN SPACE: MATERIALS AND STRUCTURES FOR SPACECRAFT AND SATELLITES
Mohammed Umair, R.V.College of Engineering, India

IAC-23.C2.4.10  DESIGN OF THERMAL PROTECTION BASED ON CARBON AEROGEL COMPOSITE STRUCTURE OPTIMIZATION
Margarita Salosina, Moscow Aviation Institute (National Research University), Russian Federation

C2.5. Advancements in Materials Applications and Rapid Prototyping

October 5 2023, 10:15 — BCC A1
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-23.C2.5.1  OPTIMIZATION OF SATELLITE SPACE RADIATION SHIELDING
Oleg Datsenko, Yuzhnoye State Design Office, Ukraine

IAC-23.C2.5.2  VOLTAGE REGULATOR RADIATION QUALIFICATION CASE STUDY
Nayef Alshamlan, King Abdulaziz City for Science & Technology (KACST), Saudi Arabia

IAC-23.C2.5.3  RADIATION SHIELDING TECHNOLOGIES FOR DEEP SPACE EXPLORATION DEVELOPMENT AND ASSESSMENT OF ADVANCED COMPOSITE MATERIALS AND THEIR EFFECTIVENESS IN REDUCING SPACE RADIATION EXPOSURE
Sudarsan Nerella, University of Petroleum and Energy Studies, India

IAC-23.C2.5.4  APPLICATION OF AMORPHOUS METAL THERMAL SPRAY COATING FOR NON-LUBRICANT WEAR-RESISTANT MOBILITY COMPONENTS FOR THE LUNAR ENVIRONMENT
Sumant Hemant Jadhav, Cranfield University, Cranfield UK, United Kingdom

IAC-23.C2.5.5  3D PRINTING OF SHAPE MEMORY ALLOYS FOR COMPLEX ARCHITECTURES OF SMART STRUCTURES
Tiziana Biasutti, Politecnico di Milano, Italy

IAC-23.C2.5.6  ADDITIVE MANUFACTURING OF COPPER COMPONENTS FOR THE SPACE SECTOR: TECHNOLOGY COMPARISON, OPPORTUNITIES AND CHALLENGES
Marco Grasso, Politecnico di Milano, Italy

IAC-23.C2.5.7  WIRE-ARC ADDITIVE MANUFACTURING (WAAM) FOR SPACE APPLICATION
Sumant Hemant Jadhav, Cranfield University, Cranfield UK, United Kingdom

IAC-23.C2.5.8  DESIGN AND STANDARDISATION OF ADDITIVE MANUFACTURING FOR SPACECRAFT STRUCTURES
Didunoluwa Obilanade, Luleå University of Technology, Sweden

IAC-23.C2.5.9  EFFECTS OF MACHINE PARAMETERS ON SPACE COMPONENTS MANUFACTURED THROUGH SLM
Davide Zuin, Politecnico di Milano, Italy

IAC-23.C2.5.10  PERFORMANCE IMPROVEMENT OF 3D PRINTED FUNCTIONAL PARTS THROUGH THE USE OF UNCONVENTIONAL CONTINUOUS FIBER REINFORCEMENTS
Enrico Zappino, Politecnico di Torino, Italy

C2.6. Space Environmental Effects and Spacecraft Protection

October 5 2023, 10:15 — BCC A1
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-23.C2.6.1  OPTIMIZATION OF SATELLITE SPACE RADIATION SHIELDING
Oleg Datsenko, Yuzhnoye State Design Office, Ukraine

IAC-23.C2.6.2  VOLTAGE REGULATOR RADIATION QUALIFICATION CASE STUDY
Nayef Alshamlan, King Abdulaziz City for Science & Technology (KACST), Saudi Arabia

IAC-23.C2.6.3  RADIATION SHIELDING TECHNOLOGIES FOR DEEP SPACE EXPLORATION DEVELOPMENT AND ASSESSMENT OF ADVANCED COMPOSITE MATERIALS AND THEIR EFFECTIVENESS IN REDUCING SPACE RADIATION EXPOSURE
Sudarsan Nerella, University of Petroleum and Energy Studies, India

IAC-23.C2.6.4  APPLICATION OF AMORPHOUS METAL THERMAL SPRAY COATING FOR NON-LUBRICANT WEAR-RESISTANT MOBILITY COMPONENTS FOR THE LUNAR ENVIRONMENT
KangSan Kim, Space Generation Advisory Council (SGAC), Korea, Republic of

IAC-23.C2.6.5  IN-SPACE MANUFACTURING BY PHOTOPOLYMER EXTRUSION: INVESTIGATION OF DIFFERENT PHOTOPOLYMERS UNDER HIGH VACUUM CONDITIONS
Michael Kringer, Munich University of Applied Sciences, Germany

IAC-23.C2.6.6  CROSS-LINKED POLY(VINYL ALCOHOL)/BORIC ACID GELS FOR RADIATION SHIELDING APPLICATIONS
Lucia Lambertini, Sapienza University of Rome, Italy
C2.7. Space Vehicles – Mechanical/Robotic/Thermal/Fluidic Systems

October 5 2023, 15:00 — BCC A1

Co-Chair(s): Brij Agrawal, Naval Postgraduate School, United States; Oleg Alfianov, MAI, Russian Federation;
Rapporteur(s): Guoliang Mao, Beijing Institute of Aerodynamics, China; Federica Angeletti, University of Rome “La Sapienza”, Italy;

IAC-23.C2.7.1
STUDY OF GAS FLOW BY INVERSE PROBLEMS TECHNIQUE
Alena V. Morzhukhina, Moscow Aviation Institute (National Research University, MAI), Russian Federation

IAC-23.C2.7.2
DESIGN OF AN ALGORITHM FOR ESTIMATION AND COMPENSATION OF STATIC AND DYNAMIC UNBALANCES OF CIRCM INSTRUMENT ROTATING BODY VIA GYROSCOPES TELEMETRY DATA
Fabrizio Gennari, Thales Alenia Space Italia (TAS-I), Italy

IAC-23.C2.7.3
EXTENDING SATELLITE UPTIME THROUGH ROBOTIC MAINTENANCE
Arzu Mirzabayova, Azerbaijan State Oil and Industry University (ASOIU), Azerbaijan

IAC-23.C2.7.4
MINIMAL HEATING THERMAL MANAGEMENT DESIGN FOR LOW-MASS, POWER-CONSTRAINED TUMBLEWEED MOBILE IMPACTORS ON MARS
Mihai Coman, Team Tumbleweed, The Netherlands

IAC-23.C2.7.5
FEASIBILITY OF MULTI-AXIAL GECKO GRIPPING FOR ACTIVE DEBRIS REMOVAL
Kristina Andreyeva, Viterbi School of Engineering, USC, United States

IAC-23.C2.7.6
THRUST VECTOR CONTROL FOR CONTROLLED DEORBITATION – DEVELOPMENT AND TESTING
Ewa Majewska, Łukasiewicz Research Network – Institute of Aviation (ILOT), Poland

IAC-23.C2.7.7
TEMPERATURE STABILIZATION DEVICE’S DESIGN AND IMPLEMENTATION METHOD FOR NANO SATELLITE SYSTEM
Kikuko Miyata, Meijo University, Japan

IAC-23.C2.7.8
THERMAL VACUUM TESTS CAMPAIGN FOR THE AMAZONIA 1 SATELLITE
Geilson Loureiro, National Institute for Space Research - INPE, Brazil

IAC-23.C2.7.9
MACHINE LEARNING BASED THERMAL FAILURE DETECTION IN THERMAL VACUUM TESTING
Yaqoob Alqassab, National Space Science Agency (NSSA), Bahrain

IAC-23.C2.7.10
DESIGN OF AN INTEGRATED VEHICLE FLUID SYSTEM BASED ON ENERGY-FLUID MATCHING
Liqiang Ai, China Academy of Launch Vehicle Technology (CALT), China

C2.8. Specialized Technologies, Including Nanotechnology

October 6 2023, 10:15 — BCC A1

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-23.C2.8.1
DEVELOPMENT OF A NEURAL NETWORK FOR SOLVING DESIGN AND STRUCTURAL PROBLEMS
Atzin Fernanda Constantino Gomez, Samara National Research University (Samara University), Russian Federation

IAC-23.C2.8.2
ELECTROMAGNETIC CHARACTERIZATION OF LUNAR LAVA TUBES SIMULANTS FOR A FUTURE MOON BASE
Andrea Delfini, Sapienza University of Rome, Italy

IAC-23.C2.8.3
 Embedding Electronics with Textile Based Soft-Goods Using FRET Technology
Vittorio Netti, Sasakiwa International Center for Space Architecture, Italy

IAC-23.C2.8.4
GRAPHENE AND GRAPHENE-LIKE MATERIALS: INNOVATION AND FORESIGHT IN SPACE TRANSPORTATION TECHNOLOGIES
Marco Di Clemente, Italian Space Agency (ASI), Italy

IAC-23.C2.8.5
ORGANIC-INORGANIC HYBRID (OIH) COMPOUNDS FOR SMALL SPACECRAFT MISSIONS
Urzsula Wisniewska, Wroclaw University of Science and Technology, Poland

IAC-23.C2.8.6
DEVELOPMENT OF AN INNOVATIVE TWO-PHASE FLOW COOLING SYSTEM ENHANCED BY A GRAPHENE EVAPORATIVE LAYER
Andrea Delfini, Sapienza University of Rome, Italy

IAC-23.C2.8.7
PARAMETRIC IDENTIFICATION OF HEAT TRANSFER PROCESSES IN HEAT PIPES
Alena V. Morzhukhina, Moscow Aviation Institute (National Research University, MAI), Russian Federation

IAC-23.C2.8.8
NUMERICAL INVESTIGATION OF DETONATION SPRAY PROCESS OF SUSPENSIONS CONTAINING NANO-PARTICLES
Ivan Yakovenko, Joint Institute for High Temperatures of the Russian Academy of Sciences, Russian Federation
C.3. 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;


October 3 2023, 10:15 — BCC B1
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;

Koichi Iijichi, Japan Space Systems, Japan

IAC-23.C3.1.4 TAILORING SPACE SOLAR POWER FOR DIVERSE LOCATIONS: AN SPS-ALPHA USE CASE STUDY
John C. Mankins, ARTEMIS Innovation Management Solutions, LLC, United States

IAC-23.C3.1.5 PROPOSAL OF A LOW EARTH ORBIT (LEO) SPACE SOLAR POWER SATELLITE SYSTEM
Joon Min Choi, Korea Aerospace Research Institute (KARI), Korea, Republic of

IAC-23.C3.1.6 MMR-SPS, AN UPDATED CONCEPT DESIGN ON MR-SPS
Xinbin Hou, CAST, China

IAC-23.C3.1.7 SPACE-BASED SOLAR POWER: AN AMBITIOUS SPACE PROJECT FOR HUMANITY
Amru Alamoudi, NEOM Space, Saudi Arabia

IAC-23.C3.1.8 MORPHEUS: A SANDWICH TYPE SOLAR POWER SATELLITE CONCEPT BASED ON THE ECO-DESIGN APPROACH
Haroon B. Qaqab, Space Canada Corporation, Canada

IAC-23.C3.1.9 SEEKING SUSTAINABILITY FOR TERRESTRIAL AND SPACE POWER NEEDS: A NOVEL, MODULAR AND SCALABLE APPROACH TO SPACE-BASED SOLAR POWER
Sahana Shastry, University of Bremen, Germany

IAC-23.C3.1.10 TESTING OF A SOLAR ENERGY SATELLITE CONCEPT ON NANO SATELLITE PLATFORM
Nurlan Rahimli, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.C3.1.11 STATE OF THE INDUSTRY REPORT ON INVESTMENT AND DEVELOPMENT OF SPACE SOLAR POWER
Kevin Barry, LightBridge Strategic Consulting, United States

IAC-23.C3.1.12 SPACE SOLAR POWER - 2023 SURVEY OF PUBLIC AND PRIVATE INITIATIVES
Erik Kul, Estonia
C3.2. Wireless Power Transmission Technologies and Application

October 5 2023, 10:15 — BCC B5

Co-Chair(s): Nobuyuki Kaya, Kobe University, Japan; Ming Li, China Academy of Space Technology (CAST), China; Rapporteur(s): Massimiliano Vásile, University of Strathclyde, United Kingdom; Haroon B. Oqab, Space Canada Corporation, Canada;

IAC-23.C3.2.1 RESULTS FROM THE FIRST TEST OF A CONVERSION MODULE FOR SPACE SOLAR IN ORBIT Elias Wilcoski, Naval Research Laboratory, United States

IAC-23.C3.2.2 MISSION DESIGN FOR ON-ORBIT PRECISE MICROWAVE BEAM CONTROL EXPERIMENTS OF WIRELESS POWER TRANSMISSION TECHNOLOGY Koji Tanaka, Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency, Japan

IAC-23.C3.2.3 MICROWAVE POWER TRANSMISSION SUBSYSTEMS DESIGN EVOLUTION FROM DEMONSTRATION TO OPERATION SYSTEMS FOR SSS Shi-Wei Dong, China Academy of Space Technology (X’ian), China

IAC-23.C3.2.4 AUTOMATIC REMOTE ARRAY CALIBRATION SYSTEM FOR MICROWAVE WIRELESS POWER TRANSMITTER Sang-Hwa Yi, Korea Electrotechnology Research Institute (KERI), Korea, Republic of

IAC-23.C3.2.5 ADVANCED SPACE-TO-SPACE WIRELESS POWER TRANSMISSION SYSTEM VIA LASER Giovanni Pio Porracino, Politecnico di Milano, Italy

IAC-23.C3.2.6 FROM SPACE TO EARTH: WIRELESS POWER TRANSMISSION TECHNOLOGIES FOR EARTH-BASED APPLICATIONS Sakit Yarmammadli, Azercomos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.C3.2.7 RECEIPTIR-BYPASSING OF ATMOSPHERIC ATTENUATION FOR SPACE BASED SOLAR POWER WITH AN AIRBORNE RECEIVER Alexandre Garus, Thales Alenia Space, Italy

IAC-23.C3.2.8 WIRELESS POWER TRANSMISSION SYSTEM BASED ON SPACE TECHNOLOGIES Zarifa Guliyeva, Azercomos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.C3.2.9 INVESTIGATION OF SPACE-BASED SOLAR POWER BEAMING KINEMATIC EFFICIENCY FOR MOLNIYA ORBITS Basel Omran, Clarkson University, United States

IAC-23.C3.2.10 INTERNATIONAL SPACE SOLAR POWER STUDENT COMPETITION PAPER NO. 1 MR. GEORGE B. DIETRICH 1-SPACE CANADA, ONTARIO, CANADA Megan Campbell, United Kingdom

IAC-23.C3.2.11 INTERNATIONAL SPACE SOLAR POWER STUDENT COMPETITION PAPER NO. 2 MR. GEORGE B. DIETRICH SPACE CANADA, ONTARIO, CANADA Connor MacRohbie, University of Waterloo, Canada

IAC-23.C3.2.12 INTERNATIONAL SPACE SOLAR POWER STUDENT COMPETITION PAPER NO. 3 MR. GEORGE B. DIETRICH SPACE CANADA, ONTARIO, CANADA Abdulbari Agboola, The University of Texas at Austin, United States

C3.3. Advanced Space Power Technologies

October 6 2023, 10:15 — BCC B1

Co-Chair(s): Matthew Perren, Airbus Defence & Space, United Kingdom; Gary Barnhard, XISP-Inc, United States; Lisa May, Lockheed Martin (Space Systems Company), 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-23.C3.3.1 RESEARCH ON APPLICATION OF EXTRA-HIGH POWER ELECTRIC THRUSTER TOWARDS SPACE SOLAR POWER STATION No Yao, Qian Xuesen Laboratory of Space Technology, China Academy of Space Technology (CAST), China


IAC-23.C3.3.3 DESIGN AND SIMULATION OF A BIDIRECTIONAL CONVERTER WITH POWER BALANCE CONTROL TECHNIQUE FOR A SPACE-BASED ELECTRICAL POWER SYSTEM. Methawan Jantra, National Astronomical Research Institute of Thailand (NARIT), Thailand

IAC-23.C3.3.4 DESIGN AND ANALYSIS OF A DC/DC BUCK CONVERTER WITH LOAD SWITCH FOR EDUCATIONAL NANOSATELLITE POWER SUB-SYSTEMS. HOUARI BENTOUTOU, Agence Spatiale Algérienne (ASAL), Algeria

IAC-23.C3.3.5 (unconfirmed) A NOVEL DUAL-BUS SATELLITE ELECTRICAL POWER SYSTEM Wei Lu, Tianjin Institute of Power Sources, China

IAC-23.C3.3.6 AN OVERVIEW OF THE SOLAR CELL SPACE CALIBRATION TECHNIQUE AND STANDARD Jiang Yaoxian, China Academy of Space Technology (CAST), China

IAC-23.C3.3.7 (unconfirmed) COMBINED POWER SYSTEMS IN AEROSPACE VEHICLE: DC BUS VOLTAGE STABILISATION AND INFLUENCE OF LOADING ON SERVO SYSTEM. Mansi Gupta, University of Petroleum and Energy Studies, India

IAC-23.C3.3.8 (unconfirmed) GRAPHENE BASED BATTERIES FOR ROBOTS S J Amy Dewswy, Karunya Institute of Technology and Sciences, India

IAC-23.C3.3.9 DEVELOPMENT PROCESS OF LITHIUM-ION BATTERY TEST PLATFORM DESIGNED FOR AEROSPACE APPLICATION LAKHDAR LIMAM, Agence Spatiale Algérienne (ASAL), Algeria

IAC-23.C3.3.11 ON-ORBIT DEMONSTRATION FOR NEXT GENERATION SPACE SOLAR CELL ON HTV-X Tepppei Okumura, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-23.C3.3.12 MEMS-BASED SOLAR PANEL DEPLOYMENT FOR A SPACECRAFT Srisys Bhurat, R V College of Engineering, Bengaluru, India
C3.4. Space Power System for Ambitious Missions

October 6 2023, 13:45 — BCC B1

Co-Chair(s): Massimiliano Vasile, University of Strathclyde, United Kingdom; Shoichiro Mihara, Japan Space Systems, Japan; Lisa May, Lockheed Martin (Space Systems Company), United States;

Rapporteur(s): Xinbin Hou, CAST, China; Koji Tanaka, Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency, Japan;

IAC-23.C3.4.1 (unconfirmed)
A MULTIPHYSICS MODEL TO SIMULATE LASER POWER TRANSMISSION, EXPERIMENTS DRIVEN AND TRAINED
Tommasso Aresi, Politecnico di Milano, Italy

IAC-23.C3.4.2
ORBIT OCCUPANCY OF A SOLAR POWER SATELLITE IN GEOSYNCHRONOUS ORBIT
Nathan Pullicino, University of Strathclyde / Mechanical and Aerospace Engineering, United Kingdom

IAC-23.C3.4.3
AN EVALUATION OF SOLAR ENERGY SYSTEMS FOR DEEP SPACE APPLICATIONS.
Ivy Mayor, Sweden

IAC-23.C3.4.4
PHASED ON-ORBIT ASSEMBLY SCHEME OF DEMONSTRATION MR-SPS
ZhengAi Cheng, Qian Xuesen Laboratory of Space Technology, China

IAC-23.C3.4.5
ASSEMBLY OF BASE SOLAR POWER SATELLITE AND MAINTENANCE USING SPACE ROBOTICS
Prathmesh Barapatre, National Space Society (USA) -Mumbai chapter, India

IAC-23.C3.4.6
COST EFFECTIVE FOLDABLE ORIGAMI STYLE SOLAR PANELS FOR SPACE BASED SOLAR POWER SYSTEMS.
Pranav Jha, India

IAC-23.C3.4.7
ASSEMBLY AND DISASSEMBLY DYNAMICS OF A MODULAR SOLAR POWER SATELLITE
Maria Anna Laino, University of Strathclyde, United Kingdom

IAC-23.C3.4.8
SKYBEAM: IN-ORBIT ASSEMBLY FOR SPACE-BASED SOLAR POWER WITH EUROPEAN ROBOTIC TECHNOLOGIES
Diego A. Urbina, Space Applications Services, Belgium

IAC-23.C3.4.10
MULTIFLUID GEOTHERMAL ENERGY GENERATION ON MARS IN THE SEDIMENTARY REGIONS UTILIZING INDIGENOUS RESOURCES OF THE PLANET
Akshay Rajeshkhar Hiremath, Space Generation Advisory Council (SGAC), United States

IAC-23.C3.4.11
SOLAR POWER ENERGY GENERATION IN SPACE FOR MOON AND MARS
VISHAL SHARMA, India

IAC-23.C3.4.12
DEVELOPMENT OF A SMALL-SCALE ENERGY GENERATION SYSTEM ON MARS USING FORMIC ACID
Sukhjit Singh, Space Generation Advisory Council (SGAC), India

C3.5-C4.10. Joint Session on Nuclear Power and Propulsion Systems, and Propellantless Propulsion

October 6 2023, 13:45 — BCC A8

Co-Chair(s): Leopold Summerer, European Space Agency (ESA), The Netherlands; Christian Bach, Technical University Dresden, Germany; Lisa May, Lockheed Martin (Space Systems Company), United States;

Rapporteur(s): Markus Jaeger, The Exploration Company GmbH, Germany; Saroj Kumar, University of Alabama in Huntsville, United States;

IAC-23.C3.5-C4.10.4
APPLICATION OF NUCLEAR POWER AND PROPULSION SYSTEMS OF HIGH POWER LEVEL FOR SPACE TRANSPORTATION
Alexander Solodukhin, Keldysh Research Center, Russian Federation

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’Études Spatiales (CNES), France;

C4.1. Liquid Propulsion (1)

October 2 2023, 15:15 — BCC A8

Co-Chair(s): Christophe Bonhomme, Centre National d’Études Spatiales (CNES), France; Markus Jaeger, The Exploration Company GmbH, Germany;

Rapporteur(s): AnnafedERICA Urbano, ISAE - Institut Supérieur de l'Aéronautique et de l'Espace, France; Hidenori Hara, Mitsubishi Heavy Industries, Ltd., Japan;

IAC-23.C4.1.1
KEYNOTE: OVERVIEW ON DEVELOPMENT OF LIQUID ROCKET ENGINES FOR HEAVY LAUNCH VEHICLES IN CHINA
Yushan Gao, Xian Aerospace Propulsion Institute, China

IAC-23.C4.1.2
ADDITIVE MANUFACTURED FUEL INJECTOR AS A WAY FORWARD TO IMPROVE GREEN PROPELLANT LIQUID APOGEE ENGINE
Adrian Parzybut, Łukasiewicz Research Network – Institute of Aviation (ILOT), Poland

IAC-23.C4.1.4
DEVELOPMENT OF SMALL ROCKET ENGINE FOR ROCKET VENTURES
Ryoma Yamashiro, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-23.C4.1.5
DEVELOPMENT OF THE LIQUID OXYGEN AND METHANE M10 ROCKET ENGINE FOR THE VEGA-E UPPER STAGE
Simone Porzi, AVIO S.p.A., Italy

IAC-23.C4.1.6
T(H)RUST: APPLIED RESEARCH ACTIVITIES ON LIQUID ROCKET PROPULSION AT SAPIENZA UNIVERSITY OF ROME
Francesco Nasuti, Sapienza University of Rome, Italy

IAC-23.C4.1.7
INVESTIGATION ON PERFORMANCE IMPROVEMENT OF THE NEW HYDROGEN PEROXIDE THRUSTER WITH EXTERNALLY HEATED AEROSPIKE NOZZLE
Kotaro Munenaga, Kanazawa Institute of Technology, Japan
C4.2. Liquid Propulsion (2)

October 4 2023, 10:15 — BCC A8

Co-Chair(s): Angelo Cervone, Delft University of Technology (TU Delft), The Netherlands; Annafeiderica Urbano, ISAE – Institut Supérieur de l'Aéronautique et de l’Espace, France; Christian Bach, Dresden University of Technology (DUT) / Technische Universität Dresden, Germany; Hidenori Hara, Mitsubishi Heavy Industries, Ltd., Japan;

IAC-23.C4.2.1 QUALIFICATION OF A PROPULSION SYSTEM FOR ACTIVE DEORBIF Ulrich Gotzig, ArianeGroup, Germany

IAC-23.C4.2.2 PERFORMANCE EVALUATION OF HYPERGOLIC IONIC LIQUID-BASED FUEL (LETHCU01) WITH 95% HYDROGEN PEROXIDE OXIDIZER IN 50 N THRUSTER. Vikas Bhosale, Space Solutions Co. LTD, Korea, Republic of

IAC-23.C4.2.3 EXPERIMENTAL INVESTIGATION OF FUEL TRANSVERSE INJECTION DURING THROTTLING IN A BIPROPELLANT THRUSTER. Vincent Ugozini, Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of

IAC-23.C4.2.4 (unconfirmed) EMPLOYING CARBON-SPLIT PORE TUBES AS ADSORBENTS TO CONTROL THE LEAKAGE OF METHANE IN TRANSPORT VALVES Anagha Udup, R V College of Engineering, Bengaluru, India

IAC-23.C4.2.5 SOFT FLOW METER FOR MISSION-ONBOARD TO MEASURE FLOW PARAMETER FOR LIQUID ROCKET ENGINES Elayaraperumal Ezhilrajan, Indian Space Research Organization (ISRO), India

IAC-23.C4.2.6 DESIGN AND ANALYSIS OF A NOVEL SWIRL-PINTLE COMBINED FUEL INJECTOR FOR IMPROVED PERFORMANCE OF LIQUID ROCKET ENGINES Srima Kumar, Sri Sairam Engineering College, India

IAC-23.C4.2.7 FEASIBILITY OF UV INDUCED DECOMPOSITION OF HIGH TEST PEROXIDE IN SPACECRAFT PROPULSION. Damian Grabowski, Lukasiewicz Research Network – Institute of Aviation (ILOT), Poland

IAC-23.C4.2.8 PERFORMANCE TESTING OF IN HYDROGEN PEROXIDE THRUSTER AT FOTEC PROPULSION TEST FACILITIES Varun Reddy Nandyala, FOTEC Forschungs- und Technologietransfer GmbH, Austria

C4.3. Solid and Hybrid Propulsion (1)

October 3 2023, 10:15 — BCC A8

Co-Chair(s): Marco Di Clemente, Italian Space Agency (ASI), Italy; Ozan Kara, Technology Innovation Institute (TII), United Arab Emirates; Rene Gonçalves, Aeronautic Institute of Technology (ITA), Brazil

IAC-23.C4.3.2 A CONCEPTUAL DESIGN OF PERMEABLE NOZZLE FOR ALTITUDE COMPENSATION AND THRUST VECTORIZATION Ye Wang, CAS Space, China

IAC-23.C4.3.3 DESIGN, MANUFACTURING AND TESTING OF 50 MM SOLID ROCKET MOTOR USING NON-HTPB COMPOSITE PROPELLANT FOR POTENTIAL IN-ORBIT APPLICATIONS. Florin Mingireanu, Romanian Space Agency (ROSA), Romania

IAC-23.C4.3.4 EFFECT OF ALUMINIUM CONTENT ON NOZZLE EROSION IN A HYBRID ROCKET MOTOR Xianzhu Jiang, School of Astronautics, Beihang University, China

IAC-23.C4.3.5 HYBRID AUTOPHAGE PROPULSION FOR SPACE LAUNCH VEHICLES: A PROMISING CONCEPT Martin Gros, France

IAC-23.C4.3.6 RESEARCH ON ANALYTICAL INVERSE KINEMATICS ALGORITHM FOR SERVO MECHANISM OF SWINGING NOZZLE Guancho Han, CAS Space, China

IAC-23.C4.3.7 IN-SITU PROPULLENT DESIGN FOR MOON AND MARS EXPLORATION USING HYBRID ROCKETS Hessa Almarzooqi, Technology Innovation Institute (TII), United Arab Emirates

IAC-23.C4.3.8 SURROGATE NEURAL NETWORK MODEL FOR INTEGRATED ASCENT TRAJECTORY OPTIMIZATION OF THRUSTABLE HYBRID ROCKETS Mario Tindaro Migliorino, Sapienza University of Rome, Italy

IAC-23.C4.3.9 DESIGN AND TESTING OF THE COMBUSTION CHAMBER OF A H2O2/ABS STUDENT-DEVELOPED HYBRID ROCKET ENGINE Daniel Cantos Gálvez, ISAE - Institut Supérieur de l'Aéronautique et de l'Espace, France

IAC-23.C4.3.10 COURSE AND CHALLENGES OF FLIGHT QUALIFICATION TEST CAMPAIGN OF THE STUDENTS’ HYBRID ROCKET ENGINE. Marek Dzik, Warsaw University of Technology (WUT), Poland

C4.4. Solid and Hybrid Propulsion (2)

October 4 2023, 10:15 — BCC B6

Co-Chair(s): Didier Boury, ArianeGroup SAS, France; Adam Okninski, Lukasiewicz Research Network – Institute of Aviation (ILOT), Poland
C4.5. Electric Propulsion (1)

October 3 2023, 15:00 — BCC A8

Co-Chair(s): Garri A. Popov, Research Institute of Applied Mechanics and Electrodynamics (RIAME), MAI, Russian Federation; Vito Salvatore, CIRA Italian Aerospace Research Center, Capua, Italy

Rapporteur(s): Angelo Cervone, Delft University of Technology (TU Delft), The Netherlands;

Rapporteur(s): Marco Di Clemente, Italian Space Agency (ASI), Italy;

IAC-23.C4.5.1
NUMERICAL SIMULATIONS OF THE HELICAL PLASMA THRUSTER EXPERIMENT UNDER DIFFERENT MAGNETIC CONFIGURATIONS Renan Almeida, Universidade de Brasilia, Brazil

IAC-23.C4.5.2
ENHANCING IONIC THRUST GENERATION VIA NUCLEAR POWER Pratik B Mott, R V College of Engineering, Bengaluru, India

IAC-23.C4.5.3
INVESTIGATION ON THE IONIZATION PROBABILITY OF COATED INTAKES USED FOR A NOVEL PASSIVELY IONIZING AIR-BREATHING ELECTRIC PROPULSION CONCEPT FOR VERY LOW EARTH ORBITS Florian Prochnow, TU Dresden, Germany

IAC-23.C4.5.4
RESULTS OF THE SUCCESSFUL 48000 H ENDURANCE TEST OF A FEEP MULTI-EMITTER Laura Bettiol, FOTEC Forschungs- und Technologietransfer GmbH, Austria

IAC-23.C4.5.5
PULSED PLASMA THRUSTER FOR DEEP SPACE EXPLORATION Jayakumar Venkatesan, Valles Marineris International Private Limited, India

IAC-23.C4.5.6
COUPLING TEST OF PROPULSION SUB-SYSTEM: TMA 5000, PPU ELEKTRO, AND XFC PPS*5000 Alexandre Briggs, SAFRAN, France

IAC-23.C4.5.7
PPSX00 HALL THRUSTER: ON THE FINAL PATH TOWARDS THE QUALIFICATION OF A SUBKILOWATT-CLASS THRUSTER Claude-Martin Brito, SAFRAN, France

IAC-23.C4.5.8
STARTING MODES OF MULTIDIRECTIONAL PLASMA THRUSTER OPERATED IN NOBLE GASES Andrei Shumeika, Bauman Moscow State Technical University, Russian Federation

IAC-23.C4.5.9
MOCK-UP OF PROPULSION SYSTEM: TMA 5000, PPU ELEKTRO, AND XFC PPS*5000 Mirko Magarotto, University of Padova, Italy

IAC-23.C4.5.10
PARAMETRIC DESIGN OF A WATER-VAPOR HALL THRUSTER FOR 100W OPERATION Masayuki Matsuura, University of Tokyo, Japan

IAC-23.C4.5.11
LANTHANUM HEXABORIDE HOLLOW CATHODE FOR A MAGNETIC OCTUPOLE THRUSTER Jordan Hsieh, National Chung Kung University, Taiwan, China

C4.6. Electric Propulsion (2)

October 4 2023, 15:00 — BCC A8

Co-Chair(s): Jamila Mansouri, European Space Agency (ESA), The Netherlands; Nicoletta Wagner, European Space Agency (ESA), France;

Rapporteur(s): Garri A. Popov, Research Institute of Applied Mechanics and Electrodynamics (RIAME), MAI, Russian Federation; Vito Salvatore, CIRA Italian Aerospace Research Center, Capua, Italy;

Rapporteur(s): Marco Di Clemente, Italian Space Agency (ASI), Italy;

IAC-23.C4.6.1
NUMERICAL SIMULATION OF IONIC LIQUID ION SOURCES FOR ELECTROSPRAY PROPULSION DURING STEADY ION EVAPORATION Ximo Gallud Cidoncha, Massachusetts Institute of Technology (MIT), United States

IAC-23.C4.6.2
DESIGN AND SIMULATION OF AN IONIC PROPULSION ENGINE WITH PROPOSED Au-GRAFENE COMPOSITE MATERIAL Rosaura Patriciia Delgado Orta, University of Guadalajara, Mexico
ASSOCIATED WITH DATA-DRIVEN APPROACHES
MIXING ENHANCEMENT VIA EVOLUTIONARY ALGORITHMS
MULTI-OBJECTIVE DESIGN OPTIMIZATION OF SHOCK-INDUCED MIXING ENHANCEMENT VIA EVOLUTIONARY ALGORITHMS ASSISTED BY DATA-DRIVEN APPROACHES
MERCURY PROPULSION SYSTEM FOR 6U CUBESAT; DESIGN AND DEVELOPMENT OF A BUTANE WARM GAS ENGINE WITH AN AFTERBURNER BURNING METAL FUEL
C4.9. Disruptive Propulsion Concepts for Enabling New Missions

October 6 2023, 10:15 — BCC A8

Co-Chair(s): Elena Toson, T4i, Italy; Nicoletta Wagner, European Space Agency (ESA), France;
Rapporteur(s): Angelo Cervone, Delft University of Technology (TU Delft), The Netherlands; Arnau Pons Lorente, Space Generation Advisory Council (SGAC), Spain;

IAC-23.C4.9.1
KEYNOTE: SPACE FLIGHT EXPERIMENTS OF DETONATION ENGINE SYSTEM BY USING SOUN丁ROCKET S-520
Jiro Kasahara, Nagoya University, Japan

IAC-23.C4.9.2
QUANTUM PROPULSION FOR INTERSTELLAR TRAVEL: ANALYSIS AND EXPLORATION OF KEY CHALLENGES
Pratyaksha Shetty, India

IAC-23.C4.9.3
ATMOSPHERE-BREATHING ELECTRIC PROPULSION (ABEP) SYSTEM USING A CATHODE-LESS RF PLASMA THRUSTER: DESIGN AND ROBUST OPTIMISATION FOR VLEO
Mirko Magarotto, University of Padova, Italy

IAC-23.C4.9.4
APPLICATION OF NUCLEAR THERMAL PROPULSION FOR SUSTAINABLE CISTLUNAR EXPLORATION
Saraj Kumar, Propulsion Research Center, University of Alabama in Huntsville, United States

IAC-23.C4.9.5
INTEGRATED OPTIMIZATION OF SPACECRAFT LAYOUT AND SCENARIOS FOR LONG-TERM MAINTENANCE OF ELLIPTICAL ORBITS WITH ULTRA-LOW PERICENTERS USING ONLY RENEWABLE RESOURCES
Alexander S. Filatyev, Lomonosov Moscow State University, Russian Federation

IAC-23.C4.9.6
FEASIBILITY OF HYBRID PHOTONIC PROPULSION TECHNOLOGY (HOPPER) FOR FUTURE SPACE MISSION
Anand Nagesh, Big Dipper Exploration Technologies, India

IAC-23.C4.9.7
EFFICIENCY EVALUATION OF EMITTED CHARGED DROPLETS IN ULTRASONIC-ASSISTED ELECTRIC PROPULSION SYSTEM
Weiguo He, Shanghai University, China

IAC-23.C4.9.8
THE CASE STUDY OF ADVANCED NUCLEAR PROPULSION METHODS FOR INTERSTELLAR UNMANNED PROBE TO ALPHA CENTAURI
Ugur Guven, UN CSSTEEP, United Kingdom

IAC-23.C4.9.9
OPTIMAL DESIGN AND CURRENT CONTROL STRATEGIES OF AN ELECTRODYNAMIC TAPE FOR ISS STATION-KEEPING
Alice Brunello, CISAS “G. Colombo” - University of Padova, Italy
D1.1. Innovative and Visionary Space Systems

October 2 2023, 15:15 — HAC Hall A

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-23.D1.1.1 A CONCEPTUAL FRAMEWORK FOR CLIMATE CHANGE MITIGATION ACTIONS EMPLOYING IN-SPACE GEOENGINEERING
Bruce Chesley, Teaching Science and Technology, Inc (TSTI), United States

IAC-23.D1.1.2 SPACECRAFT ATTITUDE CONTROL USING INERTIAL MORPHING
Suraj James Aranha, RMIT University (Royal Melbourne Institute of Technology), Australia

IAC-23.D1.1.3 BIO-TRLs: AN EVOLVED TECHNOLOGY READINESS LEVELS FOR BIOLOGICALLY ACTIVE MATERIALS AND ORGANISMS.
Layla A. van Ellen, Newcastle University, United Kingdom

IAC-23.D1.1.4 A CONCEPTUAL SYSTEM ANALYSIS OF MICRO SATELLITE CONSTELLATION
Buşra Şimşek, TAI - Turkish Aerospace Industries, Inc, Türkiye

IAC-23.D1.1.5 QUANTUM COMPUTING FOR SPACE: EXPLORING QUANTUM CIRCUITS WITH PROGRAMMABLE NANOPHOTONIC CHIPS
Priyank Dubey, University of Luxembourg, Luxembourg

IAC-23.D1.1.6 DEVELOPMENT OF COMMERCIAL SPACECRAFT EDUCATION AND TRAINING SIMULATOR USING THE METAVERSE
Taichi Yamazaki, ASTRAX, Inc., Japan

IAC-23.D1.1.7 INNOVATIVE AND VISIONARY SPACE SYSTEMS: SPACE-BASED SOLAR POWER SYSTEMS
Asad Hasanov, Azercoms, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.D1.1.8 LTA VEHICLES FOR EXPLORATION OF MARTIAN CAVES
Pranjal Mhatre, University of Mumbai, India

IAC-23.D1.1.9 NEW GENERATION OF ONBOARD COMPUTERS FOR LONG MISSIONS
Rania Toukebri, Airbus D&S, Germany

D1.2. Space Systems Architectures

October 3 2023, 10:15 — HAC Hall A

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-23.D1.2.1 BUILDING BLOCK-BASED EARTH OBSERVATION GROUND SEGMENT ARCHITECTURE: A FLEXIBLE AND SCALABLE APPROACH TO DESIGNING AND BUILDING GROUND SYSTEMS
Baptiste Schandeler, Airbus Defence & Space, France

IAC-23.D1.2.2 LUNAR COMMUNICATION RELAY ARCHITECTURE DESIGN VIA MULTIPERIOD FACILITY LOCATION PROBLEM
Yuri Shimane, Georgia Institute of Technology, United States

IAC-23.D1.2.4 DESIGN CHALLENGES OF AUTONOMOUS FORMATION CONTROLLER FOR SMALL SATELLITE MISSIONS
Sanjeeviraja Thangavel, Singapore, Republic of Singapore

IAC-23.D1.2.7 MODULARITY IN THE LIFE CYCLE OF SATELLITE SYSTEMS: A REVIEW OF BARRIERS, DRIVERS, AND IMPACTS
Victoria Krivova, Politecnico di Milano, Italy

IAC-23.D1.2.8 FACING THE COMPUTATIONAL COMPLEXITY THREAT OF AUTONOMOUS LUNAR MINING
Rafal Graczyk, University of Luxembourg, Luxembourg

IAC-23.D1.2.9 POINT CLOUD-BASED REINFORCEMENT LEARNING FOR AUTONOMOUS NAVIGATION OF A ROBOTIC ROVER ON PLANETARY SURFACES
Federico Mustich, Politecnico di Torino, Italy

IAC-23.D1.2.10 DESIGN OPTIMIZATION AND STATISTICAL PERFORMANCE EVALUATION OF OPTICAL COMMUNICATIONS RELAY ARCHITECTURES
Julia Milton, Massachusetts Institute of Technology (MIT), United States

IAC-23.D1.2.11 CONCEPT AND DESIGN OF AN AUTONOMOUS MICRO ROVER FOR LONG TERM LUNAR EXPLORATION
Joel Gützlaff, FH Aachen University of Applied Sciences, Germany

IAC-23.D1.2.12 NESTED AUTONOMOUS ORBIT DETERMINATION AND CONTROL FOR DISTRIBUTED SATELLITE SYSTEMS: A CASE STUDY ON CONSTELLATION OF FORMATIONS FOR EARTH OBSERVATION
Khaja Faisal Hussain, Khalifa University of Science and Technology (KUST), United Arab Emirates

IAC-23.D1.2.13 OPTIMIZING ON-ORBIT PROCESSING AND SYSTEM ARCHITECTURE FOR OPEN-PLATFORM SATELLITES
Ravneet Kaur, TU Berlin, Germany

D1.3. Technologies to Enable Space Systems

October 3 2023, 15:00 — HAC Hall A

Co-Chair(s): Steven Arnold, The Johns 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-23.D1.3.1 STEP: THE TECHNOLOGY PROGRAM OF ITALIAN SPACE AGENCY
Marco Di Clemente, Italian Space Agency (ASI), Italy

IAC-23.D1.3.2 USING REINFORCEMENT LEARNING FOR SATELLITE FORMATION
Hari Bharath Chitta, Technical University of Berlin, Germany

IAC-23.D1.3.3 DESIGN OF IN-ORBIT ASSEMBLY OF LARGE REFLECTOR BASED ON PARALLEL ROBOT
Guangyao Zhu, China Aerospace Science and Technology Corporation (CASC), China
IAC-23.D1.3.4 AUTOROTATION: AN INNOVATIVE ALTERNATIVE TO PARACHUTES FOR SPACECRAFT LANDING
Clemens Riegler, Julius Maximilians Universität Würzburg, Germany

IAC-23.D1.3.5 SCIENTIFIC RESULTS OF FARGO - A VERIFICATION OF NOVEL FERROFLUID SYSTEMS ON THE ISS
Manfred Ehresmann, Institute of Space Systems, University of Stuttgart, Germany

IAC-23.D1.3.6 FORFABSAT: APPROACHES TO PRODUCTION OF MULTI-SATELLITE SYSTEMS
Klaus Schilling, Zentrum für Telematik, Germany

IAC-23.D1.3.7 REUSABILITY POTENTIAL OF SPACECRAFT SOLAR PANELS
Margot Claus, Luited University of Technology, Sweden

IAC-23.D1.3.8 DESIGN AND DEVELOPMENT OF AN ACTIVE MAGNETIC BEARING FOR ENHANCED LONGEVITY OF EARTH SENSOR
Mayur Pawar, India

IAC-23.D1.3.9 ARTIFICIAL INTELLIGENCE IN PLANETARY EXPLORATION: ENABLING AUTONOMOUS DECISION-MAKING FOR SPACECRAFT
Anton Ivanov, Technology Innovation Institute (TII), United Arab Emirates

IAC-23.D1.3.10 A REVIEW ON PHOTONIC SENSING SYSTEMS FOR SPACECRAFT APPLICATIONS
Ahmed E. S. NOSSEIR, University of Trento, Italy

IAC-23.D1.3.11 ANALYSIS OF AI ALGORITHMS USED IN AUTONOMOUS NAVIGATION FOR MOBILE ROBOTS IN SPACE EXPLORATION
Andrea Abascal Molina, ITESM, Mexico

IAC-23.D1.3.12 PRECISE POWER DESCENT FAULT TOLERANT CONTROL OF A LUNAR LANDER
Krishna Kumar, Ryerson University, Canada

IAC-23.D1.3.13 ADVANCEMENTS IN IN-SPACE MANUFACTURING USING PHOTOPOLYMERS: INSIGHTS INTO EXPERIMENTS PERFORMED AND APPROACHES TOWARDS A MATURE TECHNOLOGY.
Markus Pietras, Munich University of Applied Sciences, Germany

D1.4A. Space Systems Engineering - Methods, Processes and Tools (1)

October 5 2023, 10:15 — HAC Hall A
Co-Chair(s): Dapeng Wang, Beihang University, China; Peter Dieleman, Netherlands Aerospace Centre (NLR), The Netherlands;
Rapporteur(s): Hui Du, Institute of Spacecraft System Engineering,China Academy of Space Technology (CAST), China;
IAC-23.D1.4A.1 (unconfirmed) AI4CE - LATEST DEVELOPMENTS ON THE AI-BASED SYSTEM GENERATION PLATFORM
Jan-Peter Ceglarek, TU Darmstadt, Germany

IAC-23.D1.4A.2 A SIMULATION AND ANALYSIS TOOL FOR ITERATIVELY DESIGNING AND SIZING SOLAR ARRAYS AND BATTERIES FOR SMALL SATELLITE MISSIONS
Marlin Kanzow, Institute of Space Systems, University of Stuttgart, Germany

IAC-23.D1.4A.3 ORBIT MANOEUVRE STRATEGIES FOR VERY LOW EARTH ORBIT (VLEO) SATELLITES
Sui Chen, Politecnico di Milano, Italy

IAC-23.D1.4A.4 LEVERAGING LANGUAGE MODELS SEMANTIC SIMILARITY CAPABILITIES TO FACILITATE INFORMATION REUSE IN SYSTEM ENGINEERING
Paul Darm, University of Strathclyde, United Kingdom

IAC-23.D1.4A.6 ARCHITECTURE OF A GENERATIVE DESIGN TOOL FOR SPACECRAFT AND USER FRONT-END IMPLEMENTATION THROUGH A CHATBOT SIMTAR DESIGN ASSISTANT
Ramón María García Alarcía, Technical University of Munich, Germany

IAC-23.D1.4A.7 A MODEL-BASED APPROACH FOR THE PRELIMINARY DESIGN OF SMALL SATELLITES CONSTELLATIONS BASED ON USER NEEDS ANALYSIS. THE IRIDE OPTICAL SUB-CONSTELLATION CASE STUDY
Federica Conti, Sapienza University of Rome, Italy

IAC-23.D1.4A.9 SAFE APPROACH OF A SMALL SATELLITE WITH A LARGE SPACECRAFT: ANALYSIS OF NOMINAL AND OFF-NOMINAL SOLUTIONS.
Antonio D’Ortona, Politecnico di Torino, Italy

IAC-23.D1.4A.11 A SEMI-STOCHASTIC, NUMERIC SIMULATION TOOL IN MODEL BASED SYSTEMS ENGINEERING FOR TUMBLEWEED ROVERS
Markus Renoldner, Team Tumbleweed, Austria

IAC-23.D1.4A.12 ENHANCING 5G GLOBAL CONNECTIVITY VIA SATELLITE CONSTELLATIONS: PRELIMINARY SIZING OF PHASED ARRAY ANTENNAS USING A HEURISTIC SOLVER WITH GENETIC ALGORITHMS
Anton Koenig, Cranfield University, United Kingdom

IAC-23.D1.4A.13 MAXIMIZING LIMITED VOLUME: A GENETIC ALGORITHM-BASED APPROACH TO CUBESAT SOLAR PANEL AND ANTENNA DEPLOYMENT PATTERN DESIGN
Mohammadamin Alandoostlaj, University of Luxembourg, Luxembourg
IAC-23.D1.48.6
APPLICATION OF MODEL-BASED SYSTEMS ENGINEERING (MBSE) TO ROCKET ENGINE AFFORDABILITY AND POTENTIALS
Shreyas Lakshmipiram Raghu, University of Alabama in Huntsville, United States

IAC-23.D1.48.7
TOWARDS A MODEL-BASED DESIGN REVIEW: THE NANO-SAT-C BR3 CUBESAT STUDY CASE
Geilson Loureiro, Instituto Nacional de Pesquisas Espaciais (INPE), Brazil

IAC-23.D1.48.8
TRANSITIONING FROM WATERFALL TO AGILE METHODOLOGIES IN SATELLITE DEVELOPMENT: A CASE STUDY OF ORBIT NTTU
Patrick Nikolay Falkeid, NTNU, Norway

IAC-23.D1.48.9
APPLICATION OF MARKOWITZ PORTFOLIO THEORY FOR SPACE TECHNOLOGIES
Afreem Siddiqi, Massachusetts Institute of Technology (MIT), United States

IAC-23.D1.48.10
FROM DESIGN TO DELIVERY IN THREE MONTHS: THE FAST DEVELOPMENT OF A 3U CUBESAT
Luisa Lossa, Politecnico di Torino, Italy

IAC-23.D1.48.11
HYSIM: A TOOL FOR SPACE-TO-SPACE HYPERSONIC RESOLVED IMAGERY
Leonard Felicetti, Cranfield University, United Kingdom


October 6 2023, 10:15 — HAC Hall A

Co-Chair(s): Yoshikazu 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-23.D1.5.1
BEST PRACTICES AND LESSONS LEARNED ON PRODUCT AND QUALITY ASSURANCE ACTIONS ON CUBESAT MISSIONS: THE SAPIENZA XSSLAB STUDY CASE
Michela Boscia, Sapienza University of Rome, Italy

IAC-23.D1.5.2
THE STUDY ON THE RELIABILITY INCREASING OF NEWLY DEVELOPED SPACE TECHNOLOGY
Sangsoo Yong, Korea Aerospace Research Institute (KARI), Korea, Republic of

IAC-23.D1.5.3
LESSONS LEARNED AND BEST PRACTICES FROM THE BIRDS-5 PROJECT
Yukihisa Otani, Kyushu Institute of Technology, Japan

IAC-23.D1.5.4
THE EFFECT ON THE ITERATIVE DESIGN APPROACH OF DIFFERENT STARLINK SATELLITE GENERATIONS AND VERSIONS AS SEEN BY THE APPARENT BRIGHTNESS CHARACTERISTICS
Andreas Hormig, Aerospace Research Institute (TII), United Arab Emirates

IAC-23.D1.5.5
LESSONS LEARNED WITH RISK MANAGEMENT: A SYSTEMS ENGINEER’S PERSPECTIVE
Charles Baker, NASA Goddard Space Flight Center (USRA), United States

IAC-23.D1.5.6
SPACECRAFT DIGITAL ENGINEERING: THE TALE OF “DIGITAL TWINS” AND LESSONS LEARNED
Anton Ivanov, Technology Innovation Institute (TII), United Arab Emirates

IAC-23.D1.5.7
STANDARDIZING CUBESAT INTERIORS: SAFEGUARDING MISSIONS AND ADVANCING THE MARKET
Miraslava Kazlouskaya, International Space University (ISU), France

IAC-23.D1.5.8
THE EFFECTS OF THE DESIGN ON THE SATELLITE REFUELING SYSTEM EFFICIENCY.
Samir Bairamov, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.D1.5.9
THE PRACTICE OF REDUCING COST IN THE DEVELOPMENT OF SMALLSATS
Lianxiang Jiang, China Academy of Space Technology (CAST), China

IAC-23.D1.5.10
JAXA’S SYSTEMS ENGINEERING/PROJECT MANAGEMENT PROCESSES AND BEST PRACTICES IN HAYABUSA2 MISSION
Yuto Takei, Japan Aerospace Exploration Agency (JAXA), Japan

D1.6. Cooperative and Robotic Space Systems

October 6 2023, 13:45 — HAC Hall A

Co-Chair(s): Otfrid G. Liepack, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States; Klaus Schilling, Zentrum für Telematik, Germany;
Rapporteur(s): Steven Arnold, The Johns Hopkins University Applied Physics Laboratory, United States; Audrey Berquand, European Space Agency (ESA), The Netherlands;

IAC-23.D1.6.1
MULTI-AGENT 3D MAP RECONSTRUCTION AND CHANGE DETECTION IN MICROGRAVITY WITH FREE-FLYING ROBOTS
Julia Di, Stanford University, United States

IAC-23.D1.6.2
ADAPTIVE SPACE ROBOT MOTION SYNCHRONIZATION TOWARDS TUMBLING UNCOOPERATIVE TARGET GRASPING
Lorenzo Capra, Politecnico di Milano, Italy

IAC-23.D1.6.3
AN EFFICIENT PDDLSTREAM-BASED TASK AND MOTION PLANNING METHOD FOR CHINA SPACE STATION MANIPULATOR JinTao Li, Northwestern Polytechnical University, China

IAC-23.D1.6.5
DYNAMICS CONTROL AND VIBRATION SUPPRESSION OF FLEXIBLE DUAL-ARM SPACE ROBOT FOR FACILITY CONSTRUCTION IN LOW GRAVITY ENVIRONMENT
Xiaodong Fu, Tsinghua University, China

IAC-23.D1.6.6
ADAPTIVE DUAL LAYER SLIDING MODE IMPEDANCE CONTROLLER FOR SPACE ROBOT ON-ORBIT AUXILIARY DOCKING OPERATION
An Zhu, Fuzhou University, China

IAC-23.D1.6.7
ORU-BOAS: DEVELOPING REUSABLE BUILDING BLOCKS FOR SATELLITE MODULARISATION
Ana Ruiz Perez, SENER Aerospacial, Spain

IAC-23.D1.6.8
MULTIFUNCTIONAL INTERCONNECT FOR FUTURE MODULAR PLANETARY ROBOTS
Wiebke Brinkmann, DFKI Robotics Innovation Center Bremen, Germany

IAC-23.D1.6.9
PANGOLIN SWARM ROBOTICS FOR LUNAR HABITATS: EXCAVATING UNDERGROUND STRUCTURES ON THE MOON
Akanksha Bhagat, Politecnico di Torino, Italy

IAC-23.D1.6.10
COMPARISON OF LEGGED SINGLE-ROBOT AND MULTI-ROBOT ANALOG EXPLORATION SYSTEMS
Philip Arm, ETHZ, Switzerland
D2. IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM

Coordinator(s): Yuguang Yang, China Aerospace Science & Industry Corporation (CASIC), China; Markus Jaeger, The Exploration Company GmbH, Germany; Randolph Kendall, The Aerospace Corporation, United States; John M. Horack, The Ohio State University College of Engineering, United States;

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;

October 2 2023, 15:15 — BCC A3

D2.1. Launch Vehicles in Service or in Development

Co-Chair(s): Yorichika Mihara, Mitsubishi Heavy Industries, Ltd., Japan; Rapporteur(s): Martin Sippel, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;

IAC-23.D2.1.1

THE YL-2 LAUNCH VEHICLE AND ITS FUTURE PLANS
Fan Shaobing, Orienspace Ltd., China

IAC-23.D2.1.2

REIMAGINING SCIENTIFIC DISCOVERY WITH SPACE LAUNCH SYSTEM UNIQUE LAUNCH CAPABILITY
James Green, National Aeronautics and Space Administration (NASA), United States

IAC-23.D2.1.3

THE FLIGHT RESULTS OF H3 AND NEXT STEP FOR INNOVATIVE SPACE TRANSPORTATION SYSTEM
Shoyo Hyodo, Mitsubishi Heavy Industries, Ltd., Japan

IAC-23.D2.1.4

LONG MARCH 6A AND ITS TECHNICAL CHARACTERISTICS
Gang Hong, Shanghai Academy of Spaceflight Technology (SAST), China Aerospace and Technology Corporation (CASC), China

IAC-23.D2.1.5

VEGA-C GUIDANCE IMPROVEMENT FOR OPTIMIZED SRM RE-ENTRY
Angela Trombetta, AVIO S.p.A., Italy

IAC-23.D2.1.6

PR-1 FOR SCIENCE EXPLORATION DEVELOPED BY CHINESE ACADEMY OF SCIENCES
Ai Zhen Ming, CAS Space, China

IAC-23.D2.1.7 (unconfirmed)

STUDY ON LIFT AND DRAG CHARACTERISTICS OF RETRO-PROPULSION STAGE OF REUSABLE ROCKETS
Chenxi Zhang, Northwestern Polytechnical University, China

IAC-23.D2.1.8

RESEARCH ON RECOVERY TECHNOLOGY DEVELOPMENT STRATEGY OF LAUNCH VEHICLE IN CHINA
Jianbin Su, Beijing Special Engineering Design and Research Institute (BSEDI), China

D2.2. Launch Services, Missions, Operations, and Facilities

October 3 2023, 15:00 — BCC A3

Co-Chair(s): Paolo Mori, D-Orbit SpA, Italy; Oleg Ventskovsky, Yuzhnoye SDO Europe; Rapporteur(s): Jeremy Pinier, National Aeronautics and Space Administration (NASA), Langley Research Center, United States;

IAC-23.D2.2.1

THE NEW GENERATION OF THE EUROPEAN LAUNCH BASE, IN FRENCH GUIANA, IS ON THE WAY!
Egaljo Joël, Centre National d’Etudes Spatiales (CNES), French Guiana

IAC-23.D2.2.2

THE SPACE LAUNCH SYSTEM (SLS): A DIGITALLY TRANSFORMED FACTORY FOR THE FUTURE
Benjamin Thompson, The Boeing Company, United States

IAC-23.D2.2.3

CREATION AND IMPLEMENTATION OF THE MANAGEMENT SYSTEM FOR ONE-STOP LAUNCH SERVICES ON A SHARED LAUNCH VEHICLE
Xiangyu Li, China Great Wall Industry Corporation (CGWIC), China

IAC-23.D2.2.4

WIND PROFILER UPPER AIR OBSERVATIONS FOR SPACE LAUNCH OPERATIONS
Meka Rajasekhar, Indian Space Research Organisation (ISRO), SDSC SHAR, Astronautical Society of India, India

IAC-23.D2.2.5

IN-ORBIT TRANSPORTATION: THE KEY SERVICE FOR COMMERCIAL SPACE MISSIONS
Andrey maksimov, United Arab Emirates

IAC-23.D2.2.6

ROCKET LAUNCHING SITE SELECTION IN ETHIOPIA USING WEIGHT DECISION MATRIX ANALYSIS
Eden Habteslasie, Ethiopian Space Science and Technology Institute (ESSTI), Ethiopia

IAC-23.D2.2.7

THE PROSPECTS FOR A SPACEPORT IN PERU: AN OPPORTUNITY FOR AEROSPACE DEVELOPMENT AND THE COUNTRY’S ECONOMY
Juan Salvador Palacios Bett, Universidad Nacional de Ingeniería (Lima, Perú), Peru

IAC-23.D2.2.8

IN-ORBIT TRANSPORTATION: A VIEW FROM CUSTOMER SIDE
Christian Corba, EUMETSAT, Germany

IAC-23.D2.2.9

MTG-11 LAUNCH PREPARATION: A COMBINED AIRBREATHING AND ROCKET APPROACH
Lorenzo Beggio, Politecnico di Milano, Italy

D2.3. Upper Stages, Space Transfer, Entry & Landing Systems

October 3 2023, 10:15 — BCC A3

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-23.D2.3.2

READY FOR INAUGURAL MISSION LATE 2026 - NYX EARTH PROPELLENT SYSTEM USING GREEN STORABLE PROPELLANTS
Markus Jaeger, The Exploration Company GmbH, Germany

IAC-23.D2.3.3

ADVANCED EUROPEAN RE-ENTRY SYSTEM BASED ON INFLATABLE HEAT SHIELDS: EFESTO-2 PROJECT OVERVIEW
Ysoide Prereveraud, ONERA - The French Aerospace Lab, France

IAC-23.D2.3.5

A STUDY OF THE REEFING SYSTEM OF A SUPERSONIC PARACHUTE FOR MARS EXPLORATION
Weijie Xu, Northwestern Polytechnical University/NPU, China
IAC-23.D2.3.6 DEVELOPMENT AND FUTURE OUTLOOK OF AN IN-HOUSE DEVELOPED HEMISFLO RIBBON DROGUE PARACHUTE. Thomas Britting, Delft Aerospace Rocket Engineering (DARE), The Netherlands

IAC-23.D2.3.7 RETRIEVAL STRATEGIES AND SYSTEMS FOR SOUNDING ROCKETS AND PAYLOADS Lars Pepermans, Chutes.nl, The Netherlands

IAC-23.D2.3.9 LANDING GUIDANCE METHOD FOR REUSABLE LAUNCH VEHICLE BASED ON CONVEX OPTIMIZATION Zhijing Zhang, CAS Space, China

IAC-23.D2.3.10 EMBEDDED OPTIMIZATION FOR SPACE RIDER REENTRY MODULE PARAFFIL GNC Jesús Ramírez, SENER Aeroespacial, Spain

IAC-23.D2.3.12 AVUM ORBITAL MODULE GNC ARCHITECTURE FOR SPACE RIDER MISSION Giulia Broggi, AVIO S.p.A., Italy

D2.4. Future Space Transportation Systems

October 4 2023, 10:15 — BCC A3

Co-Chair(s): José Gavira Izquierdo, European Space Agency (ESA), The Netherlands; Nicolas Bérend, ONERA - The French Aerospace Lab, France; Jamila Mansouri, European Space Agency (ESA), The Netherlands

Rapporteur(s): Emmanuelle David, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland;

IAC-23.D2.4.1 BRINGING SPACE TRANSPORTATION IN EUROPE TO THE NEXT LEVEL Giorgio Tumino, European Space Agency (ESA), France

IAC-23.D2.4.2 TOWARDS THE NEXT STEP: SPACELINER B PRE-DEFINITION Martin Sippel, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

IAC-23.D2.4.3 CONCEPTUAL STUDY AND DEVELOPMENT PLAN OF REUSABLE SSTO TO REALIZE FREQUENT ACCESS TO SPACE Tadayoshi Shoyama, Innovative Space Carrier Inc., Japan

IAC-23.D2.4.4 DEVELOPMENT OF TRAJECTORY OPTIMIZATION TOOLS FOR QUICK PERFORMANCE EVALUATION OF REUSABLE LAUNCH VEHICLE CONFIGURATIONS Riccardo Santoro, AVIO S.p.A., Italy

IAC-23.D2.4.5 CONCEPTS FOR LUNAR SPACE STATION FOR INTERPLANETARY MISSIONS Jayakumar Venkatesan, Valles Marineris International Private Limited, India

IAC-23.D2.4.7 STUDY OF ASCENT CAPABILITIES FOR A MANNED MISSION ON MARS Antonio Abruscato, Politecnico di Torino - Thales Alenia Space Italia - ISAE Supaero Toulouse, Italy

IAC-23.D2.4.8 AN ANALYSIS OF THE POINT-TO-POINT CARGO TRANSPORTATION SYSTEM USING REUSABLE LAUNCH VEHICLES Song-Don Lee, Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of

IAC-23.D2.4.9 A UNIQUELY EUROPEAN SOLUTION TO THE SUPERHEAVY LAUNCH PROBLEM Jose Mariano Lopez Urdiales, Zero2Infinity, Spain

IAC-23.D2.4.10 A FULL MAGNETIC SAFE MODE FOR SPACE RIDER MISSION Anton Bahu, AVIO S.p.A., Italy

D2.5. Technologies for Future Space Transportation Systems

October 4 2023, 15:00 — BCC A3

Co-Chair(s): Mathieu Chaize, Ariane Group SAS, France; Lin Shen, China Academy of Launch Vehicle Technology (CALT), China; Daniel McCammon, E3 Launch Systems, Corporation, Canada;

Rapporteur(s): Andrea Esposito, Northrop Grumman Corporation, Italy; Andrea Jaime, Isar Aerospace Technologies GmbH, Germany;

IAC-23.D2.5.1 TOWARDS A NEW CLASS OF ENGINE FOR FUTURE HEAVY LIFT LAUNCH VEHICLES Amaya Espinosa, Centre National d’Etudes Spatiales (CNES), France

IAC-23.D2.5.2 PARAMETER OPTIMIZATION-BASED AUTOMATIC DESIGN OF LAUNCH VEHICLE’S ATTITUDE CONTROLLER Ki-Wook Jung, Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of

IAC-23.D2.5.4 NUMERICAL REBUILDING OF ATMOSPHERIC ENTRIES WITHIN THE EU PROJECT MEESST Christian Korn, Institute of Space Systems, University of Stuttgart, Germany

IAC-23.D2.5.5 MISSION DESIGN AND SENSITIVITY ANALYSIS FOR IN-AIR CAPTURING OF A WINGED REUSABLE LAUNCH VEHICLE Martin Sippel, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

IAC-23.D2.5.6 SPACE RIDER THERMAL PROTECTION SYSTEM, AN ENABLING TECHNOLOGY FOR REUSABLE SPACE TRANSPORTATION SYSTEMS: DESIGN, DEVELOPMENT AND QUALIFICATION STATUS Giuseppe Rufolo, CIRA Italian Aerospace Research Centre, Italy

IAC-23.D2.5.8 FAULT DIAGNOSIS METHOD FOR REDUNDANT HETEROGENEOUS SENSOR OF ELECTROMECHANICAL ACTUATOR IN TWC SYSTEM Chaoran Wang, Zhejiang University, China

IAC-23.D2.5.9 CANFIELD MECHANISM FOR THRUSTER POINTING APPLICATIONS IN ORBIT TRANSFER VEHICLE Pranav Keskar, Bellatrix Aerospace Private Limited, India

IAC-23.D2.5.10 RAPID TRANSPORTATION OF FLEXIBLE ASSEMBLY CELL BASED ON NON-SINGULAR TERMINAL SLIDING MODE CONTROL WITH PRE-DEFINED TIME REACHING LAW Ran Tao, Northwestern Polytechnical University, China

IAC-23.D2.5.11 FUTURE SPACE TRANSPORTATION TECHNOLOGIES Sima Maniyeva, Baku State University, Azerbaijan
D2.6. Future Space Transportation Systems Verification and In-Flight Experimentation

October 5 2023, 10:15 — BCC A3
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-23.D2.6.2
FIRST TEST FLIGHT OF A REUSABLE SUBORBITAL PERUN ROCKET.
Marek Lubieniecki, SpaceForest, Poland

IAC-23.D2.6.3
OVERVIEW OF THE QUALIFICATION AND REFURBISHMENT APPROACH IMPELEMNETED BY SPACE RIDER SYSTEM TO ACCOMPLISH REUSABLE SPACE MISSIONS.
Vincenzo Giorgio, ALTEC Spa, Italy

IAC-23.D2.6.4
SYSTEM DROP TEST FOR THE VALIDATION OF SPACE RIDER DESCENT AND LANDING MISSION PHASE: STATUS OF DESIGN AND DEVELOPMENT ACTIVITIES.
Giuseppe Rufolo, CIRA Italian Aerospace Research Centre, Italy

IAC-23.D2.6.5
DESIGN OF A LIQUID METHANE-OXYGEN ENGINE-BASED VTOL DEMONSTRATION ROCKET FOR REUSABLE LAUNCH VEHICLES.
Liang CHEN, Beijing Interstellar Glory Space Technology Co., Ltd, China

IAC-23.D2.6.6
RECENT STATUS OF EXPERIMENTAL SUBSCALE WINGED ROCKET WIRES#015 AND ITS FULL EXPANDER CYCLE LOX/LNG ENGINE COMBUSTION TEST
Koichi Yonenoto, Tokyo University of Science, Japan

IAC-23.D2.6.7
IN-FLIGHT PERFORMANCE OF THE SUPersonic PARACHUTE EXPERIMENT ABOARD REXUS (SPEAR) VEHICLE
Thomas Britting, Delft Aerospace Rocket Engineering (DARE), The Netherlands

IAC-23.D2.6.8
MISSION POSSIBLE - REENTRY CAPSULE & IN ORBIT DEMONSTRATION PLATFORM
Jon Reijneveld, The Exploration Company GmbH, France

IAC-23.D2.6.9
RESEARCH ON THE BASE HEATING OF SUB-SCALE HYDROGEN/OXYGEN ROCKET
Wang Xu, Beihang University (BUAA), China

IAC-23.D2.6.10
PAYLOAD SERVICE UNIT FOR THE ILR-33 AMBER 2K ROCKET
Karlo Bresler, Lukasiewicz Research Network – Institute of Aviation (ILOT), Poland

IAC-23.D2.6.11
EXPERIMENTAL INVESTIGATION OF THE AERODYNAMIC CHARACTERISTICS OF THE REUSABLE LAUNCH VEHICLE IN VERTICAL LANDING
Ryota Tamai, The University of TOKYO, Graduate school, Japan

D2.7. Small Launchers: Concepts and Operations

October 5 2023, 15:00 — BCC A3
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, MT Aerospace AG, Germany;

IAC-23.D2.7.1
SMALLSATS BY THE NUMBERS 2023: GROWING SMALLSAT ACTIVITY AND ITS IMPLICATIONS FOR THE SMALL LAUNCH MARKET
Emma Louden, Bryce Space and Technology, United States

IAC-23.D2.7.2
THE FUTURE OF SATELLITE LAUNCHES: REVOLUTIONIZING THE INDUSTRY WITH ELECTROMAGNETIC TECHNOLOGY
Khatayi Rustamov, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.D2.7.3
RESULT OF CONCEPTUAL DESIGN FOR KOREAN SMALLSAT-DEDICATED LAUNCH VEHICLE
Daebon Seo, Korea Aerospace Research Institute (KARI), Korea, Republic of

IAC-23.D2.7.4
DEVELOPMENT STATUS OF THE COMMERCIAL ROCKET: PR-2
Rui Zhang, CAS Space, China

IAC-23.D2.7.5
MIURA THE FIRST REUSABLE EUROPEAN MICROLAUNCHER LAUNCH CAMPAIGN KICK OFF
Pablo Gallego Sanmiguel, PDL Space, United States

IAC-23.D2.7.6
DESIGN OF A REUSABLE AIR-LAUNCHED ROCKET FOR SMALL SATELLITES LAUNCH
YAN YU, China Academy of Launch Vehicle Technology (CALT), China

IAC-23.D2.7.7
HIGH-BANDWIDTH TECHNOLOGIES FOR NEXT-GENERATION LAUNCHER NETWORKS: A COMPARATIVE ANALYSIS BETWEEN TT&HERNET AND TIME SENSITIVE NETWORKING (TSN)
Tiziana Fiori, Sapienza University of Rome, Italy

IAC-23.D2.7.8
NOVEL COMMUNICATION AND NAVIGATION SYSTEMS ONBOARD ILR-33 AMBER 2K ROCKET
Janusz Nicolau-Kuklinski, Lukasiewicz Research Network – Institute of Aviation (ILOT), Poland

IAC-23.D2.7.10
CONCEPTUAL IMPROVEMENT OF A SOUNDING ROCKET FOR LONG HIGH-QUALITY MICRO-GRAVITY EXPERIMENTS
Alessandro Domenico Corcione, Politecnico di Milano, Italy

D2.8. Space Transportation Solutions for Deep Space Missions

October 6 2023, 10:15 — BCC A3
Co-Chair(s): Kenneth Bruce Morris, Sierra Space, United States; Josef Wiedemann, MT Aerospace AG, Germany; Daniel McCammon, C6 Launch Systems, Corporation, Canada; Xiaowei WANG, China Academy of Launch Vehicle Technology (CALT), China;
Rapporteur(s): Aaron Weaver, National Aeronautics and Space Administration (NASA), United States; Giuseppe Rufolo, ;

IAC-23.D2.8.1
NUCLEAR ORBITAL COMPLEX “NUKLON”: MISSION ARCHITECTURE AND SCIENTIFIC GOALS
Dmitry Zarubin, Space Research Institute (IKI), Russian Academy of Sciences (RAS), Russian Federation

IAC-23.D2.8.2 (unconfirmed)
LUNAR LAUNCHES: A COMPARATIVE STUDY OF FLIGHT TIME AND FUEL REQUIREMENTS FROM EARTH AND THE MOON FOR MISSIONS TO MARS
Vidhu Dixit, University of Petroleum and Energy Studies, India
IAC-23.D2.8.4
CONTROL PROGRAM FOR A MULTI-TYPE ELECTRIC PROPULSION SYSTEM FOR THE EARTH-MARS-EARTH-JUPITER MISSION
Olga Starinova, Samara National Research University (Samara University), Russian Federation

IAC-23.D2.8.5
EXPLORATORY DEEP SPACE MISSION AS A PRECURSOR TO INTERSTELLAR SPACE TRAVEL
Ugur Guven, UN CSSTEAP, United Kingdom

IAC-23.D2.8.6
SKYHOOK: AFFORDABLE AND SUSTAINABLE SPACE TRAVEL
Fakhri Amanov, Azerbaijan State Oil and Industry University (ASOIU), Azerbaijan

D2.9-D6.2. Emerging Space Ventures, including Space Logistics and Space Safety for Sustainability
October 6 2023, 13:45 — BCC A3
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, Brazil;

IAC-23.D2.9-D6.2.3
COMPARISON OF THE ENVIRONMENTAL IMPACT OF PRODUCTION AND LAUNCH EMISSIONS OF DIFFERENT COMMON LAUNCHER ARCHITECTURES
Jan-Steffen Fischer, Institute of Space Systems, University of Stuttgart, Germany

IAC-23.D2.9-D6.2.4
COST ESTIMATION FOR INNOVATIVE SPACE SYSTEMS: A METHODOLOGY FOR MICROLAUNCHERS AND INFLATABLE HEATSHIELDS
Giuseppe Governa, Politecnico di Torino, Italy

IAC-23.D2.9-D6.2.5
LARGE SCALE LEO CONSTELLATION DEPLOYMENT OPTIMIZATION METHOD BASED ON NSGA II
Wen Xue, Space Engineering University (Beijing), China

IAC-23.D2.9-D6.2.6
THE ROLE OF SMALL LAUNCH VEHICLES IN DEMOCRATIZING ACCESS TO SPACE
Zahra Gasimova, Azerspaceos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.D2.9-D6.2.7 (unconfirmed)
CURRENT STATUS AND EMERGING TRENDS IN LAUNCH VEHICLE TECHNOLOGY: A COMPREHENSIVE REVIEW OF OPERATIONAL AND SHORT-TERM DEVELOPMENT VEHICLES
Prakash Kumar, R V College of Engineering, Bengaluru, India

D3. 21st IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT
October 4 2023, 10:15 — BCC Balcony C2
Co-Chair(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
October 4 2023, 10:15 — BCC Balcony C2
Co-Chair(s): John C. Mankins, ARTEMIS Innovation Management Solutions, LLC, United States; Alain Pradier, European Space Agency (ESA), The Netherlands;
Rapporteur(s): Anouck Girard, University of Michigan, United States;

IAC-23.D3.1.1
HOLISTIC RESEARCH FOR CIRCULAR LUNAR DEVELOPMENT: UPDATES FROM SGAC’S TECHNICAL UNIT RESEARCH FOR A THRIVING LUNAR ECOSYSTEM (TURTLE)
Antonino Salmeri, Space Generation Advisory Council (SGAC), Spain

IAC-23.D3.1.2
SPACE SOLAR POWER FOR THE MOON: AN OASIS 2045 USE CASE STUDY
John C. Mankins, ARTEMIS Innovation Management Solutions, LLC, United States

IAC-23.D3.1.4
RISK MAPPING FOR SUSTAINABLE LONG-TERM EXPLORATION OF THE CISLUNAR ENVIRONMENT
KangSan Kim, Space Generation Advisory Council (SGAC), Korea, Republic of

IAC-23.D3.1.5
PROPOSAL FOR A VENEZUELAN NATIONAL PROGRAM FOR ROBOTIC SPACE EXPLORATION
Rogelio Morales, Bolivarian Agency for Space Activities (ABAE), Venezuela

IAC-23.D3.1.6
THE TECHNICAL FEASIBILITY OF 3D PRINTING TECHNOLOGY FOR LUNAR BASE
Bintang Alam Semesta Wisran AM, Skolkovo Institute of Science and Technology, Indonesia

IAC-23.D3.1.7
SPACE WORKS CHALLENGE: A MILO SPACE SCIENCE INSTITUTE CAPACITY BUILDING PROGRAM
David Thomas, Arizona State University, United States

IAC-23.D3.1.8
FUTURISTIC URBANISM ON THE MARS
Ayse Seyfullayeva, Azerbaijan Architecture and Construction University (SABA groups), Azerbaijan

IAC-23.D3.1.9
LEVERAGING SPACE TO ACHIEVE SUSTAINABLE DEVELOPMENT: THE UAE APPROACH AS AN EXAMPLE
Noora Alameri, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

IAC-23.D3.1.10
MODULAR NUCLEAR REACTOR STATIONS PARKED AT LAGRANGE POINTS FOR SOLAR EXPLORATION
Ugur Guven, UN CSSTEAP, United Kingdom
D3.2A. Systems and Infrastructures to Implement Sustainable Space Development and Settlement - Systems

October 4 2023, 15:00 — BCC Balcony C2

Co-Chair(s): Paivi Jukola, Aalto University, Finland; Gary Barnhard, XISP-Inc, United States; Julie Patarin-Jossec, Spartan Space, France; Frank Preud’homme, QinetiQ Space nv, Belgium;
Rapporteur(s): Christopher Moore, National Aeronautics and Space Administration (NASA), United States; Junjiro Onoda, ISAS/JAXA, Japan;

IAC-23.D3.2A.1 GATEWAY AT THE CROSSROADS OF SUSTAINABLE LUNAR EXPLORATION
Molly Andersson, NASA, United States

IAC-23.D3.2A.2 GROUND-BASED CAPABILITIES FOR LUNAR INFRASTRUCTURE TESTING
Aaron Weaver, National Aeronautics and Space Administration (NASA), United States

IAC-23.D3.2A.3 CISLUNAR COMMUNICATIONS INFRASTRUCTURE – POLICY AND INTERNATIONAL RELATIONS CHALLENGES
Rebecca Palmer, Georgia Institute of Technology, United States

IAC-23.D3.2A.4 IN-SITU REGOLITH BASED NONOTHERMITE HEATING FOR LUNAR ROVERS AND EQUIPMENT DURING THE LUNAR NIGHT
Connor MacRobbie, University of Waterloo, Canada

IAC-23.D3.2A.7 COMPARISON OF ADDITIVE MANUFACTURING TECHNOLOGIES FOR IN-SITU CONSTRUCTION AND FABRICATION ON THE MOON
Maxim Isachenkov, Politecnico di Milano, Italy

IAC-23.D3.2A.8 DIMENSIONING AND COST EVALUATION OF A MARTIAN STEEL PRODUCTION PLANT
Guillaume Leclere, ESTACA, France

IAC-23.D3.2A.10 INVESTIGATION ON MARS GREEN HOME SYSTEM DESIGN AND KEY TECHNOLOGIES
Xiao Zhang, Harbin Institute of Technology, China

D3.2B. Systems and Infrastructures to Implement Sustainable Space Development and Settlement - Technologies

October 6 2023, 10:15 — BCC Balcony C2

Co-Chair(s): Alain Pradier, European Space Agency (ESA), The Netherlands; Christopher Moore, National Aeronautics and Space Administration (NASA), United States;
Rapporteur(s): Gary Barnhard, XISP-Inc, United States;

IAC-23.D3.2B.1 IN-SITU MANUFACTURED LANDING PADS AND BERMS TO ENABLE SUSTAINABLE OPERATIONS ON THE LUNAR SURFACE
Theodor Heutling, Dresden University of Technology (DUT) / Technische Universität Dresden, Germany

IAC-23.D3.2B.2 A CLASSIFICATION SYSTEM FOR SUSTAINABLE HUMAN SPACEFLIGHT (WORKING TITLE)
Paivi Jukola, Aalto University, Finland

IAC-23.D3.2B.3 DESIGN AND ASSESSMENT OF AD-1 LUNAR REGOLITH SIMULANTS
Bo Peng, New York University Abu Dhabi, United Arab Emirates

IAC-23.D3.2B.4 DEFINITION OF REQUIREMENTS FOR PAVEMENT AND TAKEOFF/LANDING AREAS ON THE MOON AND STUDY OF APPLICABILITY OF REGOLITH SINTERED MATERIALS
Yasuhiro Fuchita, Obayashi Corporation, Japan

IAC-23.D3.2B.6 PYRITE BASED SOLAR PANEL IN-SITU PRODUCTION ON THE MOON FOR SPACE-BASED SOLAR POWER
Taavi Raidik, Tallinn University of Technology, Estonia

IAC-23.D3.2B.7 ORBITAL, LUNAR AND PLANETARY INFRASTRUCTURE FOR METAL PROCESSING: ENABLING THE INDUSTRIAL REVOLUTION IN SPACE
Jan Walter Schroeder, CisLunar Industries, Germany

IAC-23.D3.2B.8 MINIATURISED DESIGN OF ON-BOARD ANTENNA USING ADDITIVE MANUFACTURING TECHNIQUES
Anand Nagesh, Big Dipper Exploration Technologies, India

IAC-23.D3.2B.9 AN IN-ORBIT ASSEMBLY CONCEPT FOR LARGE SPACE INFRASTRUCTURES THROUGH MULTIPURPOSE STANDARDIZED TILES AND ROBOTIC ASSEMBLER
Rachel Wright, Cranfield University, UK, United Kingdom

IAC-23.D3.2B.10 SPACE MANIPULATOR ON ORBIT CLEANING SOLAR PANELS OPERATION BASED ON BIAS NEURAL NETWORK FORCE/POSITION CONTROL
An Zhu, Fuzhou University, China

IAC-23.D3.2B.11 EXPLORING OTHERWORLDLY DEPTHS: EVALUATING EARTH’S ROBOTIC CAVE EXPLORATION TECHNOLOGIES FOR SUBSURFACE EXPLORATION ON THE MOON AND MARS
Faith Tng, Space Generation Advisory Council (SGAC), Singapore, Republic of

IAC-23.D3.2B.12 CARGO FIXING ASSEMBLY MODULE FOR INTERPLANETARY TRANSPORT MISSIONS
Rory Dick, University of Glasgow, United Kingdom

D3.3. Space Technology and System Management Processes and Tools

October 6 2023, 13:45 — BCC Balcony C2

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-23.D3.3.1 MODELING MEGA-PROJECTS: A SPACE SOLAR POWER CASE STUDY
John C. Mankins, ARTEMIS Innovation Management Solutions, LLC, United States

IAC-23.D3.3.2 A MULTI-STAKEHOLDER LUNAR REGISTRY OF OBJECTS AND ACTIVITIES FOR INTERNATIONAL TRANSPARENCY AND COLLABORATION
Rachel Williams, Open Lunar Foundation, United States

IAC-23.D3.3.3 DIGITAL TWIN OF A SATELLITE BATTERY SYSTEM
Martin Makac, TRL Space, Czech Republic

IAC-23.D3.3.5 MAJOR MANAGEMENT COMPETENCES OF SPACE COMPLEX PROJECTS
Aluisio Camargo, Brazilian Space Agency (AEB), Brazil
D4. 21st IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE

October 2, 2023, 15:15 — BCC Balcony C2

Co-Chair(s): Ayman Ahmed, Egyptian Space Agency (EgSA), Egypt; Sabha El-Shawa, Jordan Space Research Initiative (JSRI), Jordan;
Rapporteur(s): Xiaowei WANG, China Academy of Launch Vehicle Technology (CALT), China;

IAC-23.D4.1.1 ICETHRUST: AN END-TO-END DEMONSTRATION OF THE IN-SITU RESOURCE UTILIZATION OF WATER FOR IN-SPACE PROPULSION
Chiara Manfletti, Technical University of Munich, Germany

IAC-23.D4.1.2 BENCHMARKING JOHN VON NEUMANN’S INFORMED SELF-REPLICATION ARCHITECTURES FOR IN SITU PRODUCTION IN SPACE ENVIRONMENTS
Matthias Frentz, Space Forward Lab, Austria

IAC-23.D4.1.4 AUTONOMOUS AND ROBUST LOW-THRUST ORBIT TRANSFERS VIA DEEP REINFORCEMENT LEARNING
Matteo Stoisa, AIIKO S.r.l., Italy

IAC-23.D4.1.5 THE ROLE OF METAVERSE IN THE FUTURE OF THE SPACE SECTOR
Jacob Cohen, NASA Ames Research Center, United States

IAC-23.D4.1.6 AUTONOMOUS DATA VAULT ORGANIZATION FOR SELF-SOVEREIGN, BORDERLESS & CARBON-LIGHT SPACE TRAFFIC MANAGEMENT (INTER-DOM-STM)
Marek Kosuda, Slovak Republic

IAC-23.D4.1.7 ARTIFICIAL INTELLIGENCE AND DIGITAL TWIN-POWERED SMART LUNAR GATEWAY AND PLANETARY EXPLORATION MISSIONS
Krishna Kumar, Ryerson University, Canada

IAC-23.D4.1.8 AI FOR EARTH: SUSTAINABLE DEVELOPMENT SOLUTIONS FOR GLOBAL ENVIRONMENTAL CHANGE
Aлина Визерану, Space Generation Advisory Council (SGAC), United Kingdom

IAC-23.D4.1.9 SATELLITE RE-ENTRY SYSTEM - PROPOSAL FOR REUSABLE SATELLITE TECHNOLOGY
Anumadhubala Rajakumari, Skyline Space, India

IAC-23.D4.1.10 LEVERAGING MACHINE LEARNING FOR STREAMLINED METEOR REDUCTION
Aisha Alowais, Sharjah Academy for Astronomy, Space Sciences and Technology (SAAST), United Arab Emirates

D4.4. Contribution of Moon Village to Solving Global Societal Issues

October 3, 2023, 10:15 — BCC Balcony C2

Co-Chair(s): Giuseppe Reibaldi, Moon Village Association (MVA), Austria; Yu Lu, China Academy of Launch Vehicle Technology, China, China;
Rapporteur(s): Paivi Jukola, Aalto University, Finland;

IAC-23.D4.2.1 CONTRIBUTION OF MOON VILLAGE TO SOLVING GLOBAL SOCIETAL ISSUES
Aysu Allazova, Azerbaijan State University of Economics, Azerbaijan

IAC-23.D4.2.2 IS THE LUNAR ECONOMY SOLELY FOR THE SPACE INDUSTRY? OPPORTUNITIES FOR NON-SPACE COMPANIES IN LUNAR INFRASTRUCTURE LEVERAGING TECHNOLOGICAL SYNERGIES. Simonetta Di Pippo, SDA Bocconi School of Management, Bocconi University, Italy

IAC-23.D4.2.3 LUNAR ENTREPRENEURSHIP, FUTURE CHALLENGES AND RISKS TO BE MANAGED. A COMPREHENSIVE STUDY OF FUTURE LUNAR ECONOMY ISSUES, WHICH SHALL BE SOLVED TODAY. Katarzyna Malinowska, Kozminski University, Poland

IAC-23.D4.2.4 THE GLOBAL EXPERT GROUP ON SUSTAINABLE LUNAR ACTIVITIES: RECOMMENDED FRAMEWORK AND KEY ELEMENTS FOR PEACEFUL AND SUSTAINABLE LUNAR ACTIVITIES Giuseppe Reibaldi, Moon Village Association (MVA), Austria

IAC-23.D4.2.5 EMERGING SPACE COUNTRIES AND THE FUTURE OF LUNAR EXPLORATION
Peter Schulte, Moon Village Association (MVA), Saudi Arabia

IAC-23.D4.2.6 THE CONTRIBUTION OF MOON VILLAGE TO SOLVING GLOBAL SOCIETAL ISSUES: A RESEARCH Debarshi Mukherjee, India

IAC-23.D4.2.8 ARTIFICIAL INTELLIGENCE AND NEXT-GENERATION ROCKETS/SPACESHIPS
KOMAL PANCHAL, India

IAC-23.D3.6 AN ALTERNATIVE PERSPECTIVE IN ASSESSING THE SUITABILITY OF SUSTAINABLE SPACE TECHNOLOGY
Matthie Leuridan, Germany

IAC-23.D3.7 LUNAR ECONOMY OR HOW OPPORTUNITIES IN SPACE CAN IMPROVE BUSINESSES AND LIFE ON EARTH
Julian Schroth, European Space Agency (ESA-ESTEC), The Netherlands

IAC-23.D3.8 EXANT: EXPLORING NLP AI SYSTEMS FOR REQUIREMENTS DEVELOPMENT
Manfred Ehresmann, Institute of Space Systems, University of Stuttgart, Germany

IAC-23.D3.9 OPEN INNOVATION WITH SPACE DATA ECOSYSTEMS
Jeanne Holm, City of Los Angeles, United States

IAC-23.D3.10 IN-SPACE ECONOMY IN 2023 - STATISTICAL OVERVIEW AND TRENDS
Erik Kulu, Estonia

IAC-23.D3.11 SPACE APPLICATION DEVELOPMENT: RAPID PROTOTYPING AND UI DESIGN METHODOLOGIES
Grecia Olano O’Brien, Concordia University, Canada

IAC-23.D3.12 TRL FRAMEWORK FOR HUMAN SPACEFLIGHT AND FOR THE BUILT ENVIRONMENT ON EARTH (WORKING TITLE)
Paivi Jukola, Aalto University, Finland

IAC-23.D3.13 INTRODUCTION TO EXPLORATION EMERGING SPACE COUNTRIES AND THE FUTURE OF LUNAR ACTIVITIES: RECOMMENDED FRAMEWORK AND KEY ELEMENTS FOR PEACEFUL AND SUSTAINABLE LUNAR ACTIVITIES
Giuseppe Reibaldi, Moon Village Association (MVA), Austria

IAC-23.D3.14 AUTONOMOUS ROBOTIC SYSTEMS FOR SPACE EXPLORATION AND EXPLORATION LEARNING Simonetta Di Pippo, SDA Bocconi School of Management, Bocconi University, Italy

IAC-23.D3.15 THE ROLE OF METAVERSE IN THE FUTURE OF THE SPACE SECTOR
Jacob Cohen, NASA Ames Research Center, United States

IAC-23.D3.16 AUTONOMOUS DATA VAULT ORGANIZATION FOR SELF-SOVEREIGN, BORDERLESS & CARBON-LIGHT SPACE TRAFFIC MANAGEMENT (INTER-DOM-STM)
Marek Kosuda, Slovak Republic

Krishna Kumar, Ryerson University, Canada

IAC-23.D3.18 AI FOR EARTH: SUSTAINABLE DEVELOPMENT SOLUTIONS FOR GLOBAL ENVIRONMENTAL CHANGE
Aлина Визерану, Space Generation Advisory Council (SGAC), United Kingdom

D4.2. Contribution of Moon Village to Solving Global Societal Issues

October 3, 2023, 10:15 — BCC Balcony C2

Co-Chair(s): Giuseppe Reibaldi, Moon Village Association (MVA), Austria; Yu Lu, China Academy of Launch Vehicle Technology, China, China;
Rapporteur(s): Paivi Jukola, Aalto University, Finland;

IAC-23.D4.2.1 CONTRIBUTION OF MOON VILLAGE TO SOLVING GLOBAL SOCIETAL ISSUES
Aysu Allazova, Azerbaijan State University of Economics, Azerbaijan

IAC-23.D4.2.2 IS THE LUNAR ECONOMY SOLELY FOR THE SPACE INDUSTRY? OPPORTUNITIES FOR NON-SPACE COMPANIES IN LUNAR INFRASTRUCTURE LEVERAGING TECHNOLOGICAL SYNERGIES. Simonetta Di Pippo, SDA Bocconi School of Management, Bocconi University, Italy

IAC-23.D4.2.3 LUNAR ENTREPRENEURSHIP, FUTURE CHALLENGES AND RISKS TO BE MANAGED. A COMPREHENSIVE STUDY OF FUTURE LUNAR ECONOMY ISSUES, WHICH SHALL BE SOLVED TODAY. Katarzyna Malinowska, Kozminski University, Poland

IAC-23.D4.2.4 THE GLOBAL EXPERT GROUP ON SUSTAINABLE LUNAR ACTIVITIES: RECOMMENDED FRAMEWORK AND KEY ELEMENTS FOR PEACEFUL AND SUSTAINABLE LUNAR ACTIVITIES
Giuseppe Reibaldi, Moon Village Association (MVA), Austria

IAC-23.D4.2.5 EMERGING SPACE COUNTRIES AND THE FUTURE OF LUNAR EXPLORATION
Peter Schulte, Moon Village Association (MVA), Saudi Arabia

IAC-23.D4.2.6 THE CONTRIBUTION OF MOON VILLAGE TO SOLVING GLOBAL SOCIETAL ISSUES: A RESEARCH
Debarshi Mukherjee, India

IAC-23.D4.2.8 ARTIFICIAL INTELLIGENCE AND NEXT-GENERATION ROCKETS/SPACESHIPS
KOMAL PANCHAL, India
D4.3. Modern Day Space Elevators Customer Design Drivers

October 3 2023, 15:00 — BCC Balcony C2
Co-Chair(s): Peter Swan, Teaching Science and Technology, Inc (TSTI), United States; Yoji Ishikawa, Obayashi Corporation, Japan;
Rapporteur(s): Jerry Eddy, International Space Elevator Consortium (ISEC), United States;
IAC-23.D4.3.1
KEYNOTE: “JEROME PEARSON MEMORIAL LECTURE” - RESEARCH INTO CHARACTERISTICS OF A PERMANENT SPACE ACCESS TRANSPORTATION INFRASTRUCTURE
Peter Swan, Teaching Science and Technology, Inc (TSTI), United States
IAC-23.D4.3.2
DUAL SPACE ACCESS STRATEGY ENABLES SIGNIFICANT MISSIONS
Peter Swan, Teaching Science and Technology, Inc (TSTI), United States
IAC-23.D4.3.3
A SURVEYS FOR EFFECT ON THE SPACE ELEVATOR BY ELECTRIC PARTICLES IN SPACE
Ryuta Niinobe, Obayashi Corporation, Japan
IAC-23.D4.3.4
EVALUATION OF THE EFFECT OF CURRENT THROUGH CABLE ON TEMPERATURE AND DYNAMICS OF SPACE ELEVATOR
Yoji Ishikawa, Obayashi Corporation, Japan
IAC-23.D4.3.5
A LARGE-SCALE TETHER DEPLOYMENT CONTROL SCHEME FOR SPACE ELEVATOR CONSTRUCTION
Feng Zhang, China Academy of Launch Vehicle Technology (CALT), China
IAC-23.D4.3.6
CONTROLLED DEPLOYMENT OF A PARTIAL SPACE ELEVATOR
Arun Muru, Mc Gill Institute for Aerospace Engineering (MIAE), Canada
IAC-23.D4.3.7
HIGH-PRECISION MULTIBODY MODEL FOR SPACE ELEVATOR INCLUDING TORSIONAL DEFORMATION
Ryo KUZUNO, Tohoku University, Japan
IAC-23.D4.3.8
EVALUATION OF THE COUNTERWEIGHT TYPE SPACE ELEVATOR: IN THE CASE APPLIED TO THE ALTITUDE UPPER THAN GEO
Yoji Ishikawa, Obayashi Corporation, Japan
IAC-23.D4.3.9
DEVELOPMENT OF SPACE ELEVATOR CLIMBER APPLIED IN HIGH VACUUM SPACE ENVIRONMENT AND EXTRACTION OF ITS PROBLEMS
Fumihiro Inoue, Shonan Institute of Technology, Japan
IAC-23.D4.3.10
PERFORMANCE VERIFICATION OF SPACE ELEVATOR CLIMBER WITH HYBRID DRIVE ROLLER AND DEVELOPMENT OF SMALL MANNED CLIMBER
Momoe Terata, Shonan Institute of Technology, Japan
IAC-23.D4.3.11
THE SPACE ELEVATOR PAYLOAD JOURNEY BEYOND GEO: CLIMBER CONCEPT AND OPTIONS
Peter Robinson, International Space Elevator Consortium, United Kingdom
IAC-23.D4.4.1
COMMUNICATIONS RECEIVER DESIGNS FOR INTERSTELLAR PROBE MISSIONS
Philip Mauskopf, Arizona State University, United States
IAC-23.D4.4.2
HIGH TEMPERATURE-SUPERCONDUCTOR MATERIAL (HTSM) USED FOR ELECTRONICS IN RADIO-ISOTROPIC THERMAL HEAT GENERATOR (RTG) WHERE THORIUM RODS ARE BEING USED AS CELLS FOR SOURCE.
Abhishekh Singh, National Space Society (USA) - Mumbai chapter, India
IAC-23.D4.4.3
HIGH-SPEED SCIENTIFIC SPACECRAFT LAUNCHES WITH COMMERCIAL LAUNCH VEHICLES
Ralph L. McNutt, Jr., The John Hopkins University, United States
IAC-23.D4.4.4
INTERSTELLAR EXPLORATION USING “EXPLORER” SPACECRAFT - BUILDING THE FOUNDATION
Aditya Prakash, Indian Institute of Technology Kanpur, India
IAC-23.D4.4.5
INTERSTELLAR EXPLORATION: FROM SCIENCE FICTION TO ACTUAL TECHNOLOGY
Giancarlo Genta, Politecnico di Torino, Italy
IAC-23.D4.4.6
EXPLORING INTERSTELLAR TRAVEL IN VIDEO GAMES: SHAPING PUBLIC PERCEPTIONS AND SUPPORT FOR FUTURE INITIATIVES
Jason Batt, 100 Year Starship, United States
IAC-23.D4.4.7
THE CANOPUS AWARD FOR EXCELLENCE IN INTERSTELLAR WRITING: CELEBRATING FICTION AND NONFICTION THAT CHAMPIONS THE DREAM OF INTERSTELLAR TRAVEL
Jason Batt, 100 Year Starship, United States
IAC-23.D4.4.8
CELLS FOR SOURCE. GENERATOR (RTG) WHERE THORIUM RODS ARE BEING USED AS CELLS FOR ELECTRONICS IN RADIO-ISOTROPIC THERMAL HEAT GENERATOR (RTG) WHERE THORIUM RODS ARE BEING USED AS CELLS FOR SOURCE.
Abhishekh Singh, National Space Society (USA) - Mumbai chapter, India
IAC-23.D4.4.9
A COMBINED RESOURCE MAPPER AND EXCAVATION CONCEPT FOR PSRS
Roger X. Lenard, LPS, United States
IAC-23.D4.4.10
THE MOON’S DATA MARKETPLACE
Clement Lonex, ISAE-Supaero University of Toulouse, France
IAC-23.D4.4.11
IS THE FUTURE OF HUMANITY IN SPACE?
Uliyeva Nojafli, Azerbaijan

D4.5. Space Resources, the Enabler of the Earth-Moon Econosphere

October 5 2023, 15:00 — BCC Balcony C2
Co-Chair(s): Roger X. Lenard, LPS, United States; Mark Sundhal, Cleveland State University;
Rapporteur(s): Peter Swan, Teaching Science and Technology, Inc (TSTI), United States;
IAC-23.D4.5.1
RANKING NEAR-EARTH OBJECTS FOR LONG-TERM MULTI-RETURN MINING MISSIONS
Rui Xia, UNSW Australia, Australia
IAC-23.D4.5.2
A COMBINED RESOURCE MAPPER AND EXCAVATION CONCEPT FOR PSRS
Roger X. Lenard, LPS, United States
IAC-23.D4.5.3 (unconfirmed)
THE MOON’S DATA MARKETPLACE
Clement Lonex, ISAE-Supaero University of Toulouse, France
IAC-23.D4.5.4
IS THE FUTURE OF HUMANITY IN SPACE?
Uliyeva Nojafli, Azerbaijan
D5. 56th 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. For a successful space program: Quality and Safety!

October 3 2023, 10:15 — BCC A4
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-23.D5.1.2 (unconfirmed) AN ANALYSIS OF THE BRAZILIAN SPACE PROGRAM’S PUBLIC SECTOR WORKFORCE WANDO SA, Brazilian Space Agency (AEB), Brazil
IAC-23.D5.1.4 GUIDELINES FOR PROCESSES AND METHODS FOR A SUCCESSFUL SPACE MISSION IN VERY TIGHT SCHEDULE FOR PROJECT AND PROGRAMME MANAGERS Imane El Khantouti, Space Generation Advisory Council (SGAC), France
IAC-23.D5.1.5 STUDY THE EFFECTIVENESS OF AIRBAGS IN CAPSULE RECOVERY SYSTEMS FOR SPACECRAFT DURING THE DESCENT PHASE ON DIFFERENT PLANETS WITH VARYING CONDITIONS. Rathnakar D, R V College of Engineering, Bengaluru, India
IAC-23.D5.1.6 FULL SYSTEM IN-HOUSE DEVELOPED MISSION ASSEMBLY, INTEGRATION AND VERIFICATION CAMPAIGN FOR KVARKEN SAT, A 2U CUBESAT AT THE KIRUNA SPACE CAMPUS IN NORTH SWEDEN Margot Claus, Luleå University of Technology, Sweden
IAC-23.D5.1.7 PRODUCT ASSURANCE OF KSLV-II, NURI Song Yeon Cho, Korea Aerospace Research Institute (KARI), Korea, Republic of
IAC-23.D5.1.9 PAYLOAD FOCUSED PDR PROCESS FOR SMALL SATELLITE MISSIONS IN NEW SPACE Alexander Schmidt, Institut für Raumfahrttechnik Universität der Bundeswehr München, Germany

D5.2. Emerging trends of knowledge management in organizations

October 4 2023, 10:15 — BCC A4
Co-Chair(s): Roberta Mugellesi-Dow, European Space Agency (ESA), United Kingdom; Jeanne Holm, City of Los Angeles, United States;

IAC-23.D5.2.1 5 PILOT STUDIES TO ENHANCE ESA HUMAN AND ROBOTIC EXPLORATION LESSONS LEARNED WITH NATURAL LANGUAGE PROCESSING AND KNOWLEDGE GRAPHS Alice Pastor, HE Space, The Netherlands
IAC-23.D5.2.2 THE CREATION OF A SPACE AGENCY’S STRATEGIC PLAN, A CASE STUDY ON BRAZIL Erik Busnello Imbuzeiro, Brazilian Space Agency (AEB), Brazil
IAC-23.D5.2.3 KNOWLEDGE MANAGEMENT PRACTICES IN THE CREATION OF THE UAE’S FIRST OPEN DATA PORTAL Kaitlyn Holm, University of Pennsylvania, United States
IAC-23.D5.2.4 SHARING KNOWLEDGE ACROSS ORGANIZATIONS Daniel Galarreta, Centre National d’Etudes Spatiales (CNES), France
IAC-23.D5.2.6 PRESERVING THE KNOWLEDGE GENERATED BY BRAZILIAN SCIENTIFIC AND TECHNOLOGICAL RESEARCH IN THE SPACE SECTOR: STRATEGIES FOR MITIGATING KNOWLEDGE LOSS. João Sérgio Lima, Brazilian Space Agency (AEB), Brazil
IAC-23.D5.2.6 TRENDS, CHALLENGES AND OPPORTUNITIES FOR AFRICAN NEWSPACE COMPANIES IN THIS DECADE Mustapha Iderowumi, Nigeria
IAC-23.D5.2.7 DIGITAL TRANSFORMATION FRAMEWORK FOR SMALL SATELLITE MISSIONS: NSSA’S CASE STUDY IN PROJECT AND KNOWLEDGE MANAGEMENT Aysha Alharam, National Space Science Agency (NSSA), Bahrain
IAC-23.D5.2.8 LSTM-BASED ESTIMATION OF THE SATELLITE REMAINING USEFUL LIFE IN PRESENCE OF ADCS FAULTS Mohaddese Daryabari, Sharif University of Technology, Iran

D5.3. Predicting, testing, and measuring the effects of the space environment on space missions

October 5 2023, 10:15 — BCC A4
Co-Chair(s): Henry de Plinval, Office National d’Etudes et de Recherches Aérospatiales (ONERA), France; Teppel Okumura, Japan Aerospace Exploration Agency (JAXA), Japan;
Rapporteur(s): Carlos Soares, NASA Jet Propulsion Laboratory, United States;

IAC-23.D5.3.1 SPACE ENVIRONMENT MODELING AND MISSION PERFORMANCE PREDICTION Margarita Belali, National Observatory Of Athens, Greece
IAC-23.D5.3.3 EFFECTS OF LONG-TERM STORAGE ON PROPERTIES OF PEROVSKITE SOLAR CELLS Yoshiyuki Murakami, Japan Aerospace Exploration Agency (JAXA), Japan
IAC-23.D5.3.5 MAGNETIC TRACES OF PLASMA JETS OF SPACE ENGINES Ilyas Abushzada, Baku State University, Azerbaijan
IAC-23.D5.3.6 PROBABILISTIC FORECAST OF SOLAR ENERGETIC PARTICLE (SEP) EVENTS Maher Dayeh, Southwest Research Institute, United States
D5.4. Cybersecurity in space systems, risks and countermeasures

October 6 2023, 10:15 — BCC B5
Co-Chair(s): Julien Airaud, Centre National d’Etudes Spatiales (CNES), France; Stefano Zatti, University of Rome “La Sapienza”, Italy;
Rapporteur(s): Nil Angli, ESA - European Space Agency, United Kingdom;
IAC-23.D5.4.1 ANALYSING CYBERATTACKS ON SPACE SYSTEMS IN THE WAR IN UKRAINE
Clémence Poirier, European Space Policy Institute (ESPI), Austria
IAC-23.D5.4.2 ANALYSING SPACE CYBERATTACKS WITH NIST AND SPARTA FRAMEWORKS
Tiago Rebelo, SIMPLYCONNECTED Lda (CONNECTED), Portugal
IAC-23.D5.4.3 THE THREAT OF AI-DRIVEN CYBER ATTACKS ON SPACE SYSTEMS
Giorgio Cardile, Ielo and Associates Law Firm, Italy
IAC-23.D5.4.4 DEVELOPING AN AI-ENABLED CYBERSECURITY MODEL TO PROTECT SATELLITE SYSTEMS FROM CYBER THREATS
Alex Thach, University of Maryland, United States
IAC-23.D5.4.5 TOWARDS A RESILIENT CYBER ARCHITECTURE FOR SPACE INFRASTRUCTURES: MITIGATING THE NEW ATTACK VECTORS
Antonio Carlo, Tallinn University of Technology, Estonia
IAC-23.D5.4.6 SPACE SPECIFIC SIEM SYSTEMS FOR CYBERSECURITY IN SPACE STATIONS
Fegan Mirzeyev, Azerbaijan
IAC-23.D5.4.7 INVESTIGATING CYBER THREATS AND PROVIDING TECHNICAL SOLUTIONS FOR SPACE CYBER SECURITY
Elkhan Gasimli, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan
IAC-23.D5.4.8 DEVELOPING A CCSDS COMPLIANT PLATFORM TO SWIFTLY AND RELIABLY SECURE CURRENT AND FUTURE SPACE COMMUNICATION LINKS
Louis Masson, Cysec SA, Switzerland
IAC-23.D5.4.9 (unconfirmed) DEVELOPING RISK BASED CYBER MISSION ASSURANCE ONTOLOGIES FOR SPACE LAUNCH MISSION SYSTEMS
Shane Bennett, Australia
IAC-23.D5.4.10 LESSONS LEARNED FROM CYBERSECURITY TRAINING IN THE SPACE DOMAIN: IMPLICATIONS FOR FUTURE WORKFORCE DEVELOPMENT
Bruce Chesley, Teaching Science and Technology, Inc (TSTI), United States

D6. IAF SYMPOSIUM ON COMMERCIAL SPACEFLIGHT SAFETY ISSUES

Coordinator(s): Francesco Santoro, Altec S.p.A., Italy;

D6.1. Commercial Spaceflight Safety and Emerging Issues

October 3 2023, 10:15 — BCC B5
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-23.D6.1.1 AIRSPACE INTEGRATION OF U.S. COMMERCIAL SPACE LAUNCHES AND REENTRIES
Brooke Teferra, Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST), United States
IAC-23.D6.1.2 COMMERCIAL SPACEFLIGHT: REGULATORY FRAMEWORK ASSESSMENT AND SAFETY PERSPECTIVES
Gianpiero Buzzo, CIRA Italian Aerospace Research Centre, Italy
IAC-23.D6.1.3 (unconfirmed) OVERCOMING LICENSING CHALLENGES FOR SPACE COMPANIES: THE ROLE OF A THIRD-PARTY INTERMEDIARY
Souitat Naoufal, United States
IAC-23.D6.1.4 SPACE SAFETY AND RESCUE IN HUMAN SPACEFLIGHT: WHERE ARE THE GAPS?
Shawna Pandya, International Institute for astronautical Sciences (IIAS), Canada
IAC-23.D6.1.5 THE PATH TO MISSION SUCCESS: THE UK’S MISSION ASSURANCE FRAMEWORK FOR COMMERCIAL LAUNCH SERVICES
Mauro Augelli, UK Space Agency, United Kingdom
IAC-23.D6.1.6 UNREACH FOR THE STARS—THE USE CASE OF A SATELLITE LAUNCH FAILURE AND ITS SAFETY OF COMMERCIAL FLIGHTS IMPLICATIONS
Katarzyna Malinowska, Kazimierz University, Poland
IAC-23.D6.1.8 (unconfirmed) HAND SIGNALS FOR MULTINATIONAL SPACE TRAVELERS
Chikako Murayama, Japan

D6.2-D2.9. Emerging Space Ventures, including Space Logistics and Space Safety for Sustainability

October 6 2023, 13:45 — BCC A3
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, Brazil;
IAC-23.D6.2-D2.9.1 OPALS ADVANCED KICK STAGE AND SPACE LOGISTICS VEHICLE ARCHITECTURE AND INNOVATIVE TECHNOLOGIES
Arturs Jasjukevics, ArianeGroup, Germany

D6.3. Enabling safe commercial spaceflight: vehicles and spaceports

October 4 2023, 10:15 — BCC B5
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-23.D6.3.1 BUILDING A 21ST CENTURY SPACEPORT: DEVELOPMENT AND APPLICATION OF THE SPACEPORT READINESS LEVEL SCALE
Janet Tinoco, Embry-Riddle Aeronautical University, United States
E1. Lift Off - Secondary Space Education

October 3 2023, 10:15 — HAC Museum GA

Co-Chair(s): Seyed Ali Nasseri, Space Generation Advisory Council (SGAC), Canada; Alina Vizireanu, Space Generation Advisory Council (SGAC), United Kingdom;

IAC-23.E1.2.1 PHONE STATIONS: EMPOWERING SECONDARY EDUCATION THROUGH LOW-COST GROUND STATIONS ON SMARTPHONES
Jorge Soliz, Universidad Privada Boliviana (UPB), Bolivia

IAC-23.E1.2.2 THE ZERO ROBOTICS PROGRAM INVITSES YOUTH TO PROGRAM ROBOTS ON THE INTERNATIONAL SPACE STATION
Danielle Wood, Massachusetts Institute of Technology (MIT), United States

IAC-23.E1.2.3 BUILDING THE SCHOOL OF TOMORROW THROUGH SPACE: THE LESSONS LEARNED FROM THE GIS4SCHOOLS PROJECT
Alessandra Vernile, EURISY, France

IAC-23.E1.2.4 ENSURING SPACE RESILIENCE - LEARN TO FAIL, OR FAIL TO LEARN
Shimrit Maman, Ben-Gurion University of the Negev, Israel

IAC-23.E1.2.5 CHALLENGES AND OPPORTUNITIES FOR STEM EDUCATION IN COSTA RICA: EXPLORING THE FEASIBILITY OF A SPACE BOOTCAMP.
Rebeca Jiménez, Space Generation Advisory Council (SGAC), Costa Rica

IAC-23.E1.2.6 YOUNG SPACE POLICY LOBBYIST: OUTCOME OF SECONDARY LEVEL SPACE EDUCATION AND OUTREACH IN NEPAL
Oshan Sharma Kattel, Nepal Astronomical Society (NASO), Nepal

IAC-23.E1.2.7 (unconfirmed) STEM EDUCATION USING SPACE ROVER AND STUDENT ROVER CHALLENGE(SRC)
Kyungwhan Kim, International Space University (ISU), France

IAC-23.E1.2.8 METHODS AND PRACTICES FOR INTRODUCING PRIVATE SPACE EDUCATION PROGRAMS INTO JAPANESE SCHOOLS
Hikaru Otsuka, Japan

IAC-23.E1.2.9 MODEL MARS: A COLLABORATIVE LEARNING EXPERIENCE FOR THE MARTIANS OF THE FUTURE
Jennifer Blank, National Aeronautics and Space Administration (NASA), Ames Research Center /Blue Marble Space Institute of Science, United States

IAC-23.E1.2.10 NEED FOR AN EDUCATION MODEL FOR ADOLESCENTS, SPECIFICALLY IN RURAL AREAS
Sri Venkata Vathsala Musunuri, Polytechnique Montreal, Canada
E1.3. On Track - Undergraduate Space Education

October 3 2023, 15:00 — HAC Museum GA

Co-Chair(s): Kathryn Robison Hasani, Flinders University, Australia; Eberhard Gill, Delft University of Technology, The Netherlands;

IAC-23.E1.3.1
FOSTERING SPACE EDUCATION IN AZERBAIJAN THROUGH SMALL SATELLITE DESIGN PROGRAM FOR UNDERGRADUATE STUDENTS
Nadir Atayev, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.E1.3.2
A COMPLETE SCALABLE LEARNING EXPERIENCE FOR AEROSPACE ENGINEERING LEARNING
Cristian Chavez, Chile

IAC-23.E1.3.3
TEAM ANTARIKSH: ITS OBJECTIVE TO PROMOTE SPACE TECHNOLOGY AMONGST THE YOUTH
Darpan Byahatti, K V College of Engineering, Bengaluru, India

IAC-23.E1.3.4
USING CAN-SIZED SATELLITE (CANSAT) SYSTEMS WITH PROBLEM-BASED LEARNING FOR INTERDISCIPLINARY EDUCATION — LESSONS LEARNED
Michael Johnson, University of Limerick (UL), Ireland

IAC-23.E1.3.5
TRIAL ON OBJECTIVE EVALUATION OF STUDENTS COMPETENCE FOR PARTICIPATING IN THE SPACE PROGRAM
Kentaro Kitamura, Kyushu Institute of Technology, Japan

IAC-23.E1.3.6
PROJECT MANAGEMENT CASE STUDY OF STUDENT TEAMS IN A BALLOON PAYLOAD DESIGN COMPETITION
James Xie, International Space University (ISU), Canada

IAC-23.E1.3.7
REFLECTIONS ON SPOCS: STUDENT PAYLOAD OPPORTUNITY WITH CITIZEN SCIENCE
Lauren Milord, DreamUp, PBC, United States

IAC-23.E1.3.8
EDUCATION OPPORTUNITIES UNDER THE UNITED NATIONS ACCESS TO SPACE FOR ALL INITIATIVE: ACHIEVEMENTS IN 2022-2023
Wenbin Zhang, United Nations Office for Outer Space Affairs, Austria

IAC-23.E1.3.9
ADVANCING SPACE EDUCATION FOR SUSTAINABLE DEVELOPMENT IN AZERBAIJAN: IMPORTANCE OF GEOINFORMATION TECHNOLOGIES
Sona Guliyeva, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

E1.4. In Orbit - Postgraduate Space Education

October 4 2023, 10:15 — HAC Museum GA

Co-Chair(s): David Spencer, The Aerospace Corporation, United States; Eberhard Gill, Delft University of Technology, The Netherlands;

Rapporteur(s): Carol Carnett, International Space University (ISU), United States; Remco Timmermans, International Space University (ISU), United Kingdom;

IAC-23.E1.4.1
HANDS-ON EDUCATION WITH CUBESATS MOTIVATING INNOVATIVE NEW SPACE PROJECTS: SMART, SMALL, SELF-ORGANIZING SPACECRAFT SYSTEMS (SS)
Klaus Schilling, Zentrum für Telematik, Germany

IAC-23.E1.4.2
A STRATOSPHERIC BALLOON PROGRAM AS A SPACE MISSION ANALOGUE: AN EDUCATIONAL ACTIVITY AT THE INTERNATIONAL SPACE UNIVERSITY
Scott Madry, International Space University (ISU), United States

IAC-23.E1.4.3
ENHANCING THE EUROPEAN ENTREPRENEURIAL ECOSYSTEM BY CLOSING THE GAP BETWEEN HIGH AND LOW/MODERATE INNOVATION REGIONS: THE ENTPRENEUDE CASE
Valerio Roscani, Fondazione E. Amaldi, Italy

IAC-23.E1.4.4
GET SPACE — GROWTH OF EDUCATION AND TECHNOLOGY FOR SPACE: AN INTERDISCIPLINARY EDUCATION PROJECT ON TETHERED CUBESAT MISSIONS AND ROBOTIC SPACE TECHNOLOGIES AT THE UNIVERSITY OF STUTTGART
Marlin Kanzow, Institute of Space Systems, University of Stuttgart, Germany

IAC-23.E1.4.5
SPACE & ROBOTS IN TEACHER EDUCATION
Ayelet Weizman, Kibbutzim College of Education, Technology and the Arts, Israel

IAC-23.E1.4.6
TEACHING SPACE TECHNOLOGIES THROUGH PRACTICE. THE DEVELOPMENT OF SPACE EDUCATION IN POLAND ON THE EXAMPLE OF UNIVERSITY-BUSINESS COOPERATION AND WITHIN THE FRAMEWORK OF EUROPEAN CONSORTIA.
Maciej Myśliwiec, AGH University of Science and Technology, Poland

IAC-23.E1.4.7
THE IMPORTANCE OF HANDS-ON STUDENT ACTIVITIES: CHALLENGES AND LESSONS LEARNED FROM THE ROMULUS STRATOSPHERIC EXPERIMENT.
Linda Missercola, University of Rome “La Sapienza”, Italy

E1.5. Enabling the Future - Developing the Space Workforce

October 4 2023, 15:00 — HAC Museum GA

Co-Chair(s): Kathleen Coderre, Lockheed Martin (Space Systems Company), United States; Olga Zhdanovich, Modis, The Netherlands;

IAC-23.E1.5.1
FORMING A SPACE INDUSTRY ENGINEERING TEAM IN A NEWLY FORMED RESEARCH AND DEVELOPMENT DEPARTMENTS OF DEVELOPING COUNTRIES
Tahir Gadimov, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.E1.5.3
ESA YOUNG PROFESSIONAL SATELLITE: INSPIRING THE NEXT GENERATION OF YOUNG PROFESSIONALS
Julien Krompholtz, ESA - European Space Agency, France

IAC-23.E1.5.4
THE EUROSPECHUB PROJECT: BUILDING THE SKILLS OF THE NEXT GENERATION OF SPACE ENTREPRENEURS AND ASTRONAUTS
Bernard Foing, ILEWG “EuroMoonMars”, The Netherlands

IAC-23.E1.5.5
MANPOWER INITIATIVES AND THEIR SHORT-TERM EFFECT IN SPACE PIONEER, KOREA NATIONAL SPACE CORE TECHNOLOGY RND PROGRAM
Mi-jin Yoo, Korea Aerospace Research Institute (KARI), Korea, Republic of

IAC-23.E1.5.6
FILLING THE GAPS IN SPACE LEADERSHIP IN AFRICA
Etim Offiong, University of Pretoria, South Africa
IAC-23.E1.6.7
EXPLORING THE PERUVIAN AEROSPACE ECOSYSTEM: OPPORTUNITIES FOR STUDENTS AND PROFESSIONALS
George Steve Fajardo Soria, Agencia Espacial del Peru (CONIDA), Peru

IAC-23.E1.6.8
OVERVIEW OF HANDS-ON SATELLITE DEVELOPMENT TRAINING OF LOCAL COMPANIES IN THE PHILIPPINES AS A MEANS TO DEVELOP A SPACE WORKFORCE
Julie Ann Banaoa, Philippine Space Agency, The Philippines

IAC-23.E1.6.9
EVALUATION OF THE SPACE SECTOR IN THE MIDDLE EAST FOR NEXT GENERATIONS
Anna Alhosani, Technology Innovation Institute (TII), United Arab Emirates

IAC-23.E1.5.10
SPACE INDUSTRY WORKFORCE DEVELOPMENT: LESSONS LEARNED AND CASE STUDY WITH THE ANGOLAN NATIONAL SPACE PROGRAM MANAGEMENT OFFICE (GGPEN)
Jerry Sellers, Teaching Science and Technology, Inc., United States

IAC-23.E1.5.11
EMPOWERING THE WORKFORCE OF TOMORROW THROUGH THE WSF 2023 THEME “SPACE AND ENTREPRENEURSHIP”
Ilayda Edali, World Space Week Association, Türkiye

E1.6. Calling Planet Earth - Space Outreach to the General Public

October 5 2023, 10:15 — HAC Museum GA
Co-Chair(s): Remco Timmermans, International Space University (ISU), United Kingdom; Nelly Ben Hayoun, SETI Institute, United Kingdom;
Rapporteur(s): Alina Vizireanu, Space Generation Advisory Council (SGAC), United States

IAC-23.E1.6.1
THE SCIENCE OF INSPIRING: HOW TO FOSTER A LOVE FOR SPACE
Oli Perna-Vella, Concordia University, Canada

IAC-23.E1.6.2
INSPIRING THE YOUTH OF THE JORDAN THROUGH SPACE CAMPS AND REALISTIC ANALOG ASTRONAUT MISSIONS IN WADI RUM
Mac Malkawi, Blinc- Borderless lab, United States

IAC-23.E1.6.3
ADVANCING THE SPACE PROGRAM MANAGEMENT OFFICE (GDPEN) FOR NEXT GENERATIONS
Jason-Flor Sisante, United States

IAC-23.E1.6.4
THE PUBLIC ECONOMICS OF SPACE EXPLORATION
Lars Hornuf, TU Dresden, Germany

IAC-23.E1.6.5
SPREAD SPACE KNOWLEDGE TO GENERAL PUBLIC THROUGH INTERACTIVE EXPERIENCES
Shao You, China Academy of Space Technology (CAST), China

IAC-23.E1.6.6
THE SPACE ECONOMY PROGRAM: INNOVATIVE EDUCATION TO ENHANCE APPLICATIONS AND OPPORTUNITIES OF THE SPACE SECTOR TO THE GENERAL PUBLIC
Chiara Maria Cocchiara, Università degli Studi di Palermo, Italy

IAC-23.E1.6.7
DIGITAL SPACE EDUCATION AND ITS IMPORTANCE TO SPACE FOR ALL
Jayakumar Venkatesan, Valles Marineris International Private Limited, India

IAC-23.E1.6.8
THE NEW PATH OF SPACE EDUCATION
Marek Gao, Poland

IAC-23.E1.6.9
LEVERAGING CULTURAL PERSPECTIVES AND BIOMEDICAL BREAKTHROUGHS TO INSPIRE THE POST-ARTEMIS GENERATION
Jason-Flor Sisante, United States

IAC-23.E1.6.10
IS THE GROWING INSPIRATIONAL DRIVE TO HUMAN COLONISATION OF SPACE POSITIVELY AFFECTING ORGANISATIONAL INCLUSIVENESS AND WELLNESS? AN ENQUIRY INSIDE AND OUTSIDE THE SPACE WORKFORCE
Giacomo Prima Scartina, Italian Space Agency (ASI), Italy

E1.7. New Worlds - Non-Traditional Space Education and Outreach

October 5 2023, 15:00 — HAC Museum GA
Co-Chair(s): Vera Mayorova, Bauman Moscow State Technical University, Russian Federation; Olga Zhdanovich, Modis, The Netherlands;
Rapporteur(s): Carol Christian, STScI, United States; Remco Timmermans, International Space University (ISU), United Kingdom;

IAC-23.E1.7.1
THE PAYANKEU MOON CIRCUS: A NEW INNOVATIVE CONCEPT FOR OUTREACH TO THE WORLD
Pierre Munu, U3P (Union pour la Promotion de la Propulsion Photonique), France

IAC-23.E1.7.2
SKYBOX & ASTROBOT - AN ENGAGING AND PERSONALIZED EDUCATIONAL ACTIVITY FOR SPECIAL NEEDS CLASSROOMS FEATURING HANDS-ON ACTIVITIES
Katherine Zamudio-Turcotte, ESA - European Space Agency, Germany

IAC-23.E1.7.3
THE PAYANKEU MOON CIRCUS: A NEW INNOVATIVE CONCEPT FOR OUTREACH TO THE WORLD
Michel Meurer, ESA - European Space Agency, Germany

IAC-23.E1.7.4
MAKING DEEP SPACE MORE ACCESSIBLE FOR ALL THROUGH INCLUSIVE ENROLMENT IN A VOLUNTEER-BASED RESEARCH LAB
Oné Mikulskyte, Team Tumbleweed, The Netherlands

IAC-23.E1.7.5
HEARING THE UNIVERSE: SONIFICATION AS AN INNOVATIVE TOOL FOR SCIENTIFIC RESEARCH, OUTREACH AND INCLUSION
Xing Yi Ang, United Nations Office for Outer Space Affairs, Austria

IAC-23.E1.7.6
DISCOVERING GALILEO GNSS VIA AN ANDROID APP “CALLISTO - GALILEO’S SPACESHIP”
Matej Poliacek, Space Generation Advisory Council (SGAC), Slovak Republic

IAC-23.E1.7.7
SPACE POPULARISATION THROUGH INNOVATIVE SPACE DESTINATION SCHOOLS: A PROJECT FOR SPACE AWARENESS & OUTREACH
Najam Naqvi, Institute of Space Technology (IST), Pakistan

IAC-23.E1.7.8
THE UK SPACE AGENCY’S NANO SATELLITE DESIGN COMPETITION – A NOVEL SPACE OUTREACH INITIATIVE
Jodie Howlett, UK Space Agency, United Kingdom

IAC-23.E1.7.9
VIRTUAL MRZ-SAT: DISSEMINATION AND LEARNING THROUGH REALITY
Raphael Bertrand Delgado, National Autonomous University of Honduras (UNAH), Honduras
**E1.8. Hands-on Space Education and Outreach**

*October 6 2023, 10:15 — International Student Zone*

**Co-Chair(s):** Remco Timmermans, International Space University (ISU), United Kingdom; Mike Garrett, University of Manchester, United Kingdom;

**Rapporteur(s):** Remco Timmermans, International Space University (ISU), United Kingdom; Alejandro J. Roman Molinass, Paraguayan Space Agency, Paraguay;

**IAC-23.E1.8.1**

*GAMES AS A TOOL TO RECOGNIZE AND RESOLVE ONGOING SPACE ACTIVITY CHALLENGES*
Anna Hurova, International Institute of Space Law (IISL), Ukraine

**IAC-23.E1.8.2**

*THE DESIGN AND IMPLEMENTATION OF AN LTE NETWORK FOR THE LOCAL REVITALIZATION PROJECT TO TURN MY HOMETOWN, KOMONO TOWN, INTO “SPACE TOWN”*
Taiko Kawakami, ASTRAX, Inc., Japan

**IAC-23.E1.8.3**

*THE DESIGN AND IMPLEMENTATION OF AN LTE NETWORK FOR THE LOCAL REVITALIZATION PROJECT TO TURN MY HOMETOWN, KOMONO TOWN, INTO “SPACE TOWN”*
Taiko Kawakami, ASTRAX, Inc., Japan

**IAC-23.E1.8.4**

*THE DESIGN AND IMPLEMENTATION OF AN LTE NETWORK FOR THE LOCAL REVITALIZATION PROJECT TO TURN MY HOMETOWN, KOMONO TOWN, INTO “SPACE TOWN”*
Taiko Kawakami, ASTRAX, Inc., Japan

**IAC-23.E1.8.5**

*THE DESIGN AND IMPLEMENTATION OF AN LTE NETWORK FOR THE LOCAL REVITALIZATION PROJECT TO TURN MY HOMETOWN, KOMONO TOWN, INTO “SPACE TOWN”*
Taiko Kawakami, ASTRAX, Inc., Japan

**IAC-23.E1.8.6**

*THE DESIGN AND IMPLEMENTATION OF AN LTE NETWORK FOR THE LOCAL REVITALIZATION PROJECT TO TURN MY HOMETOWN, KOMONO TOWN, INTO “SPACE TOWN”*
Taiko Kawakami, ASTRAX, Inc., Japan

**IAC-23.E1.8.7**

*THE DESIGN AND IMPLEMENTATION OF AN LTE NETWORK FOR THE LOCAL REVITALIZATION PROJECT TO TURN MY HOMETOWN, KOMONO TOWN, INTO “SPACE TOWN”*
Taiko Kawakami, ASTRAX, Inc., Japan

**IAC-23.E1.8.8**

*THE DESIGN AND IMPLEMENTATION OF AN LTE NETWORK FOR THE LOCAL REVITALIZATION PROJECT TO TURN MY HOMETOWN, KOMONO TOWN, INTO “SPACE TOWN”*
Taiko Kawakami, ASTRAX, Inc., Japan

**IAC-23.E1.8.9**

*THE DESIGN AND IMPLEMENTATION OF AN LTE NETWORK FOR THE LOCAL REVITALIZATION PROJECT TO TURN MY HOMETOWN, KOMONO TOWN, INTO “SPACE TOWN”*
Taiko Kawakami, ASTRAX, Inc., Japan

**IAC-23.E1.8.10**

*THE DESIGN AND IMPLEMENTATION OF AN LTE NETWORK FOR THE LOCAL REVITALIZATION PROJECT TO TURN MY HOMETOWN, KOMONO TOWN, INTO “SPACE TOWN”*
Taiko Kawakami, ASTRAX, Inc., Japan

**IAC-23.E1.8.11**

*THE DESIGN AND IMPLEMENTATION OF AN LTE NETWORK FOR THE LOCAL REVITALIZATION PROJECT TO TURN MY HOMETOWN, KOMONO TOWN, INTO “SPACE TOWN”*
Taiko Kawakami, ASTRAX, Inc., Japan

**IAC-23.E1.8.12**

*THE DESIGN AND IMPLEMENTATION OF AN LTE NETWORK FOR THE LOCAL REVITALIZATION PROJECT TO TURN MY HOMETOWN, KOMONO TOWN, INTO “SPACE TOWN”*
Taiko Kawakami, ASTRAX, Inc., Japan

**E1.9. Space Culture – Public Engagement in Space through Culture**

*October 6 2023, 13:45 — IAC Museum GA*

**Co-Chair(s):** Nelly Ben Hayoun, SETI Institute, United Kingdom; Mike Barrett, University of Manchester, United Kingdom;

**Rapporteur(s):** Remco Timmermans, International Space University (ISU), United Kingdom; Alejandro J. Roman Molinass, Paraguayan Space Agency, Paraguay;

**IAC-23.E1.9.1**

*GALAXY 101*
Afnan Malik, Khalifa University of Science and Technology (KUST), United Arab Emirates

**IAC-23.E1.9.2**

*KOMONO TOWN, INTO “SPACE TOWN”*
Taiko Kawakami, ASTRAX, Inc., Japan

**IAC-23.E1.9.3**

*STARTRCKR - 3 AXIS OPEN-SOURCE NIGHT SKY TRACKING DEVICE*
Maria Alejandra Botero Botero, Universidad EAFIT, Colombia

**IAC-23.E1.9.4**

*THE “ZAHRA KOSMOSDA” AN ONLINE SPACE-TECH PLATFORM: ACCESSIBILITY OF SPACE TOPICS FOR ALL AND ITS IMPACT ON THE CREATION OF SPACE CULTURE IN AZERBAIJAN*
Zahra Imanova, Azerbaijan

**IAC-23.E1.9.5**

*SPACE CULTURAL “CONTAMINATION” THROUGH OUTREACH IN SPELEOLOGY ANALOG MISSIONS: THE SAPIENZA GEA EXPERIENCE*
Lorenzo Chiavari, Sapienza University of Rome, Italy

**IAC-23.E1.9.6**

*ASTROLOGY IN THE SPACE AGE: WHAT WILL HAPPEN TO THE HOROSCOPES OF THOSE BORN ON THE MOON?*
Masahiko Takehara, ASTRAX LAB, Japan

**IAC-23.E1.9.7**

*STEAM ACCESS AND DISSEMINATION: INSPACE CASE STUDY*
Luis Carvalho, Belhang University, Brazil

**IAC-23.E1.9.8**

*FEMALE PARTICIPATION IN THE UK SPACE SECTOR: BARRIERS, PROGRESS, AND RECOMMENDATIONS*
Rachel Venn, Space Group of the Royal Aeronautical Society, United Kingdom

**IAC-23.E1.9.9**

*STRUCTURE, ACHIEVEMENTS AND REGIONAL IMPACT: SCIENTIFIC-TECHNOLOGICAL NON-PROFIT CIVIL ASSOCIATION “STARS HUNTERS”*
Andrea Dominguez, Instituto Tecnológico de Durango (ITD), Mexico

**E2. 51st IAF STUDENT CONFERENCE**

*Coordinator(s):* Franco Bernelni-Zazzera, Politecnico di Milano, Italy; Marco Schmidt, University Wuerzburg, Germany;

**E2.1. Student Conference - Part 1**

*October 2 2023, 15:15 — BCC A5*

**Co-Chair(s):** Franco Bernelni-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-23.E2.1.1**

*CONCEPTUAL DESIGN FOR A DEPLOYABLE HABITAT FOR EXTREME ENVIRONMENTS ON EARTH AND SPACE*
Maria Alejandra Botero Botero, Universidad EAFIT, Colombia

**IAC-23.E2.1.2**

*OBJECT DETECTION AND POSE ESTIMATION FOR NON-COOPERATIVE DOCKING USING DNN FOR SPACE APPLICATIONS*
Sanjana Lagisetty, SRM University, kattankulathur, chennai, India, India

**IAC-23.E2.1.3**

*A NEW SPACE DATA PROCESSING PIPELINE prototype FOR PASO*
Luis Gonzalves, Instituto de Telecomunicaciones (Portugal), Portugal

**IAC-23.E2.1.4**

*MULTIFUNCTIONAL ROBOTIC MANIPULATOR ON ISS (MEKARM)*
José Luis Lopez Santiago, National Technology of Mexico (TecNM), Mexico

**IAC-23.E2.1.5**

*FEA OF THERMAL COATINGS ON PROPULSION PAYLOAD STRUCTURES PRODUCED BY METALLIC ADDITIVE MANUFACTURING. Devansh Singhal, Singapore, Republic of*

**IAC-23.E2.1.6**

*NON-LINEAR CONTROL STRATEGIES FOR ATTITUDE MANEUVERS OF A LEO CUBESAT BASED ON MODIFIED RODRIGUES PARAMETERS*
Ernesto Cortes, Universidad del Valle - Cali, Colombia

**IAC-23.E2.1.7**

*THE DESIGN AND IMPLEMENTATION OF AN LTE NETWORK FOR HIGH-ALTITUDE ROCKET LAUNCHES*
Eshan Bhatab, Carleton University, Canada

**IAC-23.E2.1.8**

*DESIGN OF CUBESAT-BASED ROBOTIC TENTACLES FOR THE CAPTURE AND REMOVAL OF HIGH-PRIORITY DEBRIS OBJECTS IN LEO*
Afnan Malik, Khalifa University of Science and Technology (KUST), United Arab Emirates
**E2.2. Student Conference - Part 2**

**October 3 2023, 10:15 — BCC A5**

**Co-Chair(s):** Marco Schmidt, University Wuerzburg, 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-23.E2.2.1**

SPACECRAFT ORBITAL AND ATTITUDE CONTROL AROUND AN ASTEROID SUBJECTED TO UNDERACTUATED CONDITIONS

Vishrant Dave, Indian Institute of Technology Kanpur, India

**IAC-23.E2.2.2**

EXPERIMENTAL AND THEORETICAL STUDY OF SCALE EFFECTS OF HYBRID ROCKETS USING LOW-MELTING-POINT FUELS

Naoki Yasunaga, Japan

**IAC-23.E2.2.3**

COMPLIANT HIGH SUPPORT STIFFNESS ROCKET Gimbal FOR THRUST VECTOR CONTROL

Guillaume Hueber, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland

**IAC-23.E2.2.4**

DESIGN AND OPTIMIZATION OF ASCENT TRAJECTORY FOR A GLOBAL DELIVERY SYSTEM

Zhangrui Chen, Tsinghua University, China

**IAC-23.E2.2.5**

LOW-COST, LIGHTWEIGHT ELECTRONIC FLOW REGULATORS FOR THROTTLING LIQUID ROCKET ENGINES

Vint Lee, U.C. Berkeley, United States

**IAC-23.E2.2.6**

FAULT DIAGNOSIS OF GRAVITATIONAL WAVE DETECTION SYSTEM OPERATION WITH LIMITED COMPUTING RESOURCES USING SYMBOLIC DIRECTED GRAPH TECHNIQUES

Ruobing Tian, Beijing Institute of Technology, China

**IAC-23.E2.2.7**

INTELLIGENT AND ROBUST CONTROL OF SPACE MANIPULATOR FOR ACTIVE REMOVAL OF SPACE DEBRIS

Shababini Sampath, University of Strathclyde / Mechanical and Aerospace Engineering, United Kingdom

**IAC-23.E2.2.8**

AN ATTITUDE-INDEPENDENT PARACHUTE FOR DE-ORBITING INOPERATIVE SATELLITES

Thomas Hale, University of Bath, United Kingdom

**IAC-23.E2.2.9**

OPTIMIZING LAUNCH WINDOW OPPORTUNITIES FOR ESA’S CONCEPT INTERCEPTOR MISSION USING PRIMER VECTOR THEORY

Miguel De Almeida Rebelo, ISAE - Institut Supérieur de l’Aéronautique et de l’Espace (ISAE), France; Anna Schätti, Université de Neuchâtel, Switzerland; Frank Friedlaender, Lockheed Martin Space Systems Company, United States;

**Rapporteur(s):** Kathleen Coderre, Lockheed Martin (Space Systems Company), United States;

**IAC-23.E2.3-GTS.4.1**

ERME: TESTING AN AUTONOMOUS DOCKING MANOEUVRE DURING ESA FYT 2022 PARABOLIC FLIGHT CAMPAIGN

Alessandro Bortotto, Università degli Studi di Padova, Italy

**IAC-23.E2.3-GTS.4.2**

HARANG: STUDENT RESEARCHED AND DEVELOPED SOUNDING ROCKET CAPABLE OF DEPLOYING 3U CUBESAT AT 10,000 FT ALTITUDE

Inchul Moon, Seoul National University, Korea, Republic of

**IAC-23.E2.3-GTS.4.3**

INTEGRATION AND TESTING OF THE FIRST STUDENT-LED AUTOMATED AND ADAPTABLE GROUND STATION IN ARCTIC SWEDEN

Akshata Raut, Luleå University of Technology, Sweden

**IAC-23.E2.3-GTS.4.4**

ASSESSING THE Efficacy of the STANDING WAVE ELECTRIC CURTAIN IN CLEARING DUST FROM a LUNAR ROVER RADIATOR

Jean-Christophe Lamanque, Polytechnique Montreal, Canada

**IAC-23.E2.3-GTS.4.5**

THE STUDENT PROJECT FARGO - A FERROFLUID EXPERIMENT ON THE ISS

Bahrar Karahan, KSan e.V., Germany

**IAC-23.E2.3-GTS.4.6**

A CONCEPTUAL STUDY OF HIGH SPATIAL RESOLUTION NEUTRON IMAGING FOR WATER EXPLORATION ON THE MOON WITH A FULL SATELLITE SYSTEM DESIGN

Kentaro Taniguchi, Waseda University, Japan

**IAC-23.E2.3-GTS.4.7**

THE ROLE OF UNIVERSITY STUDENTS TO THE DEVELOPMENT AND GROWTH OF SPACE BUSINESS: THESTIAS, THE CASE STUDY

Miriam Abreu Neves, University of Coimbra, Portugal

**IAC-23.E2.3-GTS.4.8**

6U CUBESAT: A STUDENT-MADE IOD MISSION FOR CHARACTERIZATION OF PEROVSKITE SOLAR CELLS AND STRUCTURAL BATTERY

Suhailah Alkhawashke, Politecnico di Milano, Saudi Arabia

**IAC-23.E2.3-GTS.4.9**

MODELING OF ALBEDO NOISE IN COARSE SUN SENSORS USING A STRATOSPHERIC BALLOON.

Franklin Ticona, Universidad católica Boliviana San Pablo, Bolivia

**IAC-23.E2.3-GTS.4.10**

REVOLUTIONIZING SPECTRAL ANALYSIS OF STARS USING MACHINE LEARNING TECHNIQUES FOR IMPROVED CLASSIFICATION AND IDENTIFICATION

Nihat Abdullayev, Student, Azerbaijan

**IAC-23.E2.3-GTS.4.11**

DAEALUS 2: AUTOROTATION ENTRY, DESCENT AND LANDING EXPERIMENT ON REXUS29

Clemens Riegler, Julius Maximilians Universität Würzburg, Germany

**E2.4. Educational Pico and Nano Satellites**

**October 4 2023, 10:15 — BCC A5**

**Co-Chair(s):** Xiaozhou Yu, Dalian University of Technology (DUT), China; Franco Bernelli-Zazera, Politecnico di Milano, Italy; Anna Guerman, Centre for Mechanical and Aerospace Science and Technologies (C-MAST), Portugal; Igor V. Belokonov, Samara National Research University (Samara University), Russian Federation;

**IAC-23.E2.4.1**

NINE HIGH SCHOOL STUDENTS TO BUILD NEPAL’S NEXT GENERATION 1U CUBESAT UNDER HIGH SCHOOL CONSORTIUM SATELLITE PROJECT MUNAL

Eliza Sapkota, Nepal Space Foundation, Nepal

**IAC-23.E2.4.2**

DESIGN AND DEVELOPMENT OF AN ADCS TEACHING PLATFORM FOR EDUCATIONAL SMALL SATELLITE

AMIR HOSSEIN ALIKHAH MISHAMANDANI, Beihang University (BUAA), China
IAC-23.E2.4.3
ALBASAT: AN EDUCATIONAL SATELLITE FOR A MULTI-OBJECTIVES MISSION IN LEO
Federico Basana, CSAS – “G. Colombo” Center of Studies and Activities for Space, University of Padova, Italy

IAC-23.E2.4.4
DEVELOPMENT AND IN-OBJECT VERIFICATION OF THE COILABLE MAST MECHANICAL SYSTEM IN APSCO SSS-1 SATELLITE MISSION
Yu Liu, Beihang University, China

IAC-23.E2.4.5
SUPER RESOLUTION CNN FOR A QUINCUNX SAMPLING-BASED PANCHROMATIC EARTH OBSERVATION IMAGER FOR NANOSATELLITES
Giovanni Maria Capuano, Universita’ degli Studi di Napoli Federico II, Italy

IAC-23.E2.4.6
AN INNOVATIVE HIGH-RELIABILITY SUN SENSOR OF MICRO/ NANOSATELLITE
Wenlong Zhang, Dalian University of Technology (DUT), China

IAC-23.E2.4.7
THE EVOLUTION FROM DESIGN TO VERIFICATION OF THE ANTENNA SYSTEM AND MECHANISMS IN THE ACUBESAT MISSION
Georgios Kikas, Aristotle University of Thessaloniki, Greece

IAC-23.E2.4.8
ATTITUDE PATH PLANNING TO IMPROVE FULL-MAGNETIC CONTROL PERFORMANCE OF 65 CUBESAT Davide Perico, Politecnico di Milano, Italy

IAC-23.E2.4.9
HIGH RESOLUTION MULTI-FUNCTIONAL OPTICAL PAYLOAD DESIGN FOR LIANLI MICRO SATELLITE
Chao Li Zeng, Dalian University of Technology (DUT), China

IAC-23.E2.4.10
DEVELOPMENT OF A NEW COMMUNICATION PAYLOAD FOR THE EDUCATIONAL SMALL SATELLITE PROJECT UWE
Marco Schmidt, University Wuerzburg, Germany

IAC-23.E2.4.11
DESIGN OF A SOLAR ARRAY DEPLOYMENT MECHANISM FOR A NANOSATELLITE
Dhansanjoy Ashok Gujarathi, College of Engineering Pune, India

IAC-23.E2.4.12
PASSIVE ATTITUDE STABILIZATION STRATEGY FOR A 3U STUDENT CUBESAT
Antonio D’Ortona, Politecnico di Torino, Italy

IAC-23.E3.1.1
SPACE & SUSTAINABILITY USING COMPACT AGREEMENTS-A NEW INITIATIVE TO REALIZE THE SPACE 2030 AGENDA
Joseph Pelton, International Academy of Astronautics, United States

IAC-23.E3.1.2
STRENGTHENING THE ROLE OF THE SPACE SECTOR AS A MAJOR DRIVER OF SUSTAINABLE DEVELOPMENT: AN INVESTIGATION OF THE ESA BUSINESS APPLICATION PROGRAMME
Alessandro Paravano, Politecnico di Milano, Italy

IAC-23.E3.1.3
LEVERAGING SATELLITE IMAGERY FOR GLOBAL CHALLENGES: COLLABORATIVE APPROACHES AND IMPLEMENTATION CHALLENGES
Giulia Costella, Caribou Digital UK, United Kingdom

IAC-23.E3.1.4
SDGS ARE A COMMON GLOBAL LANGUAGE AND AN OPPORTUNITY FOR INNOVATION FOR SOLVING SOCIAL ISSUES: JAXA’S STRATEGY AND INITIATIVES TOWARD SDGs
Ikuko Kuriyama, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-23.E3.1.5
THE ROLE OF SPACE SCIENCE AND TECHNOLOGIES IN ACHIEVING SUSTAINABLE DEVELOPMENT GOALS.
Aytan Zeynalli, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.E3.1.6
NORWAY, THE SPACE2030 AGENDA AND THE HIGH NORTH
Per Høyland, Norwegian Space Agency (NOSA), Norway

IAC-23.E3.1.7
LEVERAGING SPACE TECHNOLOGY FOR SUSTAINABLE DEVELOPMENT: THE ROLE OF THE MIDDLE EAST’S SPACE SECTOR
Camilo Andres Reyes Mantilla, Space Generation Advisory Council (SGAC), Qatar

IAC-23.E3.1.8
ESG AND SPACE: UNDERSTANDING ESG TOWARDS A SUSTAINABLE DEVELOPMENT - AN SES CASE STUDY
Diego Greenhalgh, France

IAC-23.E3.1.9
LEVERAGING SUSTAINABLE FINANCE AND ASSET-BASED FINANCING TO PROMOTE THE SUSTAINABLE DEVELOPMENT GOALS IN THE SPACE SECTOR
Hamza Hameed, Space Generation Advisory Council (SGAC), Singapore, Republic of

IAC-23.E3.1.10
THE NEW MULTILATERAL AGREEMENT FOR THE HIGH SEAS: WHAT ROLE FOR SPACE?
Gabriele Redigonda, University of Firenze, Italy

E3. 36th 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, Stichting Space Professionals Foundation (SSPF), The Netherlands;

E3.1. International cooperation in using space for sustainable development: The “Space2030” agenda

October 3 2023, 10:15 — BCC Auditorium Balcony
Co-Chair(s): Isabelle Duvaux-Bechina, ESA - European Space Agency, France; Dumitru-Dorin Prunariu, Commission d’Astronautique de l’Academie Roumaine, Romania;
Rapporteur(s): Alexander Soucek, Austrian Space Forum, Austria; Peter Stubbe, DLR (German Aerospace Center), Germany;

October 3 2023, 15:00 — BCC Auditorium Balcony
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; Anmol Dhawan, International Institute of Space Law (IISL), The Netherlands;

IAC-23.E3.2.1
GLOBAL SPACE FUTURES — 2050
Scott Pace, Space Policy Institute, George Washington University, United States

IAC-23.E3.2.2
EUROPE’S AMBITION IN SPACE EXPLORATION (WORKING TITLE)
Piero Messina, European Space Agency (ESA), France
E3.3. Space Economy Session – A focus on in-space operations and their potential to stimulate economic development

October 4 2023, 10:15 — BCC Auditorium Balcony
Co-Chair(s): Pieter Van Beekhuizen, Stichting Space Professionals Foundation (SSPF), 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-23.E3.3.1
ANALYSIS OF THE COMMERCIAL SATELLITE INDUSTRY: KEY INDICATORS, GLOBAL TRENDS, AND EMERGING SUSTAINABLE SPACE ACTIVITIES
Emma Louden, Bryce Space and Technology, United States

IAC-23.E3.3.2
ECONOMIC IMPLICATIONS OF NATIONAL SPACE LEGISLATIONS. DEVELOPMENT SUPPORT CLAUSES AS A LEVER FOR INDIGENOUS SECTOR
Kaja Hopej, Kozminski University, Poland

IAC-23.E3.3.3
SPACE ECONOMIC CAPACITY BUILDING IN CHINA: STATUS QUO, CHALLENGES AND POSSIBLE WAYS OUT
YONGLIANG YAN, Beijing Jiaotong University, China

IAC-23.E3.3.4
OOS AS AN ENABLER TO THE SPACE ECONOMY – SUSTAINABLE OOS BUSINESS CASES THROUGH VALUE-BASED PRICING
Navin Gopal, Astroscale Pte. LTD, Malaysia

E3.4. Assuring a Safe, Secure and Sustainable Environment for Space Activities

October 4 2023, 15:00 — BCC Auditorium Balcony
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-23.E3.4.1
SPACE SUSTAINABILITY IN LEO: A MULTIDISCIPLINARY APPROACH TO IDENTIFY AND MITIGATE ECONOMIC, OPERATIONAL AND TECHNOLOGICAL RISKS OF ACTIVE DEBRIS REMOVAL SOLUTIONS. Simonetta Di Pippo, SDA Bocconi School of Management, Bocconi University, Italy

IAC-23.E3.4.3
THE POLITICAL AND LEGAL LANDSCAPE OF SPACE DEBRIS MITIGATION IN EMERGING SPACE NATIONS
Danielle Wood, Massachusetts Institute of Technology (MIT), United States

IAC-23.E3.4.4
ENGAGEMENT AND COMMUNICATION OF THE SPACE SUSTAINABILITY RATING
Andrew Garza, Space Policy Institute, George Washington University, United States

IAC-23.E3.4.5
SUSTAINABILITY OF OUTER SPACE ACTIVITIES THROUGH IMPLEMENTATION OF INTERNATIONAL SPACE LAW: A COMPARATIVE APPROACH
Merve ERDEM BURGER, Switzerland

IAC-23.E3.4.6
A GUIDE MAP FOR EMERGING SPACE ECOSYSTEMS
Matias Campos, AstralIntu Space Technologies, Ecuador

IAC-23.E3.4.7
REGIONAL MECHANISMS TO SUPPORT SAFE, SECURE AND SUSTAINABLE ENVIRONMENT FOR SPACE ACTIVITIES: A CASE STUDY OF ASIA-PACIFIC REGION
Aisha Iagurani, Asia-Pacific Space Cooperation Organization (APSCO), China

IAC-23.E3.4.9
MANAGING SPACE AS A GLOBAL COMMONS
Daniel Patton, Secure World Foundation, United States

IAC-23.E3.4.10
AN INTERGENERATIONAL PACT FOR SPACE SUSTAINABILITY
Antonino Salmeri, Space Generation Advisory Council (SGAC), Spain
E3.6. Cost and Procurement impacts on Space Programmes linked to high inflation and world-wide scarcity of components and materials

October 5 2023, 15:00 — BCC Auditorium Balcony

Co-Chair(s): Christine Klein, European Space Agency (ESA), France; Henry Hertzfeld, Space Policy Institute, George Washington University, United States;
Rapporteur(s): Karina Miranda Sanchez, ESA, The Netherlands; Raphaele Leglise, ESA, Spain;
IAC-23.E3.6.1

IAC-23.E3.6.2

IAC-23.E3.6.3

Navigating the Challenges of Inflation and Material Scarcity in Space Programmes
Raihana Shams Islam Antarak, BRAC University, Bangladesh

IAC-23.E3.6.4

Economic and Programmatic Risk Management in Large Space Projects Contracts
Franck Germes, ESA - European Space Agency, The Netherlands

IAC-23.E3.6.5

Cost and Procurement Impacts on Space Programmes Linked to High Inflation and World-Wide Scarcity of Components and Materials
Yagub Ahmadov, Azerbaijan State University of Economics, Azerbaijan

IAC-23.E3.6.6

Temporary Measures with Permanent Effects: Sanctions and Export Controls in the Space Industry
Dimitra Stefoudi, Leiden University, The Netherlands

IAC-23.E3.6.7

A Comprehensive Analysis of Policy Making to Deal with the Space Tech Supply Chain Crisis in India
Siddharth Joshi, R V College of Engineering, Bengaluru, India

IAC-23.E3.6.8

Increased Autonomy and Independence in Space Through Robust and Resilient Supply Chains
Victoria Carter-Cortez, PricewaterhouseCoopers Advisory (PwC), France

IAC-23.E3.6.9

High Inflation and Supply Chain Disruption
Stephen Airey, European Space Agency (ESA), The Netherlands

E4. 57th IAA History of Astronautics Symposium

Coordinator(s): A. Ingemar Skoog, Germany; Tal Inbar, [unlisted], Israel; Otfried G. Liepack, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States; Sandra Haeuplik-Meusburger, TU Wien, Austria;

E4.1. Memoirs & Organisational Histories

October 4 2023, 15:00 — HAC Balcony 2

Co-Chair(s): Kerrie Dougherty, Australia; Niklas Reinke, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;
Rapporteur(s): Philippe Cosyn, Independent scholar, Belgium;
IAC-23.E4.1.1

Edward A. Neuj, Jr. (1920-1963) — The Creator of the “Spaghetti” Rocket Combustion Chamber, A Biographical Sketch
Frank H. Winter, National Air and Space Museum, United States

IAC-23.E4.1.2

Fred Haise: The Lunar Module Pilot of Apollo 13
Andrew Erickson, Naval War College/Harvard University, United States

IAC-23.E4.1.3

Hermann Oberth: “The Rocket into Planetary Spaces” - 1923. The Turning Point from Imagination to Realization - How Did This Fundamental Work of Rocket and Space Technology Come About in the First Place?
Kartheinz Rohrwill, Hermann-Oberth-Raumfahrt Museum e.V., Germany

IAC-23.E4.1.4

Robert Esnault-Pelterie, the Only Aviation & Space Pioneer Inventor of Astronautique
Philippe Jung, Airbus SAS, France

IAC-23.E4.1.5

Lorenzo M. Vargas MD, FASME: A Peruvian Pioneer of AEROSPACEMEDICINE and EDUCATION
David Villanueva, Universidad Nacional Mayor de San Marcos, Peru

IAC-23.E4.1.6

Renaissement of Mexican Astronomy.
Sebastián Solá Baltazar, Universidad Nacional Autónoma de México (UNAM), Mexico

IAC-23.E4.1.7

60 Years of Service to World Cosmonautics. Dedicated to the Anniversary of the Institute of Biomedical Problems
Anna Kussmaul, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation

IAC-23.E4.1.8

60th Anniversary Legal Principles Declaration
Hannes Mayer, Karl Franzens Universität Graz, Austria

IAC-23.E4.1.11

Joshua Burns, Northeastern University, United States

E4.2. Scientific and Technical Histories

October 5 2023, 10:15 — HAC Balcony 2

Co-Chair(s): Vera Pinto Gomes, European Commission, Belgium; Randy Liebermann, United States;
Rapporteur(s): Hannes Mayer, Karl Franzens Universität Graz, Austria; Sandra Haeuplik-Meusburger, TU Wien, Austria;
IAC-23.E4.2.2

Theodore von Kármán, the California Institute of Technology, and the Jet Propulsion Laboratory: “Rockets” for Planes: The Development of RATO
Mike Pavletic, The Johns Hopkins University, United States

IAC-23.E4.2.3

History of Analog Simulations in Project Mercury
Michal Slamiony, Rzeszow University of Technology, Poland

IAC-23.E4.2.4

Beyond Mission Control: The Untold Story Behind Apollo 13’s “Lunar Lifeboat” Rescue
Andrew Erickson, Naval War College/Harvard University, United States

IAC-23.E4.2.5

Salyut and Skylab - The Origins, Development and Legacy of the First Space Stations
Amer Khan, United Arab Emirates
**E4.3. History of Western Asia Contribution to Astronautics**

*October 6 2023, 10:15 — HAC Balcony 2*

**Co-Chair(s):** Otfrid G. Liepack, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States; Kerrie Dougherty, University of Arizona, United States; Nona Minifie, LIQUIFER Systems Group (LSG), Austria; Kerry Leonard, National Aeronautics and Space Administration (NASA), Goddard Space Flight Center, United States; Olga Bannova, University of Houston, United States;

**Rapporteur(s):** Nathalie Tinjod, European Space Agency (ESA), France; Kerrie Dougherty, University of Arizona, United States; Piero Messina, European Space Agency (ESA), France;

**EAC-23.E4.3.1**

KEYNOTE: OVERVIEW OF SPACE SCIENCE AND TECHNOLOGY HISTORY — DESTINY AGAINST OF RULE

Rustam Rustamov, Azerbaijan

**EAC-23.E4.3.2**

THE POLITICAL, ECONOMIC, SOCIAL, AND TECHNOLOGICAL EVOLUTION OF THE SPACE SECTOR IN AZERBAIJAN

Grecia Olano O’Brien, Concordia University, Canada

**EAC-23.E4.3.3**

A COMPARATIVE HISTORY OF THE NATIONAL SPACE PROGRAMS OF THE ARABIAN GULF COUNTRIES

Amer Khan, United Arab Emirates

**EAC-23.E4.3.4**

SPACE APPLICATIONS AND MANAGEMENT OF GLOBAL CHALLENGES IN THE MIDDLE EAST: THE CASE OF LEBANON

Luisa Santoro, Italian Space Agency (ASI), Italy

**EAC-23.E4.3.5**

MODERN ASPECTS OF THE 11TH - 16TH C. ASIAN ISLAMIC ASTRONOMICAL OBSERVATORIES

Ilia Fernini, Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

**E5. 34th IAA SYMPOSIUM ON SPACE AND SOCIETY**

*October 2 2023, 15:15 — BCC A4*

**Co-Chair(s):** Olga Bannova, University of Houston, United States; Paolo Mangili, University of Houston, United States;

**EAC-23.E5.1.1**

SPACE ARCHITECTURE AND COMPUTATIONAL MODELING OF THE LUNAR GATEWAY MODULES AS A TESTBED FOR ECLSS SYSTEMS

Margarita Belali, National Observatory of Athens, Greece

**EAC-23.E5.1.2**

IMPORTANCE AND CHALLENGES OF INTEGRATING BLSS INTO ECLSS

Megan Kane, University of Arizona, United States

**EAC-23.E5.1.3**

SPACE TOURISM AND SPACE ARCHITECTURE: CONSTRUCTIVE STRATEGIES USING IN SITU LUNAR RESOURCES TO BUILD A HOTEL ON THE MOON

Ilaria Pia Fiore, Politecnico di Milano, Italy

**EAC-23.E5.1.4**

ARCHITECTURAL APPROACH FOR EVALUATION OF RADIATION SHIELDING INTEGRATION IN SPACE HABITATS

Olga Bannova, University of Houston, United States

**EAC-23.E5.1.5**

FEASIBILITY STUDY OF NOVEL CREW WELLBEING AND ALTERNATIVE COUNTERMEASURES SOLUTIONS FOR RECREATIONAL SPACES IN FUTURE LUNAR PERMANENT SETTLEMENTS

Giancarlo Genta, Politecnico di Torino, Italy

**EAC-23.E5.1.6**

BEYOND PHYSICAL LIMITS: A FRAMEWORK FOR ACCESSIBLE DESIGN IN SPACE HABITATS

Khushi Shah, Space Generation Advisory Council (SGAC), India

**E5.2. Is Space R&D Truly Fostering A Better World For Our Future?**

*October 3 2023, 15:00 — BCC A4*

**Co-Chair(s):** Olga Bannova, University of Houston, United States; Nona Minifie, LIQUIFER Systems Group (LSG), Austria; Kerry Leonard, National Aeronautics and Space Administration (NASA), Goddard Space Flight Center, United States;

**EAC-23.E5.2.1**

ROCKET SCIENCE AND INNOVATION SPILLOVERS – DOES SPACE RESEARCH BENEFIT THE ECONOMY AND SOCIETY?

Daniel Vrankar, TU Dresden, Germany

**EAC-23.E5.2.2**

DEVELOPMENT AND IMPLEMENTATION OF SPACE ELECTROMYOSTIMULATION TECHNOLOGIES IN TERRESTRIAL MEDICINE: PRESENT AND FUTURE

Maria Bekreneva, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation
E5.4. Space Assets and Disaster Management

October 5 2023, 15:00 — BCC A4

Co-Chair(s): Geoffrey Languedoc, Canadian Aeronautics & Space Institute (CASi), Canada; Jillianne Pierce, Space Florida, United States;

IAC-23.E5.4.2 SPACE ASSETS AND DISASTER MANAGEMENT
Nasib Karimov, Baku State University, Azerbaijan

IAC-23.E5.4.3 DEVELOPMENT OF THE SPACE TOILET CALLED “SPACE BENKING” 2023
Taichi Yamazaki, ASTRAX, Inc., Japan

IAC-23.E5.4.4 PROTECTING EUROPE: HOW CAN SPACE APPLICATIONS SUPPORT EUROPEAN STATES TO IMPLEMENT THE NEW CRITICAL ENTITIES RESILIENCE DIRECTIVE.
Fiore Grazia Maria, EURISY, France

IAC-23.E5.4.5 EUSPA SPACE ASSETS AND DISASTER MANAGEMENT
Christina Giannopapa, European Union Agency for the Space Programme (EUSPA), Czech Republic

IAC-23.E5.4.6 (unconfirmed)
HARNESSING THE POTENTIAL OF SPACE AND SPACE TECHNOLOGIES FOR GLOBAL SURGERY IN LOW- AND MIDDLE-INCOME COUNTRIES
Yvon Zola, Space Generation Advisory Council (SGAC), South Africa

IAC-23.E5.4.7 EUSPA SPACE ASSETS AND DISASTER MANAGEMENT
Abdulla Hil Kafi, BRAC University, Bangladesh

E5.5. Sharing space achievements and heritage: space museums and societies

October 6 2023, 10:15 — BCC A4

Co-Chair(s): Peter Buist, European Union Agency for the Space Programme (EUSPA), The Netherlands; Jean-Baptiste Desbois, SEMECCCEL Cité de l’Espace, France; Ines Prieto, SEMECCCEL Cité de l’Espace, France;
IAC-23.E5.5.1
THE PEDRO E. PAULET MOSTAJO PERUVIAN AEROSPACE MUSEUM THROUGH TIKTOK
David Villanueva, Universidad Nacional Mayor de San Marcos, Peru

IAC-23.E5.5.3
A CHANCE FOR EVERYONE TO STEP IN THE ENVIRONMENT OF SPACE.
Shivam Garg, India

IAC-23.E5.5.4
FUTURE SOCIETY: ROLE OF THE SPACE TECHNOLOGY AND AZERBAIJAN AS DISCOURSE DEFINITION PLATFORM
Mr Elmir Alizada, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.E5.5.5
MOON GALLERY: 100 ARTEFACTS, 100 SEEDS, 100 QUESTIONS
Anna Sitnikova, Stichting Moon Gallery Foundation, The Netherlands

IAC-23.E5.5.6
SPACE CONCORDIA ROCKETY DIVISION’S JOURNEY TO THE STARS: A STORY OF GRIT, PERSEVERANCE, AND RESILIENCE
Grecia Olano O’Brien, Concordia University, Canada

E5.6. Simulating Space Habitation: Habitats, Design and Simulation Missions

October 6 2023, 13:45 — BCC A4
Co-Chair(s): Monika Lipinska, Lund University, Sweden; Vittorio Netti, Sasakawa International Center for Space Architecture, Italy; Olga Bannova, University of Houston, United States;
Rapporteur(s): Sandra Haeuplik-Meusburger, TU Wien, Austria;
IAC-23.E6.5.6.2
OPPORTUNITIES FOR VALIDATION OF TECHNOLOGIES AND PRODUCTS INTENDED FOR LONG-TERM SPACEFLIGHT IN ANALOG ISOLATION STUDIES
Agapitseva Tatiana, Institute of Biomedical Problems (IBMP), Russian Academy of Sciences (RAS), Russian Federation

IAC-23.E6.5.6.3
DESIGN AND DEVELOPMENT OF A SPACE SUIT MOCK-UP FOR VR-BASED EVA RESEARCH AND SIMULATION
Vittorio Netti, Sasakawa International Center for Space Architecture, Italy

IAC-23.E6.5.6.4
AGRAITHRIVE: AN EMERGENCY PREPAREDNESS SYSTEM FOR PLANTS IN SPACE
Somayajulu Dhulipala, Massachusetts Institute of Technology (MIT), United States

IAC-23.E6.5.6.5
GLOBAL STANDARDIZATION OF ANALOG SPACE MISSIONS
Danny Tjokrosetio, Delft University of Technology, The Netherlands

IAC-23.E6.5.6.6
ECHO V2: CONCEPTUAL DESIGN OF A MODULAR INFLATABLE HABITAT MODULE FOR SUB-SURFACE ANALOG SPACE MISSIONS
Joshika Sachithananand, Delft University of Technology (TU Delft), The Netherlands, The Netherlands

IAC-23.E6.5.6.7
SPACE APPLICATIONS IN A MANNED UNDERWATER RESEARCH STATION
Frank Scharmann, Germany

E6. IAF BUSINESSES AND INNOVATION SYMPOSIUM

Coordinator(s): Ken Davidian, , United States; Nancy C. Wolfson, American Institute of Aeronautics and Astronautics (AIAA), United States;

E6.1. Space Entrepreneurship and Investment: The Practitioners’ Perspectives

October 5 2023, 15:00 — HAC Balcony 2
Co-Chair(s): Joerg Kreisel, JOERG KREISEL International Consultant (JKIC), Germany; Daria Stepanova, , Germany;
IAC-23.E6.1.1
SHAPING THE FUTURE OF FEMALE ENTREPRENEURSHIP
Shelli Brunswick, Space Foundation, United States

IAC-23.E6.1.2
“BREAKING BARRIERS: THE TRANSFORMATIVE POWER OF BUSINESS AND INNOVATION IN THE SPACE INDUSTRY”
Nigar Aliyeva, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.E6.1.4
START-UP SPACE: GLOBAL INVESTMENT TRENDS
Emma Louden, Bryce Space and Technology, United States

IAC-23.E6.1.5
DEVELOPMENT AND ANALYSIS OF A NEW DEDICATED STOCK MARKET INDEX OF EUROPEAN LISTED SPACE COMPANIES AND COMPARISON WITH EXISTING ONES.
Alexandre-Dimosthéni Benas, International Space University (ISU), France

IAC-23.E6.1.6
ANALYSIS AND FORECAST OF THE BLOCKCHAIN WITH REGARDS TO SPACE FINANCE
Justin Park, United States

IAC-23.E6.1.7
SPACE INVESTING: THE NEW EUROPEAN CROWDFUNDING PLATFORM
Elenora Lombardi, Fondazione E. Amaldi, Italy

IAC-23.E6.1.8
JAXA’S NEW INITIATIVES FOR INVESTMENT
Sayaka Sashida, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-23.E6.1.9
AN ANALYSIS OF UNIQUE ENTREPRENEURIAL CHALLENGES IN THE SPACE SECTOR IN THE UNITED ARAB EMIRATES AND AFRICA.
Kaitlyn Holm, University of Pennsylvania, United States

IAC-23.E6.1.10
EMERGING SPACE: PRACTITIONERS’ REFLECTIONS ON BUILDING NEW SPACE ECOSYSTEMS AROUND THE WORLD
Daniel Sagath, Slovak Investment and Trade Development Agency (SARIO) - Slovak Space Office, Slovak Republic

IAC-23.E6.1.11
SPACE INVESTMENT TO CONTRIBUTE TO SUSTAINABLE FUTURE INDUSTRY
Misuzu Onuki, Space Access Corporation, Japan

IAC-23.E6.1.12
SIGMA FIT TECH-WEAR FOR SUSTAINABLE COLONIES ON MARS
Omar Metwally, Sigma Fit, Egypt

IAC-23.E6.1.13
BUILDING ROCKETS, TAKING RISKS, AND BREAKING BARRIERS: THE TRAILBLAZING STORY OF GWYNNE SHOTWELL’S CAREER IN AEROSPACE
Grecia Olano O’Brien, Concordia University, Canada
E6.2. Public-Private Partnerships: Traditional and New Space Applications

October 4 2023, 10:15 — HAC Balcony 2
Co-Chair(s): Nancy C. Wolfson, American Institute of Aeronautics and Astronautics (AIAA), United States; Kenneth Bruce Morris, Sierra Space, United States; Nicholas Florio, Space Generation Advisory Council (SGAC), United States;

IAC-23.E6.2.1
KEYNOTE: THE U.S. DEPARTMENT OF COMMERCE AND THE SEIC IAF ON PPP MODELS FOR SPACE RESOURCES AND SUSTAINABILITY
Richard DaBello, National Oceanic and Atmospheric Administration (NOAA), United States

IAC-23.E6.2.2
ORBITAL DEBRIS: A GREAT BUSINESS OPPORTUNITY
Adriano V. Autino, Space Renaissance International, Italy

IAC-23.E6.2.3
THE EVOLUTION OF PNT – HOW COULD PUBLIC-PRIVATE PARTNERSHIPS SUPPORT FUTURE SERVICES OF GNSS TECHNOLOGY
Joshua Critchley-Marrows, The University of Sydney, Australia

IAC-23.E6.2.4
STRATEGY FOR THE MOON: ORIGINS AND DESIGN OF NASA’S HUMAN LANDING SYSTEM PROGRAM
Nantel Suzuki, National Aeronautics and Space Administration (NASA), United States

IAC-23.E6.2.5
EMERGING LAUNCH DEMAND IN KOREA AND THE PRIVATE-LED DEVELOPMENT OF DEDICATED LAUNCH VEHICLES
SeokHee Lim, Korea Aerospace Research Institute (KARI), Korea, Republic of

IAC-23.E6.2.7
THE IAF SEIC WORKING GROUP ON SPACE RESOURCES UTILIZATION AND SUSTAINABILITY
Nancy C. Wolfson, American Institute of Aeronautics and Astronautics (AIAA), United States

IAC-23.E6.2.8
AN ANALYSIS OF THE ITU APPLIED TO SPACE RESOURCES AND ASTEROID MINING
Michele Cristina Silva Melo, Brazil

IAC-23.E6.2.9
THE OPPORTUNITY OF SPACE SOLAR POWER - ECONOMICALLY, GEOPOLITICALLY, AND ENVIRONMENTALLY
Kevin Barry, LightBridge Strategic Consulting, United States

E6.3. Innovation: The Academics’ Perspectives

October 3 2023, 15:00 — HAC Balcony 2
Co-Chair(s): Ken Davidian, United States; Michele Cristina Silva Melo, Brazil;

IAC-23.E6.3.1
ENTREPRENEURSHIP IN SPACE
Azar Ismayilzada, Azerbaijan State University of Economics, Azerbaijan

IAC-23.E6.3.2
FUELING DOMESTIC SPACE WITH GLOBAL TALENT: EXPLORING A US SPACE VISA
Gidan Gautel, Moon Village Association (MVA), United Kingdom

IAC-23.E6.3.3
IS THERE A NEW TECHNOLOGICAL PARADIGM FOR THE SPACE SECTOR?
Michele Cristina Silva Melo, Brazil

IAC-23.E6.3.4
SPACE & MEDIA ENTERTAINMENT - INDUSTRY CONVERGENCE
Kais Barmawi, International Space University (ISU), France

IAC-23.E6.3.5
INVESTMENT MODELS IN THE SPACE MARKET – RISK ANALYSIS APPROACH FOR LONG-TERM PERSPECTIVE INVESTMENT OR SHORT-TERM INVESTMENT APPROACH?
Katarzyna Malinowska, Kazimierz University, Poland

IAC-23.E6.3.6
ELICITING THE VALUE OF INNOVATION INTERMEDIARIES IN THE COPERNICUS PROGRAMME ECOLOGY: AN EMPIRICAL INVESTIGATION
Alessandro Paravano, Politecnico di Milano, Italy

IAC-23.E6.3.7
INNOVATION PRACTICES: CO-CREATION IN TECH SECTORS IN NORTH AMERICAN CITIES
Katlyn Turner, Massachusetts Institute of Technology (MIT), United States

IAC-23.E6.3.8
PLACEHOLDER FOR “SPACE IS BUSINESS” PAPER-WRITING COMPETITION WINNER
Ken Davidian, United States

E6.4. Strategic Risk Management for Successful Space & Defence Programmes

October 3 2023, 10:15 — HAC Balcony 2
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-23.E6.4.1
INSURANCE MODEL IN SPACE INDUSTRY
Vali Bayramov, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.E6.4.2
TECHNOLOGY, SAFETY AND THE CUSTOMER FOREMOST: OVERCOMING INSURANCE AND REGULATION RISKS IN NEWSPACE VENTURES
Scott Schneider, Australia

IAC-23.E6.4.3
BEDROCK OF DOMESTIC SPACE “MARKET” TO THEN ACCESS GLOBAL MARKETS - STRUCTURING INDIAN SPACE
Mukund Kadursrinivas Rao, India

IAC-23.E6.4.5
HOW ARE SPACE ECONOMY TRENDSreshaping the RISK LANDSCAPE OF THE SPACE INDUSTRY? A TAXONOMY AND FRAMEWORK
Paolo Trucco, Politecnico di Milano, Italy

IAC-23.E6.4.6
EDUCATIONAL AND INFORMATIVE INITIATIVES FOR THE DECISION MAKERS, NEW NEWCOMER VC FOUND AND BUSINESS ANGLES, AS THE KEY FACTOR TO AVOID THE “SPACE HYPE BUBBLE”: THE CASE STUDY OF SPACE ENTREPRENEURSHIP INSTITUTE
Katarzyna Malinowska, Kazimierz University, Poland

IAC-23.E6.4.7
MATRIX-BASED RISK MANAGEMENT FRAMEWORK FOR FINANCING OF SPACE ASSETS IN START-UPS AND DEVELOPING SPACE SECTORS
Alvaro Piris Cuiza, France
E7.1. Young Scholars Session with Keynote Lecture

October 2 2023, 15:15 — HAC Hall B

Co-Chair(s): Ilgar Abdullayev, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan; Lesley Jane Smith, Leuphana University of Lüneburg/Weber-Steinhaus & Smith, Germany;

IAC-23.E7.1.1
KEYNOTE: TRAJECTORY TOWARDS A COMMON UNDERSTANDING - A MULTI-CONTINENTAL NEXT-GENERATIONAL PERSPECTIVE ON THE RULE OF LAW IN OUTER SPACE

Marcia Alvarenga dos Santos, National Institute for Space Research - INPE, Brazil

IAC-23.E7.1.2
SCREENING OF FOREIGN DIRECT INVESTMENTS IN THE SPACE SECTOR: THE ISSUE OF JUSTICIABILITY AND THE CASE OF THE ITALIAN GOLDEN POWER

Andrea Capurso, LUISS Guido Carli University, Italy

IAC-23.E7.1.3
THE FUNCTIONS AND PROBLEMS OF THE “CROSS-WAIVER” CLAUSE AND A NEW PROPOSAL FOR APPROPRIATE DEMARCATION OF LIABILITY.

Hinata Oshima, Nakamura Tsunoda & Matsumoto, Japan

IAC-23.E7.1.4
THE ASSESSMENT OF “HARMFUL INTERFERENCE” CONFLICTS IN OUTER SPACE ACTIVITIES ACCORDING TO INTERNATIONAL TORT LAW STANDARDS; AND SELECTING THE APPROPRIATE DISPUTE SETTLEMENT METHOD FOR SMALL SATELLITE OPERATORS.

Vugar Mammadov, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

IAC-23.E7.1.6 (unconfirmed)
HOW TO EXPLORE OUTER SPACE INSTEAD OF CONQUERING IT?

Jan Tyczynski, University of Gdansk, Poland

IAC-23.E7.1.8
ARTIFICIAL INTELLIGENCE IN SPACE: AN ANALYSIS OF RESPONSIBLE AI PRINCIPLES FOR THE SPACE DOMAIN

Thomas Graham, Swinburne University of Technology, Australia

IAC-23.E7.1.9
LEGAL ISSUES OF EXPORT CONTROL IN COMMERCIAL AEROSPACE INTERNATIONALIZATION AND CHINA’S INSTITUTIONAL COUNTERMEASURES

Jie Long, Shenzhen University, China

IAC-23.E7.1.10
MOBILE APPLICATIONS USAGE IN SPACE ACTIVITIES: LEGAL FRAMEWORK

Bahar Ramazanova, Azerbaijan

IAC-23.E7.1.11
REALIZING AN INTERNATIONAL SECURED TRANSACTIONS REGIME FOR SPACE ASSETS NATION BY NATION: REASSESSMENT OF THE SPACE PROTOCOL TO THE CAPE TOWN CONVENTION FROM A CHINESE PERSPECTIVE

Haoyue Deng, China University of Political Science and Law, China
IAC-23.E7.1.12
ANALYZING THE OBLIGATION TO RECOVER AND RETURN SPACE OBJECTS UPON CONTROLLED RE-ENTRY UNDER INTERNATIONAL SPACE LAW
Tejas Bharadwaj, India

IAC-23.E7.1.13
INSTITUTIONAL FRAGMENTATION OF GLOBAL SPACE GOVERNANCE AND THE URGENT NEED FOR THE ESTABLISHMENT OF THE GLOBAL SPACE ORGANIZATION
Simara Moradinasab, Shahid Beheshti University, Iran

IAC-23.E7.1.14
THE NON-PEACEFUL USE OF COMMERCIAL SATELLITES: EXISTING ISSUES AND NEW CHALLENGES FROM A LEGAL AND POLICY PERSPECTIVE
David Eagleson, International Institute of Air and Space Law, Leiden University, United Kingdom

E7.2. UNCOOPUOS and ITU Registration of Large Constellations

October 3 2023, 10:15 — HAC Hall B
Co-Chair(s): Tare Brisibe, OnAir, Switzerland; Frans G. Von der Dunk, University of Nebraska, College of Law, The Netherlands;
Rapporteur(s): Dimitra Stefoudi, Leiden University, The Netherlands;

IAC-23.E7.2.1
POTENTIAL OF MUTUAL REFERENCE BETWEEN ITU AND UNCOOPUOS FOR CONSTELLATION REGISTRATION
Huiliang Liu, China Academy of Space Technology (CAST), China

IAC-23.E7.2.2
POST-DEPLOYMENT REGULATION FOR SATELLITE CONSTELLATIONS: WHAT NEW RULES WILL WRC-23 ADOPT?
Elina Morozova, Intersputnik International Organization of Space Communications, Russian Federation

IAC-23.E7.2.3
ITU’S EVOLVING REGULATORY REGIME FOR SATELLITE REGISTRATION: THE CASE OF LARGE LEO CONSTELLATIONS
Audrey Allison, The Aerospace Corporation, United States

IAC-23.E7.2.4
SOME CONSIDERATIONS ON HOW TO IMPROVE THE UN REGISTER OF OBJECTS LAUNCHED INTO OUTER SPACE IN THE VIEW OF LARGE CONSTELLATIONS
Irina Chernykh, Peoples’ Friendship University of Russia (RUDN University), Russian Federation

IAC-23.E7.2.5
LINKING UNCOOPUOS AND ITU REGISTRATIONS FOR LARGE SATELLITE CONSTELLATIONS: A CASE STUDY
Chang Dai, Global Law Office, China

IAC-23.E7.2.7
ITU RESOLUTION 261 (2022) ART. 9 AND THE “THIRD WAY”
Marco Franzoso, University of Leiden, The Netherlands

IAC-23.E7.2.8
MANAGEMENT OF ORBITAL MANOEUVRES FOR SATELLITE CONSTELLATIONS AND COMMERCIAL SPACE ACTIVITIES
Patrick Neumann, Australia

E7.3. Legal Issues Relating to Emerging Space Activities on Celestial Bodies

October 3 2023, 15:00 — HAC Hall B
Co-Chair(s): Alexander Soucek, Austrian Space Forum, Austria; Jenni Tapio, International Institute of Space Law (IISL), Finland;
Rapporteur(s): Anne-Sophie Martin, Sapienza University of Rome, Italy;

IAC-23.E7.3.2
DISCUSSING THE NEED FOR A RESPONSIBLE EXPLOITATION OF SPACE RESOURCES IN VIEW OF THE ESTABLISHMENT OF PERMANENT HUMAN SETTLEMENTS ON CELESTIAL BODIES: IMPLICATIONS FOR INTERNATIONAL LAW
George (Georgios) D. Kyriakopoulos, National and Kapodistrian University Of Athens, Greece

IAC-23.E7.3.3
STATES IN SPACE? EXTRATERRESTRIAL EXERCISE OF JURISDICTION AND ITS FUTURE SCENARIOS
Frans G. Von der Dunk, University of Nebraska, College of Law, The Netherlands

IAC-23.E7.3.5
IS THERE A PRINCIPLE OF SCIENTIFIC PRIMACY IN OUTER SPACE LAW?
Hugo Lopez, Centre National d’Etudes Spatiales (CNES), France

IAC-23.E7.3.6
LEGAL STATUS OF CREWED LUNAR STATION ACTIVITIES: FURTHER CONSIDERATIONS ON NON-APPROPRIATION AND JURISDICTION ISSUES ON THE MOON
Jiaying Yu, The University of Hong Kong, China

IAC-23.E7.3.7
SHOULD THE ITU HAVE A ROLE IN GOVERNING TELECOMMUNICATIONS RELATING TO ACTIVITIES ON CELESTIAL BODIES WHEN THE TRANSMISSIONS LACK A TERRESTRIAL NEXUS?
George Anthony Long, United States

IAC-23.E7.3.8
SPACE SETTLEMENTS, AI, AND “FAULT” IN THE LIABILITY FRAMEWORK FOR DEEP SPACE EXPLORATION
Maria Manoli, University of Aberdeen, United Kingdom

IAC-23.E7.3.9
PERSONAL AND REAL PROPERTY RIGHTS ON CELESTIAL BODIES
Hamza Hameed, Space Generation Advisory Council (SGAC), Singapore, Republic of

IAC-23.E7.3.10
NORWEGIAN PETROLEUM GOVERNANCE: A POTENTIAL INSPIRATION FOR SPACE RESOURCE GOVERNANCE?
Mari Amanda Eldholm, Norwegian Space Agency (NOSA), Norway

IAC-23.E7.3.11
CURRENT STATUS OF JAPAN’S ACTIVE DEVELOPMENT OF SPACE LAWS AND SYSTEMS FOR LEGAL COMPLIANCE IN THE AGE OF CELESTIAL EXPLORATION
Shimpei Ishido, Japan

IAC-23.E7.3.12
CHINA’S PLAN FOR AN INTERNATIONAL LUNAR RESEARCH STATION: A PATH TOWARDS MULTILATERALISM OR THE BEGINNING OF THE END?
Fabio Tronchetti, Northumbria University, United Kingdom

E7.4. Key Governance Issues in the New Space Age

October 4 2023, 10:15 — HAC Hall B
Co-Chair(s): Gérardine Goh Escolar, Bynkershoek Law Institute, The Netherlands; Kuan-Wei Chen, Institute of Air and Space Law, McGill University, Canada;
Rapporteur(s): Antonino Salmeri, Space Generation Advisory Council (SGAC), Spain;

IAC-23.E7.4.1
NEW AGE SPACE ACTIVITIES: IMPLEMENTING EARTH OBSERVATION AND REDUCE INEQUALITY THROUGH ARTIFICIAL INTELLIGENCE
Maura Zara, AIKO S.r.l., Italy
IAC-23.E7.4.2 ENCODING AND SECURING SPACE ACTIVITIES: LEGAL CHALLENGES ARISING FROM ‘QUANTUM TECHNOLOGY FOR SPACE’
Anne-Sophie Martin, Sapienza University of Rome, Italy

IAC-23.E7.4.3 A LEGAL OVERVIEW ON THE USE OF SPACE TECHNOLOGY FOR GOVERNANCE OF RISK ASSESSMENT AND RISK MANAGEMENT OF CLIMATE CHANGE AND ITS IMPACTS
Sageeta Geetha Sethu, Amity University, Dubai, United Arab Emirates

IAC-23.E7.4.4 BENEFICIARIES OF THE NEW SPACE AGE: EFFECTIVE GOVERNANCE BY FOLLOWING THE REACH OF BENEFITS TO ALL HUMANKIND
Scott Schneider, Australia

IAC-23.E7.4.7 SPACE GOVERNANCE TO ACHIEVE SUSTAINABLE DEVELOPMENT IN THE NEW SPACE AGE
Beauler Wazelehe, Zimbabwe

IAC-23.E7.4.8 A THEORY OF SPACE GOVERNANCE
Pi Blount, Cardiff University, United Kingdom

IAC-23.E7.4.9 THE NUCESANES OF RESPONSIBILITY OF ARTIFICIAL INTELLIGENCE FOR IRRESPONSIBLE SPACE ACTIVITY
Larisa Sorka, NAS of Ukraine, Ukraine

IAC-23.E7.4.10 PER ANITRUST AD ASTRA: MONOPOLIES AND INTERNATIONAL SPACE LAW
Maximilian Gartner, University of Vienna, Austria

E7.5. Supervision of Space Activities

October 4 2023, 15:00 — HAC Hall B

Co-Chair(s): Ulrike M. Bohlmann, European Space Agency (ESA), France; Bernhard Schmidt-Tedder, Leuphana University, Germany;
Rapporteur(s): Laetitia Zarkan Cesari, University of Luxembourg, Luxembourg;

IAC-23.E7.5.1 U.AE NATIONAL SPACE LAW: AMBIT OF ‘AUTHORIZATION & SUPERVISION’ FOR A STABLE AND PROTECTED PRIVATE SPACE ACTIVITIES
Setu Sivakumar Monen, University of Vienna, United Arab Emirates

IAC-23.E7.5.3 ECONOMIC AND TECHNOLOGICAL DISPARITY AMONG STATES AND THE OBLIGATION TO SUPERVISE NATIONAL SPACE ACTIVITIES
George Anthony Long, United States

IAC-23.E7.5.4 EFFECTIVE AND REASONABLE LEGAL MEASURES TO APPROPRIATELY SUPERVISE PRIVATE NATIONAL SPACE ACTIVITIES
Setsuko Aoki, Keio University, Japan

IAC-23.E7.5.5 SUPERVISION OF SPACE ACTIVITY IN INDIA
Pranav Prakash Singh, Indian Space Research Organisation, India

IAC-23.E7.5.6 USAGE OF “SOFT LAW” INSTRUMENTS AT NATIONAL LEVEL: OBJECTIVE NECESSITY OR VOLUNTARY OBLIGATION
Darya Bohdan, Belarusian State University, Belarus

IAC-23.E7.5.7 ICAO PRINCIPLES FOR A SAFE, SECURE, AND SUSTAINABLE SPACE ENVIRONMENT
Quinn McKenney, Space Generation Advisory Council (SGAC), United States

IAC-23.E7.5.8 ENHANCING THE PRACTICE OF NON-FUNCTIONAL SPACE OBJECT REGISTRATION BY UTILIZING SSA DATA: LESSONS LEARNED FROM THE JAPANESE PRACTICE
Kazushi Kobata, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-23.E7.5.10 BEST PRACTICES AND LESSONS LEARNED FROM EUROPEAN SPACE-FARING NATIONS IN THE DEVELOPMENT OF A REGULATORY FRAMEWORK FOR ACTIVITIES IN OUTER SPACE IN SPAIN
Alvaro Pirís Cuíto, France

E7.7. Recent Developments in Space Law with Particular Focus on Space Debris Remediation

October 6 2023, 13:45 — HAC Hall B

Co-Chair(s): Peter Stubbe, DLR (German Aerospace Center), Germany; Maria-del-Carmen Muñoz-Rodriguez, University of Jaen, Spain;
Rapporteur(s): Gina Petrovici, German Aerospace Center (DLR), Germany;

IAC-23.E7.7.1 THE STATUS OF NATIONAL SPACE LEGISLATIONS IN THE ASIA-PACIFIC: INTRODUCTION BASED ON THE NSLI 2ND REPORT
Ikuko Kuriyama, Japan Aerospace Exploration Agency (JAXA), Japan

IAC-23.E7.7.2 HEADING FOR THE STARS AND SPACE LAW: THE CASE OF SAUDI ARABIA
Olga Volynskaya, Prince Sultan University, Saudi Arabia

IAC-23.E7.7.3 WHO REGULATES SPACE DEBRIS REMEDIATION?
Mahulena Hofmann, University of Luxembourg, Luxembourg

IAC-23.E7.7.4 THE FEASIBILITY OF APPLYING THE POLLUTER PAYS PRINCIPLE TO SPACE DEBRIS
Siavash Mirzaei, Iran

IAC-23.E7.7.5 MICRO SATELLITES AND MEGA CONSTELLATIONS: SPACE DEBRIS REMEDIATION AND PERPETUAL OWNERSHIP
Arpit Gupta, India

IAC-23.E7.7.6 THE 2023 DRAFT AGREEMENT ON THE CONSERVATION AND SUSTAINABLE USE OF MARINE BIOLOGICAL DIVERSITY OF AREAS BEYOND NATIONAL JURISDICTION AND ITS IMPLICATIONS, IF ANY, REGARDING THE EXTRACTION OF SPACE RESOURCES
George Anthony Long, United States

IAC-23.E7.7.7 SPACE DEBRIS REMEDIATION ON THE SURFACE OF MOON AND ITS ORBITS
Alexander Solntsev, Peoples’ Friendship University of Russia (RUDN University), Russian Federation

IAC-23.E7.7.8 COOPERATIVE DEBRIS REMEDIATION: READY FOR ACTION!
Valentin Uvarov, International Institute of Space Law (IISL), Russian Federation
IAC-23.E7.7.9
UPDATING THE FRENCH LEGAL AND REGULATORY FRAMEWORK FOR SPACE ACTIVITIES TO MAKE SPACE OPERATIONS MORE SUSTAINABLE – A FOCUS ON FRAMING SATELLITES CONSTELLATIONS.
Clémence Lambrecht, Centre National d’Etudes Spatiales (CNES), France

IAC-23.E7.7.10
PARIS MOVES TO SPACE: A PROPOSAL FOR A NEW INTERNATIONAL AGREEMENT TO GOVERN SPACE DEBRIS AVOIDANCE AND REMEDIATION
Rachael O’Grady, United Kingdom

IAC-23.E7.7.11
ENABLING COMMERCIAL REMEDIATION OF SPACE DEBRIS THROUGH EFFECTIVE CONTRACTUAL AND REGULATORY TRANSFER OF ITS OWNERSHIP
Charles Mudd, Mudd Law, United States

IAC-23.E7.7.12
ACTIVE REMOVAL OF FOREIGN COUNTRIES’ SPACE DEBRIS: OBLIGATION AND LIABILITY ISSUES
Jie Long, Shenzhen University, China

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

October 6 2023, 13:45 — BCC B2
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-23.E8.1.1
DEVELOPING THE TAMIL ASTRONAUTICAL TERMINOLOGY: STEP TOWARDS THE SPACE ENHANCEMENT
Anumadhubala Rajakumari, Skyline Space, India

IAC-23.E8.1.2
THE CASE FOR A SERBIAN SPACE LANGUAGE TERMINOLOGY - WHY DO WE NEED IT?
Milica Milosev, Econnects, Serbia

IAC-23.E8.1.3
SPACEGPT: A SUPERVISED LLAM DEVELOPMENT PROJECT FOR STANDARDIZED TERMINOLOGIES COLLECTION, TRANSLATION AND EXPLANATION FOR SPACE IN VARIOUS LANGUAGES AND DIALECTS
Agashram Neelakandan, TU Bergakademie Freiberg (TUBAF), Germany

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;


October 6 2023, 10:15 — BCC A6
Co-Chair(s): David Spencer, The Aerospace Corporation, United States; Andrea Capurso, LUISS Guido Carli University, Italy;
Rapporteur(s): Maruska Strah, Space Sustainability Rating, Switzerland

IAC-23.E9.1-A6.8.6
ANALYSIS OF EXISTING RULES IN SPACE TRAFFIC MANAGEMENT: FINDING THE GAPS IN “AUTHORIZATION”
Maruska Strah, Space Sustainability Rating, Switzerland

COORDINATING AND CONVERGING REGULATORY FRAMEWORKS FOR SPACE DEBRIS MITIGATION THROUGH A LEGAL AND TECHNICAL REVIEW OF STATE PRACTICE.
Mahhad Nayyer, Purdue University, Pakistan

A COMPREHENSIVE DEBRIS CREDIT FRAMEWORK FOR ALLOCATION AND USAGE OF DEBRIS CREDITS FOR FURTHERING SUSTAINABILITY IN SPACE
Abhinav Srivastava, Bellatrix Aerospace Private Limited, India

E9.2. Cyber-based security threats to space missions: establishing the legal, institutional and collaborative framework to counteract them

October 2 2023, 15:15 — BCC Auditorium Balcony
Co-Chair(s): Julien Aiaud, Centre National d’Études Spatiales (CNES), France; Stefano Zatti, University of Rome “La Sapienza”, Italy;

IAC-23.E9.2.1
ASSESSING CYBERSECURITY MEASURES IN SPACE AND CYBER LAWS
Clémence Poirier, European Space Policy Institute (ESPI), Austria

IAC-23.E9.2.2
CYBERSECURITY AND SPACE: A TRANS-ATLANTIC PERSPECTIVE
Laura Morelli, International Space University (ISU), Italy
E10. IAF SYMPOSIUM ON PLANETARY DEFENSE AND NEAR-EARTH OBJECTS

Coordinator(s): Alex Karl, Space Applications Services, Belgium; Alissa J. Haddad, Harvard University, United States;

E10.1. Planetary Defense from Asteroids and Comets

October 5 2023, 15:00 — HAC Hall B
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-23.E10.1.1
KEYNOTE: DART: LATEST RESULTS FROM THE DIMORPHOS IMPACT AND A LOOK FORWARD TO FUTURE PLANETARY DEFENSE INITIATIVES
Jason Kalirai, Johns Hopkins University Applied Physics Laboratory, United States

IAC-23.E10.1.2
MECHANICAL CHALLENGES, DESIGN AND ANALYSES OF THE HYPERSCOUT SPECTRAL IMAGER FOR THE PLANETARY DEFENCE MISSION HERA
James Harpur, Cosine Remote Sensing B.V., The Netherlands

IAC-23.E10.1.3
NANOSATELLITE MISSION TO NEAR-EARTH OBJECTS: AN OVERVIEW
Cristopher Alexander Ochoa Villanueva, Peru

IAC-23.E10.1.4
NEO DEFLECTION PERFORMANCE ANALYSIS OF A SMART CLOUD APPROACH
Yirui Wang, University of Strathclyde, United Kingdom

IAC-23.E10.1.5
CALCULATION AND EXPERIMENTAL VERIFICATION OF DRIVING FORCE FOR ABLATION OF IRREGULAR ASTEROID BY PULSED LASER
Ziheng Gong, Beijing Institute of Spacecraft Environment Engineering, China Academy of Space Technology (CAST), China

IAC-23.E10.1.6
UNDERSTANDING FAKE NEWS AND MISINFORMATION TO HELP INFORM AN EFFECTIVE SOCIAL MEDIA PLANETARY DEFENSE COMMUNICATION STRATEGY
Alex Karl, Space Applications Services, Belgium

E10.2. Informing Planetary Defense

October 6 2023, 13:45 — BCC A7
Co-Chair(s): Daniel Mazanek, NASA, United States; Alissa J. Haddad, Harvard University, United States; Rapporteur(s): Philipp Maier, Institute of Space Systems, University of Stuttgart, Germany;

IAC-23.E10.2.1
OBSERVING DART MISSION IMPACT MOMENT BY SHARJAH OPTICAL OBSERVATORY IN SUPPORT OF NASA’S DART MISSION
Mohammad Talafha, Sharjah Academy for Astronomy, Space Sciences and Technology (SAAST), United Arab Emirates

IAC-23.E10.2.2
THE ITALIAN MICROSATellite MISSION LICIACUBE: AN ENabler FOR INNOVATIVE STRATEGIES IN INTERPLANETARY EXPLORATION AND PLANETARY DEFENSE
Marianna Anzalone, Italian Space Agency (ASI), Italy
IAC-23.E10.2.4
A NOVEL ALGORITHM FOR AUTONOMOUS ASTROMETRIC MASS DETERMINATION OF ASTEROIDS.
Nicolo’ Stronati, Cranfield University, United Kingdom

IAC-23.E10.2.6
EXPERIMENTAL STUDY ON THE INTERACTION OF PULSED LASER ABLATION OF ASTEROIDS FOR PLANETARY DEFENSE
Zizheng Gong, Beijing Institute of Spacecraft Environment Engineering, China Academy of Space Technology (CAST), China

GTS. GLOBAL TECHNICAL SYMPOSIUM

Coordinator(s): Stephanie Wan, Space Generation Advisory Council (SGAC), United States; Seyed Ali Nasseri, Space Generation Advisory Council (SGAC), Canada;

GTS.2-B3.9. Human Spaceflight Global Technical Session

October 6 2023, 13:45 — BCC B5
Co-Chair(s): Guillaume Girard, Zero2infinity, Spain; Andrea Jaime, Isar Aerospace Technologies GmbH, Germany;

IAC-23.GTS.2-B3.9.6
FEASIBILITY STUDY FOR A COMMERCIAL SPACE STATION IN LOW EARTH ORBIT
Stirling Forbes, International Space University (ISU), France
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The International Astronautical Congress (IAC) is a major event in the space science conference calendar. The 74th edition of the congress was held in Baku, Azerbaijan from 2-6 October 2023. The event featured a variety of technical sessions, keynote speakers, special sessions, and interactive presentations. Participants included a diverse range of authors from around the world, covering topics from space science to technology and more. The list of authors includes names such as Pastor, Alice, Pastena, Massimiliano, Pasquali, Michele, Parikh, Nitekumar, Patelnia, Andrea, Pater, Rじa, Patek, Mary, Pater, Nihal, Pater, Zendai, Pater, Fred, Pater, Peter, and others.
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