

# 68<sup>th</sup> IAC

International Astronautical Congress

ADELAIDE, AUSTRALIA  
25 - 29 SEPTEMBER 2017

## TECHNICAL PROGRAMME

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At sea, on land and now in space, exciting new partnerships between France and South Australia are constantly being fostered to inspire shared enterprise and opportunity. And as the International Astronautical Congress and the IAF explore ways to shape the future of aeronautics and space research, you can be sure that South Australia will be there.

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## THE SKY IS THE LOWER LIMIT Booth #16



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Vision and perseverance are the launch pads of innovation. Boeing is proud to salute those who combine vision with passion to turn dreams into reality.



## GLAVKOSMOS TODAY

- |  |  |  |
|--|--|--|
| 1. Coordination of the international projects of ROSCOSMOS State Space Corporation   | 4. Turnkey solutions for Earth observation, telecommunications, space research and exploration | 8. Projects in manned spaceflights   |
| 2. Provision of Earth observation data from a Russian satellite constellation  | 5. Marketing research and analytics, training  | 9. Operating, through GK Launch Services, of Soyuz 2 commercial launches from Vostochny, Baikonur, and Plesetsk Space Centers    |
| 3. Integrated solutions in creating satellite systems of various application (design and production; launch; ground station; personnel training) | 6. Export control  | 10. Main Russian Subcontractor for Soyuz-ST commercial launches in the Guiana Space Center (South America, department of France) |
|  | 7. Export of Russian space equipment   |  |

مركز محمد بن راشد  
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MOHAMMED BIN RASHID SPACE CENTRE



# 71<sup>st</sup> IAC 2020

Dubai - United Arab Emirates  
Candidate City

Mohammed Bin Rashid Space Centre  
Host Organisation



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## 1 Welcome Messages

### Message from the IAF Vice President for Technical Activities

Welcome to the 68<sup>th</sup> International Astronautical Congress, taking place in Adelaide, Australia, in September 25-29, 2017. It is a great pleasure to introduce the exciting technical programme for this year's congress in which 1750 authors from 70 countries worldwide present their latest research, newest innovations, and vision for the future of space.

The highlights of IAC 2017 are: 179 technical sessions covering all the aspects of space, 13 keynote lectures, 1600 oral presentations, 400 interactive presentations, IP Award Ceremony and Student Competition.

Such an impressive lining up of presentations stands as a testimony for the trust the space community has developed over the years for IAC series. Thanks to all the members of the International Programme Committee, especially the Symposium Coordinators and Co-Chairs of the concerned Sessions who have done an excellent job of putting together such a rich, varied and unique technical programme.

We encourage you to take time to network with likeminded professionals, debate your science with colleagues and friends, and share the results of your work and to learn something new. We also thank all the authors who submitted their innovative work to IAC this year. Finally, we thank all IAC participants as we rely on you to make this event interactive, engaging, and thought provoking for everyone involved.



**Otto Koudelka**  
VP Technical Activities,  
International Astronautical Federation (IAF),  
Austria

### Welcome Message from the Chairs of the IAC Evolution Coordination Steering Group

Dear Colleagues,

Welcome to the 68<sup>th</sup> International Astronautical Congress!!! This year, we visit Australia, the 'Land Down Under,' for what promises to be one of the most interesting, innovative, and productive IAC's ever. Since we last met, the Cassini Mission has finished its spectacular 19-year mission, which included the descent of the ESA-provided Huygens probe to the surface of Titan. China launched their Tianzhou-1 Space Station resupply and logistics mission, and commercial space efforts continue to show progress with successful launches of SpaceX Falcon-9, RocketLab's launch of the Electron vehicle and more!

Australia is well known for its robust and diverse flora and fauna, and our Federation is no less robust, nor less diverse. From all corners of the world, and from many walks of life, we come together as a community of peaceful space exploration enthusiasts, participants, and professionals to share our accomplishments, to discuss our challenges, and to set a course for the future of our collaborative efforts. We will gather under the southern sky, to see the amazing Magellanic Clouds, the famous "Southern Cross" constellation, and Canopus, the second brightest star in the sky some 313 light years from Earth, and with a luminosity of more than 10,000 suns. And while we enjoy the exciting view of space above, we are certain to have an equally exciting view here in Adelaide of our many activities in space which unlock our imagination, foster new and useful innovations, and make the planet a safer and more sustainable home for us and those who follow.

Welcome and enjoy!



**John Horack**  
Special Adviser to the IAF President for the IAF  
Global Innovation Agenda 2016-2019,  
United States



**Clay Mowry**  
VP for Financial Matters and IAC  
Evolution, International Astronautical  
Federation (IAF),  
United States

## 2 Information

### 2.1 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 68<sup>th</sup> IAC. You can still update your manuscripts through the IAF platform: [www.iafastro.net](http://www.iafastro.net) and multimedia presentations with the latest developments 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.

### 2.2 Congress Proceedings

The IAC 2017 proceedings are available on a password protected site.

The Congress participants will be provided on 25<sup>th</sup> September with a link and online password to login and access the congress proceedings.

If you did not receive the password, please contact : [support@iafastro.org](mailto:support@iafastro.org)

Please note: the congress proceedings contain only those papers that were submitted for publication by congress presenters and may not contain all papers presented at the congress.

IAC papers will be indexed in the largest cited reference enhanced multidisciplinary databases: Elsevier's SCOPUS and Compendex.

### 2.3 Speaker Preparation Room

**Location:** Adelaide Convention Centre, Hall L

Authors who missed the deadline for presentation submission (14<sup>th</sup> September) 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.

**Opening hours:**

Sunday 24 September, 14:00-18:00

Monday 25 September - Thursday 28 September, 08:30-18:00

Friday 29 September, 08:30-13:00

### 2.4 Certificates of Attendance and Presentation

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

## 2.5 Acta Astronautica

Chairpersons/Rapporteurs of IAC Technical Sessions can preselect from their session a few high quality papers (up to 2 or 3 each session) for inclusion in the peer reviewing as a regular article of the Acta Astronautica (AA) Journal.

Questions about Acta Astronautica can be addressed to the International Academy of Astronautics:

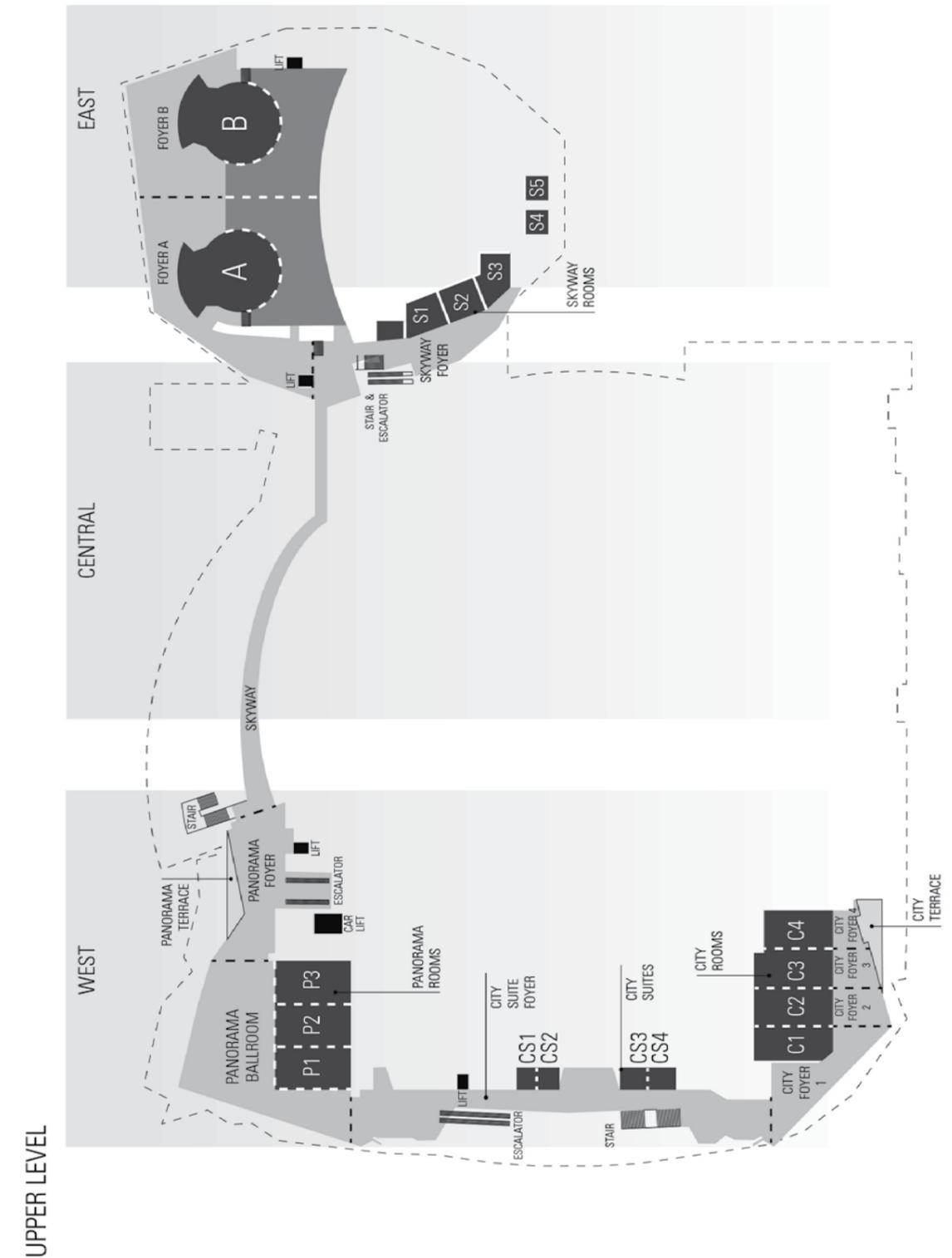
Rock Jeng-Shing Chern, Editor-in-Chief: [editor-in-chief@iaamail.org](mailto:editor-in-chief@iaamail.org)

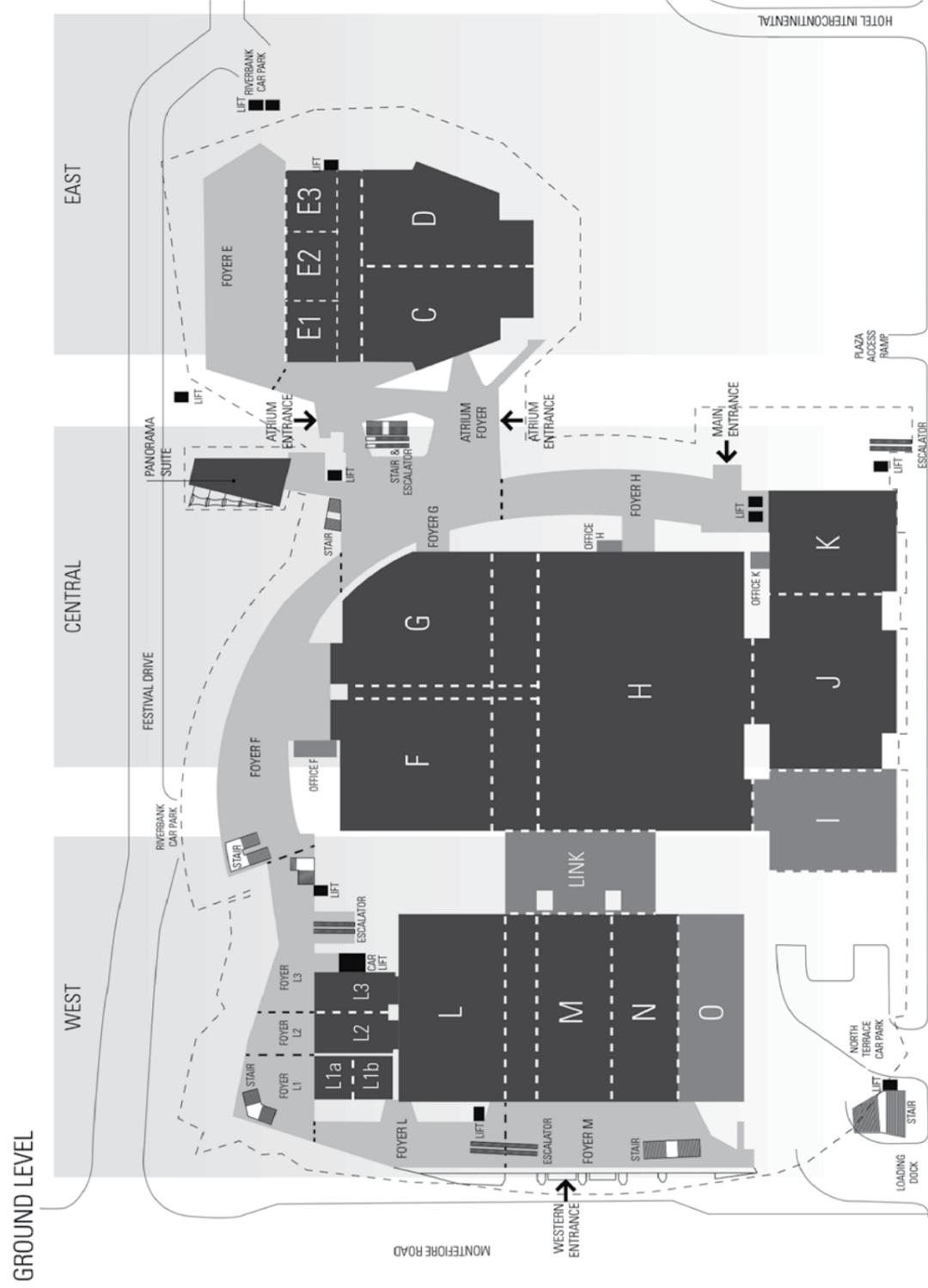
Eva Yi-Wei Chang, Managing Editor: [managing-editor@iaamail.org](mailto:managing-editor@iaamail.org)

## 2.6 Contact

For any queries about the Technical Programme please contact the IAF Secretariat at [support@iafastro.org](mailto:support@iafastro.org)

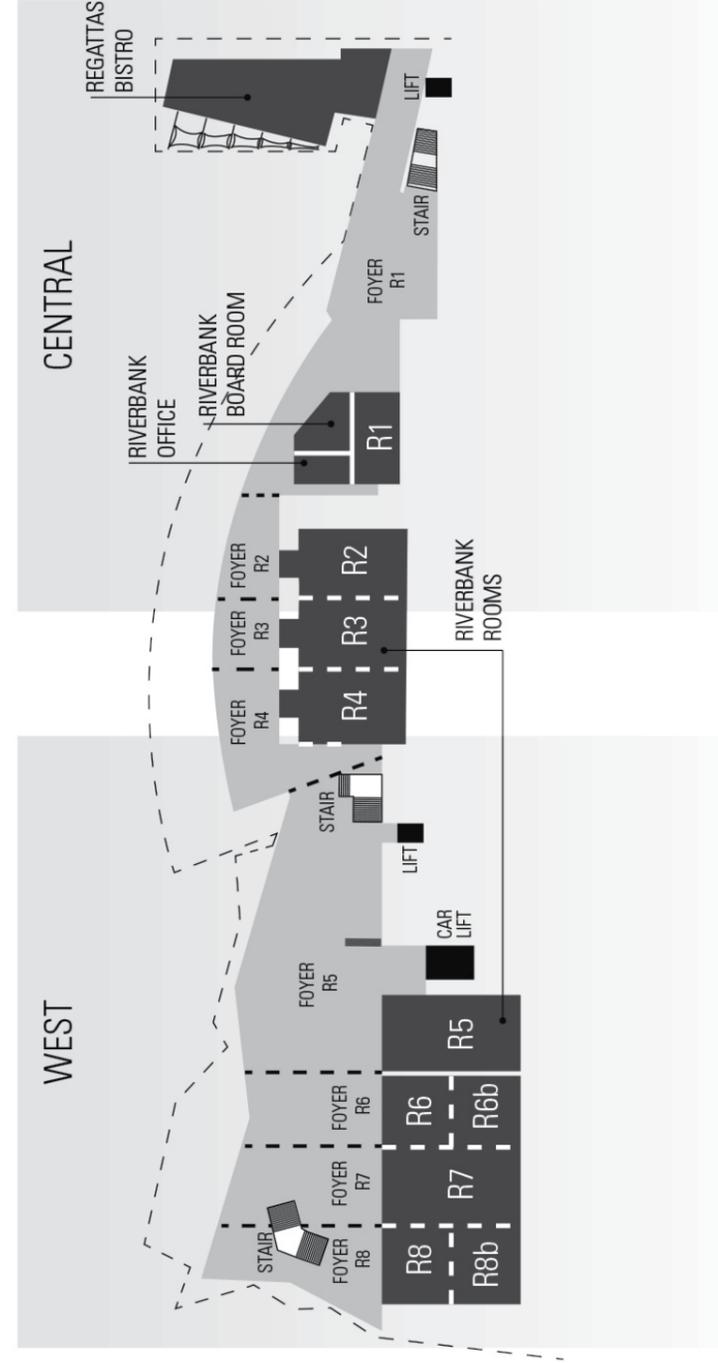
## 2.7 Congress Venue Floor Plans



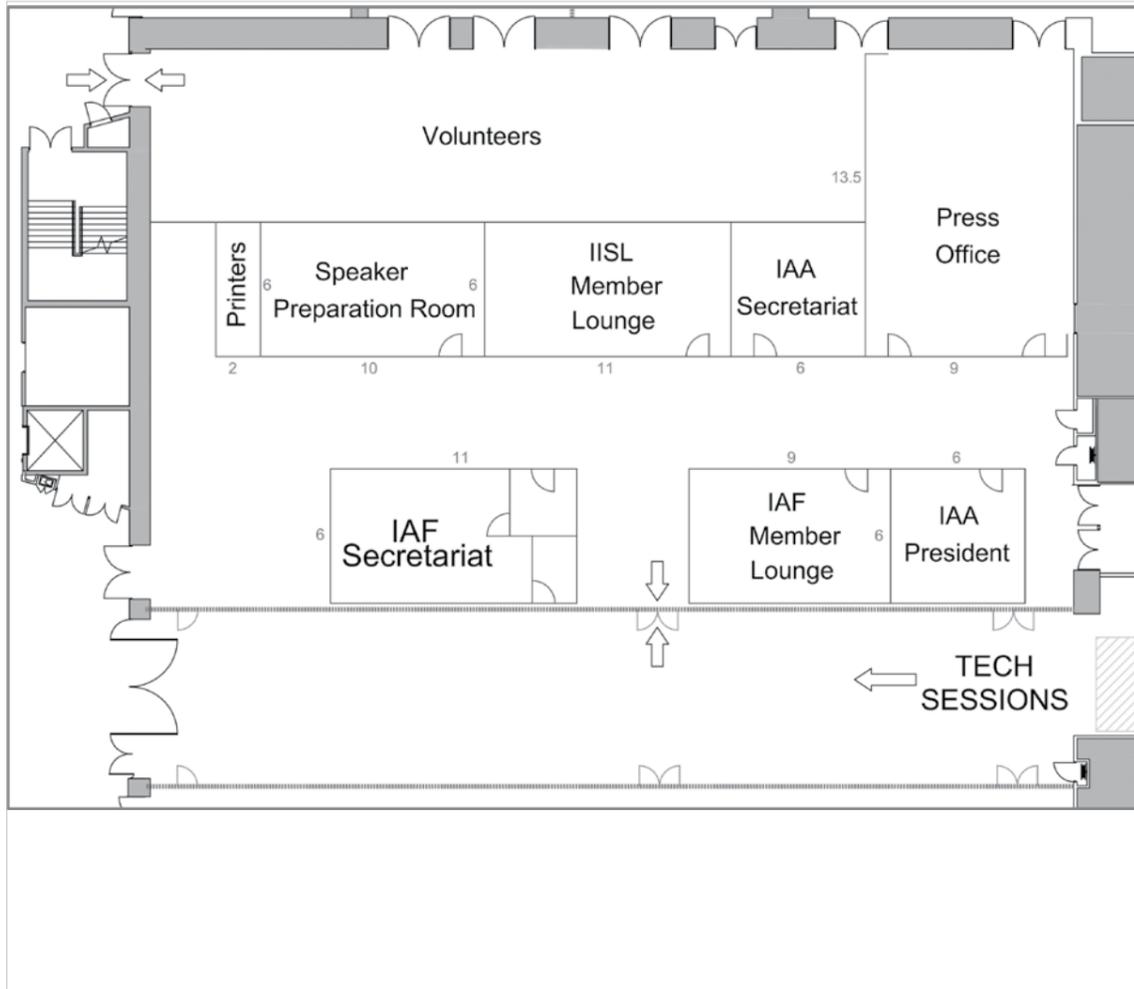


GROUND LEVEL

LOWER LEVEL



## Hall L



## 3 Technical Sessions

### 3.1 Technical Session at a Glance

Time / Room (Monday - Thursday)	2017-09-25 15:15-18:15	2017-09-26 09:45-12:45	2017-09-26 14:45-17:45	2017-09-26 09:45-12:45	2017-09-27 14:45-17:45	2017-09-27 09:45-12:45	2017-09-28 09:45-12:45	2017-09-28 14:45-17:45	2017-09-29 09:00-11:00	2017-09-29 11:00-13:00
Hall N	A3.1	A3.2A	A3.2B	A3.3A	A3.3B	A3.3A	A3.4A	A3.5	A3.2C	A3.4B
Hall O	D2.1	D2.2	D2.7	D2.3	D2.4	D2.5	D2.5	D2.6	D2.8/A5.4	D6.2/D2.9
Hall A	C1.1	C1.2	C1.3	C1.4	C1.5	C1.6	C1.6	C1.7	C1.8	C1.9
Hall E1	A6.1	A6.2	A6.4	A6.3	A6.9	A6.5	A6.5	A6.6	A6.7	A6.8
Panorama Room 1	B4.2	B4.1	B4.3	B4.4	B4.5	B4.6A	B4.6A	B4.6B	B4.8	B4.7
Hall E2	B1.1	B1.2	A5.2	B1.3	A5.1	B1.6	B1.6	B1.5	B1.4	B4.10/A6.10
City Room 3	B3.1	B3.2	B3.3	B3.4/B6.5	C3.3	B3.5	B3.5	B3.6/A5.3	B3.7	B3.8/E7.7
Hall E3	C4.1	C4.2	C4.9	C4.3	C4.4	C4.5	C4.5	C4.6	C4.7/C3.5	C4.8/B4.5A
Panorama Room 2	C2.1	C2.2	C2.3	C2.4	C2.5	C2.5	C2.6	C2.7	C2.8	C2.9
City Room 1	C3.1	C3.2	E5.1	E5.2	E5.3	E5.4	E5.4	E5.5	B6.3	E8.1
City Room 2	A1.1	A1.2	A1.3	A1.4	A1.5	A1.6	A1.6	C3.4	A1.7	A1.8
Panorama Room 3	E1.6	E1.3	E1.4	E1.8	E1.5	E1.7	E1.7	E1.9	E1.1	E1.2
Riverbank 3	D1.1	E6.1	D1.2	D1.3	D1.4A	D1.4B	D1.4B	D4.3	D1.5	D1.6
Meeting Room L2	E4.1	E7.1	E7.2	E7.3	E7.4	E4.3A	E4.3A	E4.2	E7.5	E4.3B
Meeting Room L3	B2.1	B2.2	B2.3	B2.4	B2.5	B2.6	B2.6	B5.2	B5.1	B2.7
City Room 4	B6.1	E3.1	E3.2	E3.3	E3.4	E3.5/E7.6	E3.5/E7.6	B6.2	E3.6	C4.10
Hall B	A2.1	A2.2	A4.1	A2.3	A2.4	A4.2	A4.2	A2.5	A2.6	A2.7
Riverbank 5	A7.1	A7.2	E6.2	D5.1	E6.3	D5.2	D5.2	D5.3	D5.4	A7.3
Riverbank 4	D4.1	D3.1	E2.1	D3.2	D4.2	D3.4	D3.4	D3.3	D4.5	D4.4
Riverbank 2	E2.3/GTS.4	D6.1	B4.9/GTS.5	E2.2	B3.9/GTS.2	D6.3	B2.8/GTS.3	B2.8/GTS.3	E2.4	

Category A Science & Exploration A1-> A8  
 Category B Applications & Operations B1-> B6  
 Category C Technology C1-> C4  
 Category D Infrastructure D1-> D6  
 Category E Space and Society E1-> E8



## 3.2 Technical Sessions per Day

### Monday, 25 September

#### Start time: 15:15 Technical Sessions

No	Description	Room
A2.1	Gravity and Fundamental Physics	Hall B
A3.1	Space Exploration Overview	Hall N
A6.1	Measurements	Hall E1
A7.1	Space Agency Strategies and Plans	Riverbank 5
B1.1	International Cooperation in Earth Observation Missions	Hall E2
B2.1	Advanced Space Communications and Navigation Systems	Meeting Room L3
B3.1	Governmental Human Spaceflight Programs (Overview)	City Room 3
B4.2	Small Space Science Missions	Panorama Room 1
B6.1	Ground Operations - Systems and Solutions	City Room 4
C1.1	Attitude Dynamics (1)	Hall A
C2.1	Space Structures I - Development and Verification (Space Vehicles and Components)	Panorama Room 2
C3.1	Space-Based Solar Power Architectures / Space & Energy Concepts	City Room 1
C4.1	Propulsion System (1)	Hall E3
D1.1	Innovative and Visionary Space Systems	Riverbank 3
D2.1	Launch Vehicles in Service or in Development	Hall O
D4.1	Innovative Concepts and Technologies	Riverbank 4
E1.6	Calling Planet Earth - Space Outreach to the General Public	Panorama Room 3
E2.3-GTS.4	Student Team Competition	Riverbank 2
E4.1	Memoirs & organisational histories	Meeting Room L2

### Tuesday, 26 September

#### Start time: 09:45 Technical Sessions

No	Description	Room
A1.2	Human Physiology in Space	City Room 2
A2.2	Fluid and Materials Sciences	Hall B
A3.2A	Moon Exploration – Part 1	Hall N
A6.2	Modelling and Risk Analysis	Hall E1
A7.2	Science Goals and Drivers for Future Exoplanet, Space Astronomy, Physics, and Outer Solar System Science Missions	Riverbank 5
B1.2	Future Earth Observation Systems	Hall E2
B2.2	Fixed and Broadcast Communications	Meeting Room L3
B3.2	Commercial Human Spaceflight Programs	City Room 3
B4.1	18 <sup>th</sup> Workshop on Small Satellite Programmes at the Service of Developing Countries	Panorama Room 1

C1.2	Attitude Dynamics (2)	Hall A
C2.2	Space Structures II - Development and Verification (Deployable and Dimensionally Stable Structures)	Panorama Room 2
C3.2	Wireless Power Transmission Technologies, Experiments and Demonstrations	City Room 1
C4.2	Propulsion System (2)	Hall E3
D2.2	Launch Services, Missions, Operations, and Facilities	Hall O
D3.1	Strategies & Architectures as the Framework for Future Building Blocks in Space Exploration and Development	Riverbank 4
D6.1	Commercial Space Flight Safety and Emerging Issues	Riverbank 2
E1.3	On Track - Undergraduate Space Education	Panorama Room 3
E3.1	International Cooperation - a cornerstone of 50 years UN Space Law and space diplomacy	City Room 4
E6.1	New space individuals, projects, programs, or business units: innovation, entrepreneurship & investment at the microscopic level of analysis	Riverbank 3
E7.1	9 <sup>th</sup> Nandasiri Jasentuliyana Keynote Lecture on Space Law and Young Scholars Session	Meeting Room L2

#### Start time: 14:45 Technical Sessions

No	Description	Room
A1.3	Medical Care for Humans in Space	City Room 2
A3.2B	Moon Exploration – Part 2	Hall N
A4.1	SETI 1: SETI Science and Technology	Hall B
A5.2	Human Exploration of Mars	Hall E2
A6.4	Mitigation and Standards	Hall E1
B2.3	Mobile Satellite Communications and Navigation Technology	Meeting Room L3
B3.3	Utilization & Exploitation of Human Spaceflight Systems	City Room 3
B4.3	Small Satellite Operations	Panorama Room 1
B4.9-GTS.5	Small Satellite Missions Global Technical Session	Riverbank 2
C1.3	Guidance, Navigation & Control (1)	Hall A
C2.3	Space Structures - Dynamics and Microdynamics	Panorama Room 2
C4.9	Hypersonic Air-breathing and Combined Cycle Propulsion	Hall E3
D1.2	Space Systems Architectures	Riverbank 3
D2.7	Small Launchers: Concepts and Operations	Hall O
E1.4	In Orbit - Postgraduate Space Education	Panorama Room 3
E2.1	Student Conference - Part 1	Riverbank 4
E3.2	Private Endeavour in Space Exploration	City Room 4
E5.1	Architecture for humans in space: design, engineering, concepts and mission planning	City Room 1
E6.2	New space industry segments, firms, actor groups, and multiple programs: innovation, entrepreneurship & investment at the mesoscopic level of analysis	Riverbank 5
E7.2	'NewSpace', New Laws/ How governments can foster new space activities	Meeting Room L2



## Wednesday, 27 September

### Start time: 09:45 Technical Sessions

No	Description	Room
A1.4	The International Space Station in LEO and the Deep Space Habitat in Cis- Lunar Space as platforms for simulated Mars voyages	City Room 2
A2.3	Microgravity Experiments from Sub-Orbital to Orbital Platforms	Hall B
A3.3A	Mars Exploration – missions current and future	Hall N
A6.3	Hypervelocity Impacts and Protection	Hall E1
B1.3	Earth Observation Sensors and Technology	Hall E2
B2.4	Advanced Satellite Services	Meeting Room L3
B3.4-B6.5	Flight & Ground Operations of HSF Systems (A Joint Session of the Human Spaceflight and Space Operations Symposia)	City Room 3
B4.4	Small Earth Observation Missions	Panorama Room 1
C1.4	Guidance, Navigation & Control (2)	Hall A
C2.4	Advanced Materials and Structures for High Temperature Applications	Panorama Room 2
C4.3	Propulsion Technology (1)	Hall E3
D1.3	Technologies to Enable Space Systems	Riverbank 3
D2.3	Upper Stages, Space Transfer, Entry and Landing Systems	Hall O
D3.2	Systems and Infrastructures to Implement Future Building Blocks in Space Exploration and Development	Riverbank 4
D5.1	Safety and Quality for "Low Cost" Space Programs	Riverbank 5
E1.8	Hands-on Space Education and Outreach	Panorama Room 3
E2.2	Student Conference - Part 2	Riverbank 2
E3.3	The Demand Side of the Space Economic Equation: Understanding and Evaluating the Changing Market Dynamics in Space Activities	City Room 4
E5.2	Models for Successfully Applying Space Technology Beyond Its Original Intent	City Room 1
E7.3	Refugees and the role of space communications/Status and Practice of Charter for Man-made Disasters	Meeting Room L2

### Start time: 14:45 Technical Sessions

No	Description	Room
A1.5	Radiation Fields, Effects and Risks in Human Space Missions	City Room 2
A2.4	Science Results from Ground Based Research	Hall B
A3.3B	Mars Exploration – Science, Instruments and Technologies	Hall N
A5.1	Human Exploration of the Moon and Cislunar Space	Hall E2
A6.9	Orbit Determination and Propagation	Hall E1
B2.5	Space-Based Navigation Systems and Services	Meeting Room L3
B3.9-GTS.2	Human Spaceflight Global Technical Session	Riverbank 2
B4.5	Access to Space for Small Satellite Missions	Panorama Room 1
C1.5	Guidance, Navigation & Control (3)	Hall A
C2.5	Smart Materials and Adaptive Structures	Panorama Room 2
C3.3	Advanced Space Power Technologies and Concepts	City Room 3
C4.4	Electric Propulsion	Hall E3
D1.4A	Space Systems Engineering - Methods, Processes and Tools (1)	Riverbank 3
D2.4	Future Space Transportation Systems	Hall O

D4.2	Contribution of Space Activities to Solving Global Societal Issues	Riverbank 4
E1.5	Enabling the Future - Developing the Space Workforce	Panorama Room 3
E3.4	Assuring a Safe, Secure and Sustainable Space Environment for Space Activities	City Room 4
E5.3	Contemporary Arts Practice and Outer Space: A Multi-Disciplinary Approach	City Room 1
E6.3	New space at the national, international, and overall industry levels: innovation, entrepreneurship & investment at the macroscopic level of analysis	Riverbank 5
E7.4	Space law Developments in Asia-Pacific: Diverging national space legislation with regard to the applicability of space law to suborbital flights	Riverbank 3

## Thursday, 28 September

### Start time: 09:45 Technical Sessions

No	Description	Room
A1.6	Astrobiology and Exploration	City Room 2
A3.4A	Small Bodies Missions and Technologies (Part 1)	Hall N
A4.2	SETI 2: SETI and Society	Hall B
A6.5	Space Debris Removal Issues	Hall E1
B1.6	Big Data, Data Cubes and new platforms to exploit large-scale, multi-temporal EO Data	Hall E2
B2.6	Near-Earth and Interplanetary Communications	Meeting Room L3
B3.5	Astronaut Training, Accommodation, and Operations in Space	City Room 3
B4.6A	Generic Technologies for Small/Micro Platforms	Panorama Room 1
C1.6	Mission Design, Operations & Optimization (1)	Hall A
C2.6	Space Environmental Effects and Spacecraft Protection	Panorama Room 2
C4.5	Propulsion Technology (2)	Hall E3
D1.4B	Space Systems Engineering - Methods, Processes and Tools (2)	Riverbank 3
D2.5	Technologies for Future Space Transportation Systems	Hall O
D3.4	Space Technology and System Management Practices and Tools	Riverbank 4
D5.2	Knowledge management and collaboration in space activities	Riverbank 5
D6.3	Enabling safe commercial spaceflight: vehicles and spaceports	Riverbank 2
E1.7	New Worlds - Non-Traditional Space Education and Outreach	Panorama Room 3
E4.3A	History of Australia's Contribution to Astronautics	Meeting Room L2
E5.4	Space Assets and Disaster Management	City Room 1
E7.6-E3.5	32 <sup>nd</sup> Joint IAA/IISL Round Table: Technological and legal challenges for on-orbit servicing	City Room 4

### 13:15 - 14:45 Interactive Presentations Session

Location: Adelaide Convention Centre - Halls J & K2

No	Description	Room
A1.IP	SPACE LIFE SCIENCES SYMPOSIUM	Hall J&K2
A2.IP	MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM	Hall J&K2
A3.IP	SPACE EXPLORATION SYMPOSIUM	Hall J&K2



WELCOME MESSAGE

INFORMATION

TECHNICAL SESSIONS

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A5.IP	20 <sup>th</sup> IAA SYMPOSIUM ON HUMAN EXPLORATION OF THE SOLAR SYSTEM	Hall J&K2
A6.IP	15 <sup>th</sup> IAA SYMPOSIUM ON SPACE DEBRIS	Hall J&K2
A7.IP	SYMPOSIUM ON FUTURE SPACE ASTRONOMY AND SOLAR-SYSTEM SCIENCE MISSIONS	Hall J&K2
B1.IP	EARTH OBSERVATION SYMPOSIUM	Hall J&K2
B2.IP	SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM	Hall J&K2
B3.IP	HUMAN SPACEFLIGHT SYMPOSIUM	Hall J&K2
B6.IP	SPACE OPERATIONS SYMPOSIUM	Hall J&K2
C1.IP	ASTRODYNAMICS SYMPOSIUM	Hall J&K2
C2.IP	MATERIALS AND STRUCTURES SYMPOSIUM	Hall J&K2
C3.IP	SPACE POWER SYMPOSIUM	Hall J&K2
C4.IP	SPACE PROPULSION SYMPOSIUM	Hall J&K2
D1.IP	SPACE SYSTEMS SYMPOSIUM	Hall J&K2
D2.IP	SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM	Hall J&K2
D3.IP	15 <sup>th</sup> IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT	Hall J&K2
E1.IP	SPACE EDUCATION AND OUTREACH SYMPOSIUM	Hall J&K2
E3.IP	30 <sup>th</sup> IAA SYMPOSIUM ON SPACE POLICY, REGULATIONS AND ECONOMICS	Hall J&K2
E5.IP	28 <sup>th</sup> IAA SYMPOSIUM ON SPACE AND SOCIETY	Hall J&K2
E6.IP	BUSINESS INNOVATION SYMPOSIUM	Hall J&K2
E7.IP	60 <sup>th</sup> IISL COLLOQUIUM ON THE LAW OF OUTER SPACE	Hall J&K2

### Start time: 14:45 Technical Sessions

No	Description	Room
A2.5	Facilities and Operations of Microgravity Experiments	Hall B
A3.5	Solar System Exploration	Hall N
A6.6	Space Debris Removal Concepts	Hall E1
B1.5	Earth Observation Applications and Economic Benefits	Hall E2
B2.8-GTS.3	Space Communications and Navigation Global Technical Session	Riverbank 2
B3.6-A5.3	Human and Robotic Partnerships in Exploration - Joint session of the Human Spaceflight and Exploration Symposia	City Room 3
B4.6B	Generic Technologies for Nano/Pico Platforms	Panorama Room 1
B5.2	Integrated Applications End-to-End Solutions	Meeting Room L3
B6.2	New Space Operations Concepts and Advanced Systems	City Room 4
C1.7	Mission Design, Operations & Optimization (2)	Hall A
C2.7	Space Vehicles – Mechanical/Thermal/Fluidic Systems	Panorama Room 2
C3.4	Small and Very Small Advanced Space Power Systems	City Room 2
C4.6	New Missions Enabled by New Propulsion Technology and Systems	Hall E3
D2.6	Future Space Transportation Systems Verification and In-Flight Experimentation	Hall O
D3.3	Novel Concepts and Technologies to Enable Future Building Blocks in Space Exploration and Development	Riverbank 4
D4.3	Conceptualizing Space Elevators and Tethered Satellites	Riverbank 3
D5.3	Prediction, Measurement and Effects of space environment on space missions	Riverbank 5
E1.9	Space Culture – Public Engagement in Space through Culture	Panorama Room 3
E4.2	Scientific & technical histories	Meeting Room L2
E5.5	Space Societies, Professional Associations and Museums	City Room 1

## Friday, 29 September

### Start time: 09:00 Technical Sessions

No	Description	Room
A1.7	Life Support, habitats and EVA Systems	City Room 2
A2.6	Microgravity Sciences Onboard the International Space Station and Beyond - Part 1	Meeting Room L1 (a&b)
A3.2C	Moon Exploration – Part 3	Hall N
A5.4-D2.8	Joint-session: Space Transportation Solutions for Deep Space Missions	Hall O
A6.7	Operations in Space Debris Environment, Situational Awareness	Hall E1
B1.4	Earth Observation Data Management Systems	Hall E2
B3.7	Advanced Systems, Technologies, and Innovations for Human Spaceflight	City Room 3
B4.8	Small Spacecraft for Deep-Space Exploration	Panorama Room 1
B5.1	Tools and Technology in Support of Integrated Applications	Meeting Room L3
B6.3	Mission Operations, Validation, Simulation and Training	City Room 1
C1.8	Orbital Dynamics (1)	Riverbank 6 (a&b)
C2.8	Specialised Technologies, Including Nanotechnology	Panorama Room 2
C4.7-C3.5	Joint Session on Advanced and Nuclear Power and Propulsion Systems	Hall E3
D1.5	Lessons Learned in Space Systems: Achievements, Challenges, Best Practices, Standards.	Riverbank 3
D2.8-A5.4	Space Transportation Solutions for Deep Space Missions	Hall O
D4.5	Space Mineral Resources, Asteroid Mining and Lunar/Mars insitu	Riverbank 4
D5.4	Cyber-security threats to space missions and countermeasures to address them	Riverbank 5
E1.1	Ignition - Primary Space Education	Panorama Room 3
E2.4	Educational Pico and Nano Satellites	Riverbank 2
E3.6	Strategic Risk Management for successful space programmes	City Room 4
E7.5	Current Developments in Space Law	Meeting Room L2

### Start time: 11:00 Technical Sessions

No	Description	Room
A1.8	Biology in Space	City Room 2
A2.7	Microgravity Sciences Onboard the ISS and Beyond	Meeting Room L1 (a&b)
A3.4B	Small Bodies Missions and Technologies (Part 2)	Hall N
A6.10-B4.10	Joint Small Satellite/Space Debris Session to promote the long-term sustainability of space	Hall E2
A6.8	Policy, Legal, Institutional and Economic Aspects of Space Debris Detection, Mitigation and Removal (joint session with Space Security Committee)	Hall E1
A7.3	Technology Needs for Future Missions, Systems, and Instruments	Riverbank 5
B2.7	Advanced Technologies for Space Communications and Navigation	Meeting Room L3
B4.7	Highly Integrated Distributed Systems	Panorama Room 1
C1.9	Orbital Dynamics (2)	Riverbank 6 (a&b)
C2.9	Advancements in Materials Applications and Rapid Prototyping	Panorama Room 2
C4.10	Propulsion Technology (3)	City Room 4
C4.8-B4.5A	Joint Session between IAA and IAF for Small Satellite Propulsion Systems	Hall E3



D1.6	Cooperative and Robotic Space Systems	Riverbank 3
D2.9-D6.2	Joint-Session Creating Safe Transportation Systems for Sustainable Commercial Human Spaceflight	Hall O
D4.4	Strategies for Rapid Implementation of Interstellar Missions: Precursors and Beyond	Riverbank 4
E1.2	Lift Off - Secondary Space Education	Panorama Room 3
E4.3B	"Can you believe they put a man on the Moon?"	Meeting Room L2
E7.7-B3.8	Joint IAF/IISL Session on Legal Framework for Collaborative Space Activities	City Room 3
E8.1	Multilingual Astronautical Terminology	City Room 1

## 4 Keynote Speakers

### 25 SEPTEMBER 2017

E1	SPACE EDUCATION AND OUTREACH SYMPOSIUM	Date	Time	Room
	<b>Session: 6</b> – Calling Planet Earth – Space Outreach to the General Public	2017-09-25	15:15	Panorama Room 3



**Lynn Cominsky**

Professor and Chair, Department of Physics and Astronomy Director, SSU Education and Public Outreach Group Sonoma State University

**KEYNOTE: Building the STEM Pipeline with Rockets, UAVs and CubeSats**

**Biography:**

Lynn Cominsky is the Chair of the Physics and Astronomy Department at Sonoma State University (SSU), and the founder and director of SSU's Education and Public Outreach Group, which develops educational materials for NASA, NSF and the US Department of Education. She is a Fellow of the California Council on Science and Technology, the American Physical Society, the American Association for the Advancement of Science and the California Academy of Sciences. Recent individual awards include the 2014 Aerospace Awareness award from the Women in Aerospace organization, the 2015 Sally Ride Excellence in Education Award from the American Astronautical Society, the 2016 Education Prize from the American Astronomical Society, and the 2016 Wang Family Excellence Award from the California State University.

**Abstract:**

Prof. Lynn Cominsky will discuss educational innovations that use rockets, drones and satellites to integrate science, technology, engineering and mathematics for students in grades 6-14. Through NASA-funded programs, under-represented California high school and community college students have built experimental payloads that are launched on rockets and/or flown on unmanned aerial vehicles (UAVs). In 2013, Cominsky's undergraduate physics students built and successfully operated their first CubeSat, T-LogoQube, in partnership with students from Morehead State University in Kentucky. Through NASA's Undergraduate Student Instrumentation Project, the Sonoma State University small satellite program continues, with a second CubeSat currently under construction. Following an anticipated launch in 2018, "EdgeCube" will be able to test the use of the "red edge" – a chlorophyll transition in the near-infrared - to make global measurements of the health of the Earth's vegetation.

C3	SPACE POWER	Date	Time	Room
	<b>Session: 1</b> – Space-Based Solar Power Architectures / Space & Energy Concepts	2017-09-25	15:15	City Room 1



**John C. Mankins**

Chief Operating Office, ARTEMIS Innovation Management Solutions, LLC, United States

**KEYNOTE: Implications of Advances in Hyper-Modular Space Solar Power Architectures for Terrestrial Energy and the Development & Settlement of Space**

**Biography:**

John C. Mankins, President of Artemis Innovation Management Solutions LLC is an internationally recognized leader in space systems and technology innovation, and as a highly effective manager of large-scale technology R&D programs. He holds undergraduate (Harvey Mudd College) and graduate (UCLA) degrees in Physics and an MBA in Public Policy Analysis (The Drucker School at Claremont Graduate University). Mr. Mankins is a member of the International Academy of Astronautics (IAA) and Chair of the Academy Commission III (Space Systems and Technology Development); and a member of the International Astronautical Federation (IAF), the American Institute of Aeronautics and Astronautics (AIAA), and the Sigma Xi Research Society. Mr. Mankins is an accomplished communicator, including political, programmatic, technical and lay audiences. He has authored or co-authored more than 80 published papers, reports and other technical documents, and has testified before Congress on several occasions, and has been consulted on R&D management and space issues with organizations in the U.S. and internationally.

C4	SPACE PROPULSION	Date	Time	Room
	<b>Session: 1 – Propulsion System (1)</b>	2017-09-25	15:15	Hall E3



**Dayong Zheng**  
Deputy Director,  
Beijing Aerospace Propulsion Institute (BAPI),  
China

**KEYNOTE: Development Status of the Cryogenic Oxygen/Hydrogen YF-77 Engine for Long-March 5**

**Biography:**  
Dayong Zheng, an experienced expert in aerospace propulsion, was born on August, 1978. Mr. Zheng earned a master degree of aeronautics propulsion from Nanjing University of Aeronautics and Astronautics in 2005 and then began his career in Beijing Aerospace Propulsion Institute (BAPI). He began his duty as a system designer of Chinese first high-thrust cryogenic engine, YF-77 in 2005. In 2015, Mr. Zheng was assigned as the deputy director of the Main Propulsion Division and lead a professional team to advance the missions and goals of China's space program. During his career in BAPI, Mr. Zheng has also committed himself to development of cleaner, reusable and low cost space propulsion technology. Because of his earnest support and permanent endeavor to the project, one 60-ton LOX/Methane reusable engine has been successfully developed and demonstrated over 2170 seconds and 17 mission cycles in 2016.

## 26 SEPTEMBER 2017

E7	60 <sup>th</sup> IISL COLLOQUIUM ON THE LAW OF OUTER SPACE	Date	Time	Room
	<b>Session: 1 – 9<sup>th</sup> Nandasiri Jasentuliyana Keynote Lecture on Space Law and Young Scholars Session</b>	2017-09-26	09:45	Meeting Room L2



**Peter Jankowitsch**  
President,  
International Academy of Astronautics (IAA),  
Austria

**KEYNOTE: The Outer Space Treaty – Its First Fifty Years**

**Biography:**  
Dr. Peter Jankowitsch has represented Austria in a number of capacities with multiple organizations, participating in high-level advisory and policy bodies. Notably, he was Permanent Representative to the United Nations (New York), the OECD and ESA in the Austrian Foreign Service; the Austrian Minister of Foreign Affairs; and member of the Austrian Parliament. While Chair of UN COPUOS (1972–1991), several of the UN space treaties as well as some of the Principles on state activities in space were adopted. An Honorary Board Member of the IISL, he is also a commander of the Legion d'Honneur and the recipient of numerous other awards.

**Abstract:**  
The 50<sup>th</sup> anniversary of the conclusion of the Outer Space Treaty, an innovative and creative projection of cardinal principles of international law into Outer Space, requires a broad examination of its overall achievements as well as its shortcomings, seen against the spectacular scientific and technological advances in the exploration and uses of Outer Space. How well it has withstood the test of time can best be gauged from the extent to which its main principles have been respected by its numerous states parties. The Treaty's roles and functions must also be evaluated against a proliferation of other, softer forms of space law, now seeming to be preferred by most space-faring nations, from non-binding UN GA Resolutions to national space legislation. Space Traffic Management serves as an example for the need to inject principles of the Treaty into future international and/or national regulatory mechanisms, absent a real international regime as a Protocol or amendment to the current Outer Space Treaty. The question finally arises whether the United Nations, as the single law-making body in space law, will use this anniversary to strengthen and modernize the law of Outer Space when, later this year, the General Assembly will discuss a draft resolution on the 50<sup>th</sup> anniversary of the Outer Space Treaty.

B4	24 <sup>th</sup> IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS	Date	Time	Room
	<b>Session: 9-GTS.5 – Small Satellite Missions Global Technical Session</b>	2017-09-26	14.45	Riverbank 2



**Pierre Molette**  
Engineer,  
International Academy of Astronautics (IAA),  
France

**KEYNOTE: Small satellites: an initiative and a continuous support by the IAA**

**Biography:**  
Retired from Astrium, he has completed all his career at ESA and in the space industry (Matra-Astrium). A system engineer, he contributed to the development of the first European communication satellites and of the follow-on Eurostar platforms and communication satellite projects. He contributed to the development of the Ariane launcher and has been involved in manned space systems development and utilisation. He has also had a continuous interest in quality of programmes and organisations. He is Member of the International Academy of Astronautics and Fellow Member of the French 3AF (Association Aéronautique et Astronautique de France)

**Abstract:**  
The paper presents the early contribution of the International Academy of Astronautics (IAA) to promote the concept, development and use of small satellites. Several meetings and workshops held in the early 90's have led the Academy to initiate a strong support to the development and use of small satellites. For instance the Academy provided contributions to a meeting of the Scientific and Technical Committee of the United Nations COPUOS (Committee for the Peaceful Utilization of Outer Space) in 1996, and to the United Nations Space Conference UNISPACE III in 1997-1999. Important aspects raised in these contributions will be recalled: access to advanced technology; development of space missions in science or applications such as communications or remote sensing; hands-on training; fostering of international cooperation. Two decades later these are still valuable guidelines for the development and use of small satellites.

C4	SPACE PROPULSION	Date	Time	Room
	<b>Session: 2 – Propulsion System (2)</b>	2017-09-26	09:45	Hall E3



**Vasily Novozhilov**  
Director of the Centre for Environmental Safety and Risk Engineering (CESARE),  
University of Victoria,  
Australia

**KEYNOTE: Boris Novozhilov: Life and Contribution to the Physics of Combustion**

**Biography:**  
Professor Vasily Novozhilov is a Director of the Centre for Environmental Safety and Risk Engineering (CESARE) at Victoria University, Australia. His research expertise is in the areas of Fire Safety Science, Combustion, Heat Transfer, Computational Fluid Dynamics, and Applied Mathematics. Prof. Novozhilov held research and academic appointments at the Institute for Problems in Mechanics (Russian Academy of Sciences), University of Sydney, Nanyang Technological University, University of Ulster. He contributed over 130 technical publications, delivered a number of keynote and invited presentations, is a recipient of a number of international awards as well as an Editorial Board member of several leading international journals. Major research achievements of Prof. Novozhilov are related to development of analytical and comprehensive CFD models for fire dynamics and combustion problems.

**Abstract:**  
Professor Boris Novozhilov passed away on February 19<sup>th</sup>, 2017 in Moscow. He is best known for his fundamental contribution to the theory of solid propellant combustion, for which he was awarded the Zeldovich Gold Medal for outstanding contribution to the theory of combustion by The Combustion Institute in 1996. The presentation gives a brief overview of Prof. B. Novozhilov's biography followed by discussion of his major technical contributions to the theory of combustion.

The discussion is framed around four technical topics:

- Zeldovich-Novozhilov (ZN) theory of solid-propellant nonsteady combustion including the theory fundamentals, propellant combustion stability, burning rate oscillations and associated nonlinear effects, transient propellant extinction, and extension of the theory incorporating gas phase inertia
- Studies on the theory of thermal explosion
- spin combustion
- chaotic regimes of propellant combustion

## 27 SEPTEMBER 2017

C4	SPACE PROPULSION	Date	Time	Room
	<b>Session: 4 – Electric Propulsion</b>	2017-09-27	14:45	Hall E3



**Mariano Andreucci**  
*Head,*  
 Propulsion Division,  
 Sitael Spa,  
 Italy

### KEYNOTE: Electric Propulsion: Gearing Up for a Spacefaring Future

#### Biography:

Professor of Electric Propulsion at the University of Pisa, where he has been on the Faculty of Engineering since 1977. Visiting professor of Spacecraft Propulsion at Syracuse University, USA, in 1983. General Chairman of the International Electric Propulsion Conference in 1991 and in 2007. Founder of the Centrospazio Research Centre in Pisa in 1989. Founder of the Alta company in the year 2000, later to become SITAEL (2015). Currently Head of SITAEL's Space Propulsion Division. Awardee of the ERPS Ernst Stuhlinger Medal for Outstanding Achievement in Electric Propulsion in 2011. Research Fields: Electric Rocket Propulsion, chemical rocket propulsion, energy conversion, orbital mechanics, space systems. Has authored or co-authored over 200 scientific publications, mainly in the propulsion sector.

#### Abstract:

Different types of EP technology have already proved capable of answering the propulsion needs of current mission categories, from all-electric telecom satellites to interplanetary exploration probes. In addition, EP has started unleashing its potential as a game-changing technology, enabling missions of novel conception, such as space tugs and microsatellite constellations and paving the way for a new era of exploration and exploitation of our interplanetary neighborhood. Advanced propulsion technologies combined with nuclear power generation may help extend our reach from the cislunar to the translunar space by 2025 and to Mars and beyond by the mid 2030s. By the end of this century, the basis for the transition of our species from an earthly to a spacefaring civilization may already be firmly established. This presentation reviews the status of different EP concepts and highlights current development trends and mid/long term programs undertaken to sustain this effort.

C1	ASTRODYNAMICS SYMPOSIUM	Date	Time	Room
	<b>Session: 5 – Guidance, Navigation &amp; Control (3) KEYNOTE: Invariant Manifolds in Astrodynamics</b>	2017-09-27	14:45	Hall A



**Filippo Graziani**  
*President and CEO,*  
 G.A.U.S.S. Srl,  
 Italy

### KEYNOTE: 23<sup>rd</sup> John V. Breakwell Memorial Lecture: APPLIED ASTRODYNAMICS: FROM DYADICS TO UNIVERSITY SATELLITES

#### Biography:

Filippo Graziani has been professor of Astrodynamics at Aerospace Engineering School of Sapienza University of Roma for thirtyfive years till 2012 when he retired and has been dean of the School from 2004 to 2010. He is Member of the International Academy of Astronautics (IAA) and Member of IAA Trustees Board. His didactical and research activity has been mainly directed towards the "hands-on" space educational programs.

He participated in the main Italian space programs starting with the San Marco satellites in 1970 and he was the team leader of the Italian University Satellites Program (UNISAT) with the aim of designing, manufacturing, launching microsatellites with his students. Ten microsatellites have been launched since 2000.

In 2012 he founded the company GAUSS (Group of Astrodynamics for the Use of Space Systems) as a spin-off of the Aerospace Engineering School, active in the space technology field and he is President and CEO. He is author of more than 200 technical papers on Astrodynamics and Space Systems. He is Co-Editor of Acta Astronautica since 2009. He received the "Utkin Golden Medal" for international relationship between Russia and Italy for University Satellites Launches and the "M.K.Yangel -100 years Golden Medal" for the contribution to the development of space science in the world. He is a participant of the IAF Conferences since 1975.

#### Abstract:

The use of dyadics and polyadics is a very effective tool to understand the space engineering problems as well as a powerful way to represent complex phenomena. The notation is compact and helps to retain a clearer interpretation giving a relevant insight in Astrodynamics. The most remarkable simplification is achieved when the effect of a perturbation is considered in Astrodynamics problems.

The Gravity Gradient Dyadic and the Inertia Dyadic play important roles in Astrodynamics Applications for Earth orbiting satellites. The lecture will encompass different examples of this concept, including the J2 and third bodies direct effects, the tidal or indirect effects, the Launcher Trajectory Optimization and Optimal Guidance since the Lawden PRIMER vector obeys to a dynamics fully described by the Earth Gravity Gradient, the Tethered Systems, the Earth-Moon transfers with ballistic capture.

A Lunar Mission for University microsatellites is proposed: the practical way for universities and companies, focused on research, to exploit Applied Astrodynamics.

C4	SPACE PROPULSION	Date	Time	Room
	<b>Session: 3 – Propulsion Technology (1)</b>	2017-09-27	09:45	Hall E3



**Tom Martin**  
*Senior Manager,*  
 Strategy & Business Development Aerojet Rocketdyne,  
 United States

### KEYNOTE: The Aerojet Rocketdyne AR1 Staged Combustion Booster Rocket Engine

#### Biography:

Tom Martin is currently Senior Manager, Strategy & Business Development for National Security & Commercial Launch at Aerojet Rocketdyne. In this role he is responsible for the overall strategy for Aerojet Rocketdyne's current and future products related to Defense and Commercial Space Launch with a focus on the Evolved Expendable Launch Vehicle programs. Additionally, he is responsible for development of AR's approach to commercial launch activities. Mr Martin has held numerous Program Management and technical roles of increasing importance in both large and small programs. Mr. Martin received a MS in Aeronautical & Astronautical Engineering from Purdue University and an MBA in Strategy and Finance from the University of Southern California.

#### Abstract:

Aerojet Rocketdyne is currently in development of the AR1 liquid rocket engine. AR1 is a 500,000 lbf-class, oxygen-rich, kerosene-fueled, staged combustion rocket engine. AR1 will power U.S. Evolved Expendable Launch Vehicles (EELV) and eliminate dependence on foreign supplied booster propulsion systems for critical National Security Space launches. AR1 is being developed in a partnership with the United States Air Force under an Other Transaction Authority agreement. AR1's core design features make it an attractive solution for numerous launch vehicle booster stage applications. The AR1 design leverages Aerojet Rocketdyne's extensive experience in the design and production of the large liquid rocket engines to ensure a low risk solution. It also leverages advanced manufacturing technologies being pioneered by Aerojet Rocketdyne, including Additive Manufacturing and advanced alloys for oxygen-rich environments. The AR1 development program has completed significant milestones to date is on track for Qualification in 2019.



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C2	MATERIALS AND STRUCTURES SYMPOSIUM	Date	Time	Room
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**Session: 4** – Advanced Materials and Structures for High Temperature Applications  
2017-09-27 09:45 Panorama Room 2

**Suraj Rawal**  
Technical Fellow in the Advanced Technology Center,  
Lockheed Martin Space Systems Company,  
United States

**KEYNOTE: Paolo Santini Memorial Lecture: Materials and Structures Technology insertion into Spacecraft Systems: Successes and Challenges**

**Biography:**  
Dr. Rawal is the Technical Fellow in the Advanced Technology Center, Lockheed Martin Space Systems Company. He got his PhD in Materials Science & Engineering at Brown University-  
Dr. Rawal has about 30 years of experience in the applied materials and structures research for spacecraft systems, and he has successfully inserted new materials technologies into the components of several spacecraft.

**Abstract:**  
This presentation: Materials and Structures Technology insertion into Spacecraft Systems: Successes and Challenges, includes a brief overview of the technology development and successful insertion of advanced material technologies into spacecraft structures.  
In last three decades, significant advancements have led to the use of multifunctional materials and structures technologies in spacecraft systems. This includes the integration of adaptive structures, advanced composites, nanotechnology, and additive manufacturing technologies. Development of multifunctional structures has been directly influenced by the implementation of processes and tools for adaptive structures pioneered by Prof. Paolo Santini. Multifunctional materials and structures incorporating non-structural engineering functions such as thermal, electrical, radiation shielding, power, and sensors have been investigated. The result has been an integrated structure that offers reduced mass, packaging volume, and ease of integration for spacecraft systems. Overall, opportunities and challenges to develop and mature next generation advanced materials and structures are presented

A1	SPACE LIFE SCIENCES SYMPOSIUM	Date	Time	Room
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**Session: 4** – The International Space Station in LEO and the Deep Space Habitat in Cis-Lunar Space as platforms for simulated Mars voyages  
2017-09-27 09:45 City Room 2

**Sam Scimemi**  
Director, International Space Station,  
National Aeronautics and Space Administration (NASA),  
United States

**KEYNOTE: The First Detection of Gravitational Waves**

**Biography:**  
Mr. Scimemi is the Director for International Space Station at NASA Headquarters. His duties include implementing policy and programmatic direction and ensuring safe and productive ISS operations and utilization. He engages with the White House and Congress, as well as international space agency leaders around the world regarding human spaceflight issues.  
Mr. Scimemi has been a leader in human spaceflight for 33 years. He has worked at 4 NASA centers including Johnson, Ames, Goddard and Headquarters. He has been at Headquarters since 2003.  
He earned a Bachelor of Science in Mechanical Engineering from McNeese State University in 1984.

**Abstract:**  
One of the key missions of the International Space Station is to conduct the research and technology demonstrations that will allow humans to go beyond LEO into deep space for long duration missions. These activities span human health and performance, life support, radiation mitigation, logistics, rendezvous and docking, EVA systems, and many other areas that will be applied to NASA's next steps in exploration; the cislunar Gateway and the Deep Space Transportation. Mr. Scimemi's keynote will highlight NASA's next steps in exploration and how ISS activities are enabling those next steps that lead up to performing a "shakedown cruise" in cislunar space.

## 28 SEPTEMBER 2017

A3	A3 SPACE EXPLORATION	Date	Time	Room
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**Session: 4A** – Small Bodies Missions and Technologies (Part 1)  
2017-09-28 09:45 Hall N

**Roger X. Lenard**  
Systems Engineer,  
LPS,  
United States

**KEYNOTE: Technology Needs for Exploiting Asteroid Resources**

**Biography:**  
Roger Lenard is a retired Air Force officer who holds a Bachelor of Science in physics and a Master of Science in chemical physics. In 1991 Roger was selected to be part of President Bush's Space Exploration Initiative, working for General Thomas Stafford. He was the Mars exploration team co-lead with Mr. Douglas Cook of NASA Johnson Space Center. In 1993 Roger retired from the Air Force and began working for Sandia National Laboratories. In 2000 Roger became a part-time Sandian and began to consult for the Air Force and NASA on the X-37 and hydrogen peroxide fueled upper stage. He worked extensively on the Jupiter Icy Moons Orbiter program for the Northrop Grumman team, who won the JIMO contract. Roger has authored numerous papers and holds several patents and has many documented technical advances to his credit. He is a full academician with the International Astronautical Academy.

## 29 SEPTEMBER 2017

A3	SPACE EXPLORATION SYMPOSIUM	Date	Time	Room
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**Session: 8-B4.5A** – Joint Session between IAA and IAF for Small Satellite Propulsion Systems  
2017-09-29 11:00 Hall E3

**Luis Gomes**  
Director of Earth Observation and Science,  
Surrey Satellite Technology Ltd (SSTL),  
United Kingdom

**KEYNOTE: Progress and challenges of small satellite propulsion systems**

**Biography:**  
Luis Gomes has extensive technical knowledge and practical experience of designing, planning and managing EO programmes. In his previous role as Head of Business for Earth Observation he was responsible for the development of the recently launched NovaSAR-S low cost radar mission, and the 1m resolution SSTL-300S1 platform that will provide daily high resolution imaging in the forthcoming DMC3 constellation. Gomes joined SSTL in 1997 as a Mission Analysis Engineer specialising in thermal design. Having completed an MSc at the University of Surrey in 2001 with research in Spacecraft Charging, he became a project manager and oversaw the build and commissioning of the high resolution Beijing-1 satellite launched in 2005. He led the negotiations and project for the NigeriaSat-2 programme before taking over the management of the Earth Observation business line. Besides his interest in SAR and Earth Observation, Gomes is an avid astronomer with particular interest in planetary astrophysics and robotic interstellar probes. He is a keen naval enthusiast and enjoys reading about naval history and maritime geopolitics.

## 5 Category Coordinators and Judges of the Interactive Presentations Competition



**Chairman of the Interactive Presentations Award Committee**  
**Christophe Bonnal**  
*Centre National d'Etudes Spatiales (CNES), France*

### Category A SCIENCE AND EXPLORATION



**Maria-Antonietta Perino**  
*Thales Alenia Space, Italy*

### Category B APPLICATIONS AND OPERATIONS



**Otto Koudelka**  
*Graz University of Technology (TU Graz), Austria*

### Category C TECHNOLOGY



**Li Ming**  
*China Academy of Space Technology (CAST), China*

### Category D INFRASTRUCTURE



**John David Bartoe**  
*National Aeronautics and Space Administration (NASA), United States*

### Category E SPACE AND SOCIETY



**Lyn Wigbels**  
*American Astronautical Society (AAS), United States*

## 6 Interactive Presentations

### 6.1 Interactive Presentations Award Ceremony

**Date:** Thursday 28 September

**Time:** 12:45 - 13:15

**Location:** Adelaide Convention Centre - Halls J & K2

Held on the fourth day of IAC, the IP Award Ceremony is the must-attend event of the congress. Discover the 5 category winners at this prestigious ceremony attended by over 400 presenters, Members of the International Programme Committee and delegates. The prize-giving ceremony will be followed by a cocktail to meet and celebrate the winners. All the interactive presentations will be presented after the ceremony at 13:15. The interactive presentation session aims at stimulating discussions concerning the contribution.

The presenters have been encouraged to emphasize their contributions by means of embedded multimedia content, like for instance, videos, slide shows, animated graphs, 3D rotation, and straight forward demo on specific software and also zooms. The presenters will be available during the whole duration of the session in order to answer questions and have scientific exchanges with the participants of the Congress.

Do not miss out on this great opportunity to meet with the presenters and make new connections.

Please note that this event is open to all IAC participants.

### 6.2 Interactive Presentations Session & Cocktail Reception

**Date:** Thursday 28 September

**Time:** 13:15 - 14:45

**Location:** Adelaide Convention Centre - Halls J & K2





## 6.3 Interactive Sessions by Symposium

Session	Symposia	Room
A1.IP	SPACE LIFE SCIENCES SYMPOSIUM	Hall J&K2
A2.IP	MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM	Hall J&K2
A3.IP	SPACE EXPLORATION SYMPOSIUM	Hall J&K2
A5.IP	20 <sup>th</sup> IAA SYMPOSIUM ON HUMAN EXPLORATION OF THE SOLAR SYSTEM	Hall J&K2
A6.IP	15 <sup>th</sup> IAA SYMPOSIUM ON SPACE DEBRIS	Hall J&K2
A7.IP	SYMPOSIUM ON FUTURE SPACE ASTRONOMY AND SOLAR-SYSTEM SCIENCE MISSIONS	Hall J&K2
B1.IP	EARTH OBSERVATION SYMPOSIUM	Hall J&K2
B2.IP	SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM	Hall J&K2
B3.IP	HUMAN SPACEFLIGHT SYMPOSIUM	Hall J&K2
B6.IP	SPACE OPERATIONS SYMPOSIUM	Hall J&K2
C1.IP	ASTRODYNAMICS SYMPOSIUM	Hall J&K2
C2.IP	MATERIALS AND STRUCTURES SYMPOSIUM	Hall J&K2
C3.IP	SPACE POWER SYMPOSIUM	Hall J&K2
C4.IP	SPACE PROPULSION SYMPOSIUM	Hall J&K2
D1.IP	SPACE SYSTEMS SYMPOSIUM	Hall J&K2
D2.IP	SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM	Hall J&K2
D3.IP	15 <sup>th</sup> IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT	Hall J&K2
E1.IP	SPACE EDUCATION AND OUTREACH SYMPOSIUM	Hall J&K2
E3.IP	30 <sup>th</sup> IAA SYMPOSIUM ON SPACE POLICY, REGULATIONS AND ECONOMICS	Hall J&K2
E5.IP	28 <sup>th</sup> IAA SYMPOSIUM ON SPACE AND SOCIETY	Hall J&K2
E6.IP	BUSINESS INNOVATION SYMPOSIUM	Hall J&K2
E7.IP	60 <sup>th</sup> IISL COLLOQUIUM ON THE LAW OF OUTER SPACE	Hall J&K2

## 6.4 Interactive Presentations by Symposium

### A1.IP. Interactive Presentations

**September 28 2017, 12:45 — Hall J&K2**

**Co-Chair(s):** Cora Thiel, Switzerland; Klaus Slenzka, OHB System AG-Bremen, Germany;

#### IAC-17.A1.IP.1

life support systems related to gravity in sj-10 and tg-2 satellite space flight experiments  
Hao Sun, China

#### IAC-17.A1.IP.3

The study on space-flight induced DNA damage in Arabidopsis thaliana and the protective effect of hydrogen  
Qiao Sun, Shenzhou Space Biotechnology Group, China Academy of Space Technology(CAST), China

#### IAC-17.A1.IP.4

Plant Growth Optimization by Vegetable Production System in HI-SEAS Analog Habitat  
Joshua Ehrlich, Lockheed Martin (Space Systems Company), United States

#### IAC-17.A1.IP.5

Biological responses of Streptomyces exposed to simulated microgravity and spaceflight conditions  
Bing Huang, Chinese PLA General Hospital, China

#### IAC-17.A1.IP.6 (non-confirmed)

PREVENTION OF HFQ - sRNA BINDING FOR PSEUDOMONAS AERUGINOSA VIRULENCE EFFECTS DURING THE SPACEFLIGHT  
Ozan Kara, Koc University, Turkey

#### IAC-17.A1.IP.7

Protein Dysregulation in Fungal Isolates from the International Space Station by Tandem Mass Tag Proteomics  
Abby Chiang, Beckman Research Institute of City of Hope, United States

#### IAC-17.A1.IP.9

Astronaut interactions on the Moon: Lunar Expedition 0 as an analogue  
Lucie Davidová, Faculty of Arts, Charles University, Czech Republic

#### IAC-17.A1.IP.10

Application of Virtual Reality for Crew Mental Health In Extended-Duration Space Missions  
Nick Salamon, The Ohio State University College of Engineering, United States

#### IAC-17.A1.IP.10

Hindlimb Unloading Inhibits Mammalian Digit tip Regeneration  
Connor Dolan, Texas A&M University, United States

#### IAC-17.A1.IP.11

Neuroadaptive crew countermeasures for long duration space exploration - A Systems Engineering Approach – Neurocognitive Predictive Performance Screening & Remediation tool (NPPSR): A predictive Neurobehavioral Health Performance Monitor  
Curtis Cripe, Fordham University, United States

#### IAC-17.A1.IP.12

AMSS: a Platform for Astronaut's Performance Modeling and Simulation  
Chunhui Wang, China Astronaut Research and Training Center, China

#### IAC-17.A1.IP.13

"A micro-society in a mini-world": an archaeological investigation into culture on the International Space Station  
Alice Gorman, Flinders University, Australia

#### IAC-17.A1.IP.14

Alleviation of inflammation and stimulation of the immune response by dietary supplement, Active Hexose Correlated Compound (AHCC) in stressful physiological environments.  
Elvis Okoro, Texas Southern University, United States

#### IAC-17.A1.IP.15

SIMULATE MICROGRAVITY ON THE GROUND TO PREPARE MANNED SPACEFLIGHT  
Philippe Hazane, Institute for Space Medicine and Physiology/MEDES, France

#### IAC-17.A1.IP.16

International Space Station- Microbial observatory of pathogenic viruses, bacteria and fungi and the impact on astronaut health  
Camilla Urbaniak, NASA JPL, United States

#### IAC-17.A1.IP.17

Preserving Cognition in Space Using Ultrasound Brain Stimulation  
Ahmed Farid, Telespazio VEGA Deutschland GmbH, Germany

#### IAC-17.A1.IP.18

Biomarkers for detecting the stress from confined environment: a systematic review  
Shotaro Doki, University of Tsukuba, Japan

#### IAC-17.A1.IP.20

Novel vital signs monitoring system in an analog space mission  
Pedro Jesús Alejandro Ruiz Guzmán, tesi, Mexico

#### IAC-17.A1.IP.21

Medical Systems Engineering to Support Mars Mission Crew Autonomy  
Michael Canga, NASA, United States

#### IAC-17.A1.IP.23

Breeding by space-induced mutation and screening of selenium-enriched functional yeast  
Peng Lei, Fullarton Bio-Tech (Beijing) Co., Ltd., China

#### IAC-17.A1.IP.24

Water management in 4 subjects 180-day CELSS integrated experiment: Configuration and performance  
Liangchang Zhang, Space Institute of Southern China (Shenzhen) China Astronaut Research and Training Center, China

#### IAC-17.A1.IP.25

Improvement the system of distillation cascade for long-term space flights  
Vladimir Rifert, TERMODISTILLATION, Ukraine

#### IAC-17.A1.IP.26

Chlamydomonas biofarm at the forefront of a sustainable life in space.  
Amina Antonacci, Italian National Research Council - CNR, Italy

#### IAC-17.A1.IP.27

A modified MBR system configuring post advanced purification used as water supply process in 180-day CELSS: System construction, pollutants removal examination and water allocation  
Ting Li, 1. Space Institute of Southern China, Shenzhen 518117, P. R. China; 2. Harbin Institute of Technology Shenzhen Graduate School, Shenzhen 518055, P. R. China., China

#### IAC-17.A1.IP.28

Evaluation of toxicity of nutrient solutions for plants based on mineralized organic wastes for the BTLSS  
Sergey Trifonov, Institute of Biophysics, Russian Academy of Sciences, Siberian Branch; Siberian State Aerospace University, Russian Federation

#### IAC-17.A1.IP.30

Growth and Biomass Yield of 25 Crops species in 180-day integrated experiment



Jialian Li, Space Institute of Southern China(Shenzhen), China

#### IAC-17.A1.IP.33

3D droplet scaffolding for osteocyte mechanical unloading in a rotating wall vessel  
Roxanne Fournier, University of Toronto, Canada

#### IAC-17.A1.IP.34

C.R.O.P.® Demonstrator for Human Space Exploration: Experiment Analysis and System Model Development  
Monika Johanna Pardo Spiess, Space Generation Advisory Council (SGAC), Germany

#### IAC-17.A1.IP.35

The influence of the long-term space flight factors on the human regulatory T-cells  
Sergey Ponomarev, IBMP, Russian Federation

#### IAC-17.A1.IP.36

CKIP-1 plays an important role in the regulation of cardiac remodeling induced by simulated microgravity  
Yingxian Li, China Astronaut Research and Training Center, China

#### IAC-17.A1.IP.38 (non-confirmed)

The effects of microRNA408 on root gravitropic bending in Arabidopsis  
Huasheng Li, China Academy of Space Technology (CAST) Shenzhou Space Biotechnology Group, China

#### IAC-17.A1.IP.39

Effects of modified gravity coupled with mechanical stimulation on molecular signal transduction and target gene transcription in 3D osteon cell network.  
Cassandra M. Juran, NASA Ames Research Center, United States

## A2.IP. Interactive Presentations

September 29 2017, 11:00 — Meeting Room L1 (a&b)

**Co-Chair(s):** Gabriel Pont, Centre National d'Etudes Spatiales (CNES), France; Qi Kang, National Microgravity Laboratory, Institute of Mechanics, Chinese Academy of Sciences., China;

#### IAC-17.A2.IP.1

Moon Gait: investigating walk patterns in reduced gravity  
Irene Lia Schlacht, Politecnico di Milano, Italy

#### IAC-17.A2.IP.2

The Study on Effect of Neurons in Space Flight and Conditions on Brain/Neuronal Plasticity and Connectivity Cells.  
SANDYA RAO, India

#### IAC-17.A2.IP.3 (non-confirmed)

Food Science: "Space Chocolate"  
Allison Rae Hannigan, United States

## A3.IP. Interactive Presentations

September 28 2017, 12:45 — Hall J&K2

**Coordinator(s):** Bernard Foing, ESA/ESTEC, ILEWG & VU Amsterdam, The Netherlands; Christian Sallaberger, Canadensys Aerospace Corporation, Canada;

#### IAC-17.A3.IP.1

THE KUPOL MINE: A POSSIBLE ANALOG OF A MARS OR MOON OUTPOST ON EARTH  
Antonio Del Mastro, Mars Planet (Italian Mars Society), Italy

#### IAC-17.A3.IP.3

System Concept for In-situ Casing Generation in a Deep Lunar Borehole  
Alexander Linossier, Technische Universität Berlin, Germany

#### IAC-17.A3.IP.5

Laboratory and Eifel Field Spectroscopy of Mars Analogue Samples  
Bernard Foing, ESA/ESTEC, ILEWG & VU Amsterdam, The Netherlands

#### IAC-17.A3.IP.6

Study on Self-Migration of Extraterrestrial Molten Regolith and its Potential In-Situ Use in Transforming Outer Space Resources  
Jesus Dominguez, Florida Institute of Technology, United States

#### IAC-17.A3.IP.7

Concept study of Communication Architecture for a cis-Lunar Human- Robotic Mission  
Shreya Santra, Skolkovo Institute of Science and Technology, Russian Federation

#### IAC-17.A3.IP.9

Lunar Transportation for a Sustainable Space Economy  
Melissa Sampson, United Launch Alliance, United States

#### IAC-17.A3.IP.11

Emirates Mars Mission 2020: Science Targets and Observations  
Mariam AlShamsi, Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates

#### IAC-17.A3.IP.12

Aerodynamic Analysis of an Airplane Gliding on Mars  
Abdulla Alshehhi, UAE Space Agency, United Arab Emirates

#### IAC-17.A3.IP.13

Surface Studies of Icy Regoliths using Light Scattering at small Phase Angles  
Katiyayni Balachandran, York University, Canada

#### IAC-17.A3.IP.14

Roverball - a Moon Surface Device \\ as Contribution to ESA's Moon Village.  
Eugen Svoboda, Graz University of Technology (TU Graz) / Svoboda Entwicklungs GmbH & CO KG, Austria

#### IAC-17.A3.IP.15

Alternative Mission Concepts for the Exploration of Outer Planets Using Small Satellite Swarms  
Andrew Blocher, Cal Poly, SLO, United States

#### IAC-17.A3.IP.16

LunaRoo, jumping to new heights  
Mark Fittock, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

#### IAC-17.A3.IP.17

advantages and limitations of biological in situ resource utilization for lunar exploration  
Benjamin Lehner, TU Delft, The Netherlands

#### IAC-17.A3.IP.18

Mission Scenarios Utilizing LOTUS: Lander/Orbiter Trans-Upper Stage  
Chishma Singh-Derewa, National Aeronautics and Space Administration (NASA)/Jet Propulsion Laboratory, United States

#### IAC-17.A3.IP.19

Oxygen production for life support system of Lunar base  
Roman Mykhalchynshyn, Yuzhnoye State Design Office, Ukraine

#### IAC-17.A3.IP.20

An Overview of Challenges in Design and Development of Lunar Rover for Moon Exploration  
ACHUTANANDA PARHI, Indian Space Research Organization (ISRO), India

#### IAC-17.A3.IP.23

Self-Position Estimation Using Shadow of Terrain for Precise Planetary Landing  
Tomoki Kuga, Tokyo Metropolitan University, Japan

#### IAC-17.A3.IP.25

First-Mover Advantages Impacting Site Occupation Timing and Methodology by Commercial Lunar Resource Firms.  
John Culton, United States

#### IAC-17.A3.IP.26 (non-confirmed)

Shape-Based Approach Based on Fast Numerical Approximation of Invariant Manifolds for Cislunar Low-Energy Low-Thrust Trajectories Transfer  
Renyong Zhang, Key Laboratory of Space Utilization, Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences, China

#### IAC-17.A3.IP.27

The Design of Electrical Systems to Support the Development of Self-Replicating Robots for Lunar Exploration  
Evan Gjesvold, North Dakota State University, United States

#### IAC-17.A3.IP.28

Unmanned mission to the oort cloud  
Mridul Jain, University of Petroleum and Energy Studies, India

#### IAC-17.A3.IP.29

Characterizing the material response of biopolymer-stabilized regolith to predict micrometeorite damage of ISRU habitat systems  
Maria Allende, Stanford University, United States

#### IAC-17.A3.IP.30

lucid project: lunar polar sample return mission validation and demonstration  
Carlos Crespo, G.M.V. Space and Defence, S.A., Spain

#### IAC-17.A3.IP.31

First results from the ROBEX Demonstration Mission on Mt. Etna: Robotic deployment of seismic networks for future lunar missions  
Armin Wedler, German Aerospace Center (DLR), Germany

#### IAC-17.A3.IP.32

Reassessing the Moon Village Roadmap  
Pierre EVELLIN, International Space University (ISU), France

#### IAC-17.A3.IP.34

Lunar mining and cultural heritage management: what are the issues?  
Alice Gorman, Flinders University, Australia

#### IAC-17.A3.IP.36

O'Moon: Proposing an architecture and applications for a lunar modular power infrastructure  
Enrique Garcia Bourne, O'SOL, France

#### IAC-17.A3.IP.39

Emirates Mars Mission (EMM) Spacecraft Design Overview  
Mohsen Al Awadhi, Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates

#### IAC-17.A3.IP.41

Society Building in Space: Exploring Rationales and Values that will Shape the First Human Outposts off Earth  
Ekaterina Khvastova, Space Policy Institute, George Washington University, United States

#### IAC-17.A3.IP.42

Fault tolerant reconfigurable Lunar On Board Payload Controller  
SASI SAKETH KURRA, India

#### IAC-17.A3.IP.44

In-situ resource utilization of lunar regolith to produce silicon for use in photovoltaic materials to support a long-term human presence on the Moon.  
Riddhi Maharaj, University of Cape Town, South Africa

#### IAC-17.A3.IP.45

Design and Preliminary Test Results of the Helium Extraction and Acquisition Testbed  
Aaron Olson, University of Wisconsin, United States

#### IAC-17.A3.IP.48

disturbance rejection hazard avoidance control for asteroid landing  
Dantong Ge, Beijing Institute of Technology, China

#### IAC-17.A3.IP.49

Simulation of an asteroid gravimetry mission using a spacecraft swarm  
William Crowe, UNSW Australia, Australia

#### IAC-17.A3.IP.50

Health Monitoring Methodology for a Highly Autonomous Asteroid Mission  
Alena Probst, Bundeswehr University Munich, Germany

#### IAC-17.A3.IP.52

6-DOF Control for Spacecraft Hovering Over an Asteroid with Disturbances  
Wentao Fu, School of Aerospace Engineering, Beijing Institute of Technology, China

#### IAC-17.A3.IP.53

A Castaway Space-telescope: Opportunities for Asteroid Belt Fly-by Tours for Medium and Discovery Class Missions  
Joan Pau Sanchez Cuartielles, Cranfield University, United Kingdom

## A5.IP. Interactive Presentations

September 28 2017, 12:45 — Hall J&K2

**Co-Chair(s):** Christian Sallaberger, Canadensys Aerospace Corporation, Canada; Maria Antonietta Perino, Thales Alenia Space Italia, Italy;

#### IAC-17.A5.IP.3 (non-confirmed)

Thermal control subsystem for a lunar rover  
Sylvain Bouchart, United Kingdom

#### IAC-17.A5.IP.4

Missions, Architectures and Technologies for a Lunar Space Tug in support of Cislunar Infrastructures  
Martina Mammarella, Politecnico di Torino, Italy

#### IAC-17.A5.IP.5

Three Types of Robot Builder for the Unsupervised Construction of Mars Habitats  
Pierfrancesco La Mura, Germany

#### IAC-17.A5.IP.6

Manufacturing of Lunar Basaltic Glass Substrates  
Juergen Schleppi, Heriot-Watt University, United Kingdom

#### IAC-17.A5.IP.7

Crowdsourcing a Moon Village  
Yalda Mousavinia, Space Cooperative Inc., United States

#### IAC-17.A5.IP.8

Approaches and Solutions for Martian Spacesuit Design  
Joao Lousada, GMV Insyng AG, Germany

#### IAC-17.A5.IP.10

Human Exploration of Mars: Cost Realities of a First Mission  
Ralph L. McNutt, Jr., Johns Hopkins University Applied Physics Laboratory, United States

#### IAC-17.A5.IP.11

Application of a Top-Down System-of-Systems Approach to Enable Human Mars Exploration Missions  
William O'Neill, Purdue University, United States

#### IAC-17.A5.IP.13

Architectural Design Solutions for Human Habitation on Mars  
Anusha Krishnamurthy, India

#### IAC-17.A5.IP.14

Invariant Modulation of IMF Clock Angle on the Solar Wind Energy Input into the Magnetosphere  
Jinpeng Han, China Academy of Launch Vehicle Technology, China

## IAC-17.A5.IP.16

Geological methodology for the Extravehicular Activity in Astronaut Analogue Simulations  
*Melissa Mirino, INAF-IAPS, Italy*

## A6.IP. Interactive Presentations

**September 28 2017, 12:45 — Hall J&K2**

**Co-Chair(s):** *Christophe Bonnal, Centre National d'Etudes Spatiales (CNES), France; Darren McKnight, Integrity Applications Incorporated (IAI), United States; Tetsuo Yasaka, QPS Institute, Japan;*

### IAC-17.A6.IP.1

estimation of removal method of space debris by laser ablation  
*Yuta Kobayashi, Research Institute for Sustainable Humansphere, Kyoto University, Japan*

### IAC-17.A6.IP.2

Discharge on Pseudo Solar Cells due to Hypervelocity Impact  
*Mariela Rojas Quesada, Kyushu Institute of Technology, Japan*

### IAC-17.A6.IP.3

Improvement of the Accuracy of Fast Methods for Forecasting Dangerous Approaches of Orbital Objects  
*Tatyana V. Labutkina, Dnepropetrovsk National University named after Oles' Gonchar, Ukraine*

### IAC-17.A6.IP.4

Design Optimizations for Increased Muzzle Velocities of a Compact Single-Stage Light Gas Gun for Envisaged Twin Facility Setups  
*Christoph Montag, Institute of Space Systems, Universität Stuttgart, Germany*

### IAC-17.A6.IP.5

STARC: Towards a transportable Laser Ranging Station  
*Thomas Hasenohr, German Aerospace Center (DLR), Germany*

### IAC-17.A6.IP.6

Symplectic integrators for the simulation of space debris evolution  
*Pierfrancesco Di Cintio, CNR, Italy*

### IAC-17.A6.IP.7

Interpretation of light curves based on simulation software  
*Daniel Burandt, German Aerospace Center (DLR), Germany*

### IAC-17.A6.IP.8

changes in an orbital motion for small space debris due to electromagnetic perturbations  
*Keisuke Akari, Research Institute for Sustainable Humansphere, Kyoto University, Japan*

### IAC-17.A6.IP.9

Automatic analysis of light-curves variability of orbital objects  
*Tommaso Cardona, University of Rome "La Sapienza", Italy*

### IAC-17.A6.IP.10

EQUO - Equatorial Italian Observatory At The Broglio Space Center For Space Debris Monitoring  
*Fabio Santoni, University of Rome "La Sapienza", Italy*

### IAC-17.A6.IP.11

Space debris cloud evolution modeling with respect to mutual collisions  
*Chingiz Akniyazov, Fesenkov Astrophysical Institute, Kazakhstan*

### IAC-17.A6.IP.12

On the space debris optical archive at the Italian Space Agency  
*Alessandra Di Cecco, National Institute for Astrophysics (INAF), Italy*

## IAC-17.A6.IP.13

transition in orbital resonance in inclined geosynchronous orbit and the implication on its long-term evolution  
*Jingshi Tang, Nanjing University, China*

## IAC-17.A6.IP.14

ADEO Passive De-Orbit Subsystem Activity leading to a Dragsail Demonstrator: Conclusion and Next Steps  
*Thomas Sinn, HPS GmbH, Germany*

## IAC-17.A6.IP.15

Optimal Planning of Space Surveillance Network For Orbital Debris  
*Tommaso Cardona, University of Rome "La Sapienza", Italy*

## IAC-17.A6.IP.16

Orbit determination results and space debris test observation of the OWL-Net  
*Jin Choi, University of Science & Technology, Korea, Republic of*

## IAC-17.A6.IP.17

deep neural network for vision based active debris removal tracking system  
*Seongmin Lim, Korea University of Science & Technology (UST), Korea, Republic of*

## IAC-17.A6.IP.18 (non-confirmed)

Spin axis orientation and rotation period determination of debris in sun-synchronous orbit using light curve  
*Fei Han, Harbin Institute of Technology, China*

## IAC-17.A6.IP.20

Statistical approach for the re-entry prediction estimation using Earth geopotential correction  
*Elena Vellutini, Italian Space Agency (ASI), Italy*

## IAC-17.A6.IP.21

Experimental estimation of the kinematics of a space debris mock-up via fault-tolerant methods  
*Gabriele Biondi, Politecnico di Torino, Italy*

## IAC-17.A6.IP.22

in-plane collision avoidance maneuver strategies based on orbit maintenance  
*Fei Su, National Astronomical Observatories, Chinese Academy of Sciences, China*

## IAC-17.A6.IP.25

experimental study on lodging an anchor to free-falling target for space debris mitigation  
*NGUYEN BA THANH LONG, National Defense Academy, Japan*

## IAC-17.A6.IP.26

Effective Drag Area Computation for Active Debris Removal using De-Orbit Sail  
*Anilkumar A K, Vikram Sarabhai Space Centre (VSSC), India*

## IAC-17.A6.IP.28

A Search Strategy Applicable for Breakup Fragments in Highly Elliptical Orbit  
*Yuki Itaya, Kyushu University, Japan*

## IAC-17.A6.IP.30

Attitude dependent perturbations of space debris orbital dynamics during solar activity extremes  
*Daniel Kucharski, , Australia*

## IAC-17.A6.IP.31

space object detection and characterisation with a passive space-borne bistatic radar  
*Ilias Theodorou, University of Strathclyde, United Kingdom*

## IAC-17.A6.IP.32

Initial Study on Non-Catastrophic Damage Risk for All-Electric Satellite Transferring to GEO  
*Masumi Higashide, Japan Aerospace Exploration Agency (JAXA), Japan*

## IAC-17.A6.IP.33

Improving the Calculation of Average Cross-sectional Area for Debris Fragments Using Discrete Projected Areas  
*Thomas Scruggs, University of Florida, United States*

## IAC-17.A6.IP.34

Performance Analysis of the Debris Debris Categorization System Database Engine  
*Joe Kleespies, University of Florida, United States*

## IAC-17.A6.IP.35

Demisability and survivability multi-objective optimisation for preliminary spacecraft design  
*Mirko Trisolini, University of Southampton, United Kingdom*

## IAC-17.A6.IP.36

Increasing ADR effectiveness via an altitude-shell-dependant removal approach  
*Gian Luigi Somma, University of Southampton, United Kingdom*

## IAC-17.A6.IP.37

Dynamical evolution of space debris on super-geostationary orbits  
*Eduard Kuznetsov, Ural Federal University, Russian Federation*

## IAC-17.A6.IP.38

SDM measures and development for the PRIMA family platforms  
*Massimiliano Marcozzi, Thales Alenia Space Italia (TAS-I), Italy*

## IAC-17.A6.IP.39 (non-confirmed)

A new hybrid dual-stage electromagnetic railgun equipment for hypervelocity impact testing  
*Antonio Vricella, Sapienza - University of Rome, Italy*

## IAC-17.A6.IP.40

Shielding performance of polyurethane foam stuffed in shield  
*Xuezhong Wen, China Aerodynamics Research and Development Center, China*

## IAC-17.A6.IP.41

Imaging Systems for Size Measurements of Debris Fragments  
*Bungo Shiotani, University of Florida, United States*

## IAC-17.A6.IP.42

D-Orbit involvement in the ESA CleanSat Program: An Autonomous Decommissioning System for Satellite Controlled Re-entry  
*Lorenzo Ferrario, D-Orbit, Italy*

## IAC-17.A6.IP.43

braking performance study for eddy brake detumbling space debris objects  
*Yongkang Shi, National University of Defense Technology, China*

## IAC-17.A6.IP.44

A Multiobjective Genetic Algorithm for Scheduling Follow-up Observations of Geosynchronous Space Object  
*Andreas Hinze, DLR (German Aerospace Center), Germany*

## IAC-17.A6.IP.44 (non-confirmed)

Laser-based mitigation of the low-Earth orbit debris environment  
*Ben Greene, Space Environment Research Centre Ltd. (SERC), Australia*

## IAC-17.A6.IP.45

Design of a scalable, reliable, cost-efficient, and modular de-orbit kit for spacecraft post-mission disposal  
*Konstantinos Konstantinidis, Universität der Bundeswehr München, Germany*

## A7.IP. Interactive Presentations

**September 28 2017, 12:45 — Hall J&K2**

**Co-Chair(s):** *Jakob van Zyl, National Aeronautics and Space Administration (NASA), United States;*

## IAC-17.A7.IP.2 (non-confirmed)

cubesats missions the answer to the futures studies of space missions or new space hazardous debris challenges  
*Iman Shafieenejad, K. N. Toosi University of Technology, Iran*

## IAC-17.A7.IP.3

Update on the system design of the ATHENA mission  
*Ivo Ferreira, European Space Agency (ESA), The Netherlands*

## IAC-17.A7.IP.5

a study of uncertainty analysis for formation satellite detection system in space science mission  
*Chen Gao, German Aerospace Center (DLR), Simulation and Software Technology, Germany*

## IAC-17.A7.IP.6

The Fifth Force: from Planck to Euclid  
*Lucia Aurelia Popa, Institute of Space Science, Romania*

## IAC-17.A7.IP.7

Application of machine learning in high-contrast imaging of exoplanets & Modelling the atmospheric escape phenomenon  
*Shabarinath Nair, , India*

## IAC-17.A7.IP.8

More Efficient, More Powerful RTGs for Planetary Science Missions  
*David Woerner, Jet Propulsion Laboratory - California Institute of Technology, United States*

## IAC-17.A7.IP.9

Enhanced X-ray Timing and Polarimetry(eXTP)mmission design and implement  
*Long Zhang, CAST, China*

## B1.IP. Interactive Presentations

**September 28 2017, 12:45 — Hall J&K2**

**Co-Chair(s):** *Andrew Court, TNO, The Netherlands; Gunter Schreier, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;*

## IAC-17.B1.IP.1

Towards an early warning service for fast-developing events based on a SAR-enabled microsatellite constellation  
*Francisco Vilhena da Cunha, Tekever, Portugal*

## IAC-17.B1.IP.2

The acceleration with QDR memory for data managements in near-earth sar images orbital processing  
*Hui Cao, Xi'an Microelectronics Technology Institute, China Academy of Space Electronics Technology (CASET), China Aerospace Science and Technology Corporation (CASC), China*

## IAC-17.B1.IP.3

Alignment mechanism and system concept of a scalable deployable ultra-lightweight space telescope for a 1U CubeSat demonstrator  
*Benjamin Grzesik, Technische Universität Braunschweig, Germany*

## IAC-17.B1.IP.4

Urban tree species classification with airborne hyperspectral VNIR and SWIR, PAN and DSM data by fusion at the object level  
*Josselin Aval, SUPAERO- Ecole Nationale Supérieure de l'Aéronautique et de l'Espace, France*

## IAC-17.B1.IP.6

automatic haze detection and prediction in satellite cloud images  
*Ruiguang Hu, Beijing Aerospace Automatic Control Institute, China*

## IAC-17.B1.IP.7

Identification and Quantification of Geometric Error Sources in Satellite Image Data  
*Amélie St-Amour, NGC Aerospace Ltd., Canada*

## IAC-17.B1.IP.8

Performance of the Space Orbiting Argus 1000 Micro-spectrometer: Signal-to-Noise Ratio (SNR) Analysis  
*Naif Alsalem, York University, Canada*

## IAC-17.B1.IP.9

The Role of Geographic Information System (GIS) in Modern India  
*Harsh Sanghavi, India*

## IAC-17.B1.IP.10

autonomous band co-registration of lapan-a3 multispectral imager using edge detection and fast fourier transform  
*Patria Rachman Hakim, Indonesian National Institute of Aeronautics and Space (LAPAN), Indonesia*

## IAC-17.B1.IP.11

Polarimetric synthetic aperture radar for remotely mapping salt diapirs  
*Elise Harrington, University of Western Ontario, Canada*

## IAC-17.B1.IP.12

Orbit and Constellation Design Considerations for GNSS-R receivers.  
*Benjamin Southwell, University of New South Wales, Australia*

## IAC-17.B1.IP.13

PRECISION AGRICULTURE TOOL FOR ASSESSMENT OF FERTILISER USING MULTISPECTRAL SATELLITE IMAGERY  
*Felipe Brubeck-Hernandez, University of Leicester, United Kingdom*

## IAC-17.B1.IP.14

evaluation of groundwater potential zone in ibadan area oyo state southwestern nigeria using geospatial techniques and analytical hierarchy process.  
*ALABI BABATUNDE, Federal University of Technology Akure, Ondo State., Nigeria*

## IAC-17.B1.IP.15

Role of Space Technology Applications in Managing Biodiversity and Climate Change: Case Study of the Lake Chad Area of Africa  
*ABUBAKAR BABAGANA, SEABED INTERNATIONAL, Nigeria*

## IAC-17.B1.IP.16

PerúSAT-1: a development success for quick practical applications in Peru  
*Gustavo Henríquez Camacho, Conida - Peruvian Space Agency, Peru*

## IAC-17.B1.IP.17

COSMO-SkyMed Data Exploitation: Global Trend, Perspectives and Lessons Learnt  
*Maria Libera Battagliere, ASI - Italian Space Agency, Italy*

## IAC-17.B1.IP.19

Predicting anomalous tropospheric radio propagation caused by low level inversion layers using near real-time satellite data  
*Balthasar Indermuehle, CSIRO Astronomy & Space Science, Australia*

## IAC-17.B1.IP.20 (non-confirmed)

FlyWin, a H2-lifting gas airship demonstrator  
*Nicolas Cayemex, FlyWin, Belgium*

## IAC-17.B1.IP.21

Satellite geodesy mission preparation using satellite formation flight simulator - XHPS  
*Takahiro Kato, ZARM - University of Bremen, Germany*

## IAC-17.B1.IP.23

Continental scale woody vegetation monitoring for greenhouse gas accounting  
*Shanti Reddy, Australia*

## IAC-17.B1.IP.24

the space qualification of lapan's ir camera equipped with two micro bolometer detectors  
*Bustanul Arifin, Indonesian National Institute of Aeronautics and Space (LAPAN), Indonesia*

## IAC-17.B1.IP.26

FEASIBILITY STUDY ON EARTHQUAKE MONITORING AND PRECURSOR RESEARCH IN SOUTH-EAST ASIA USING SPACE TECHNOLOGY  
*Md Yusoff Siti Harwani, Universiti Sains Malaysia, Malaysia*

## IAC-17.B1.IP.27

Analysis of Landslide in Chosica Using Satellite Images  
*Avid Roman-Gonzalez, Image Processing Research Laboratory (INTI-Lab). Universidad de Ciencias y Humanidades - UCH, Peru*

## IAC-17.B1.IP.28

Investigation of Satellite Constellation Configuration for Earth Observation Using Sierra Nevada Dream Chaser® Spacecraft Following Launch to ISS  
*Andrew J. Steen, The Ohio State University, United States*

## IAC-17.B1.IP.29

Picosatellite-based Subsurface Earth Observation  
*Jeremiah Pate, United States*

## IAC-17.B1.IP.30 (non-confirmed)

a topology structure based sar group targets recognition algorithm  
*Hao Wang, National Key Laboratory of Science and Technology on Aerospace Intelligence Control, Beijing Aerospace Automatic Control Institute, China*

## IAC-17.B1.IP.32

KhalifaSat Camera System Design Development  
*Abdalla Harmoul, Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates*

## IAC-17.B1.IP.33

MicroCarb: Atmospheric CO2 monitoring from micro-satellite  
*Arnaud Varinois, Centre National d'Etudes Spatiales (CNES), France*

## B2.IP. Interactive Presentations

September 28 2017, 12:45 — Hall J&K2

**Co-Chair(s):** Manfred Wittig, European Space Agency (ESA), retired, The Netherlands; Otto Koudelka, Joanneum Research, Austria;

### IAC-17.B2.IP.1

Deep Space Probe High Gain Antenna Field Of View Analysis Using 3D EM Simulation For Robust Design  
*Sangman Moon, Korea Aerospace Research Institute (KARI), Korea, Republic of*

### IAC-17.B2.IP.2

The feasibility study of lunar orbiter radiometric error analysis  
*Inkyu Kim, Korea Aerospace Research Institute (KARI), Korea, Republic of*

### IAC-17.B2.IP.3

Operations Concept for TC & TM Applied to Rovers on the Moon  
*Milen Tahtadjiev, Graz University of Technology (TU Graz), Germany*

### IAC-17.B2.IP.5

"What improvements to the Deep Space Network (DSN) are needed to support manned missions to Mars."  
*Prasad Falke, International Amateur Radio Union, United States*

### IAC-17.B2.IP.7

discussion on the use of small aperture antennas in maritime vsat networks  
*Yimeng Guo, Sino Satellite Communications Co., Ltd., China*

### IAC-17.B2.IP.8

Lost in GNSS: A need of commercial space policy for Positioning, Navigation and Timing.  
*Aurthur Vimalachandran Thomas Jayachandran, Samara University, Russian Federation*

## IAC-17.B2.IP.9

Assessment of Atmospheric bias in Geodetic Surveying Applications exploiting the S/N ratio of GNSS receivers  
*Francesco Vespe, Agenzia Spaziale Italiana (ASI), Italy*

## IAC-17.B2.IP.10

DESIGN OF COST EFFECTIVE LEO SATELLITE CONSTELLATION FOR AUTOMATIC DEPENDENT SURVEILLANCE-BROADCAST (ADS-B)  
*Ghulam JAFFER, University of the Punjab, Pakistan*

## IAC-17.B2.IP.11

the research of detecting the outlier in data processing of relative navigation of tight formation flying  
*Zhifei Zhang, Harbin Institute of Technology, China*

## IAC-17.B2.IP.12

Performance and Prediction of Combined Clock Error Model for Beidou New Generation Navigation Satellite  
*Dongxia Wang, Beijing Satellite Navigation Center, China*

## IAC-17.B2.IP.13 (non-confirmed)

INS/CNS Integrated Navigation Algorithm Using Small Field Star Tracker for Airborne Platform  
*Lei Zhou, China Electronics Technology Group Corporation No.20th Research Institute, China*

## IAC-17.B2.IP.14

Inter-satellite Quantum Key Distribution Pathfinder Mission  
*Douglas Griffin, University of New South Wales ADFA, Australia*

## IAC-17.B2.IP.15

a novel x-ray pulsar-based navigation technology  
*Hang Shi, Beijing Aerospace Technology Institute, China*

## IAC-17.B2.IP.16

A priority-based rateless coded cooperation communication scheme for spacecrafts multi-access channels  
*Yan Wang, Chinese Society of Astronautics (CSA), China*

## IAC-17.B2.IP.17 (non-confirmed)

Design Technology of the UHF Proximity Link Transceiver for Chinese Mars Relay Telecommunication  
*Qin Fen, China*

## IAC-17.B2.IP.18

Cableless Communication Inner the Space Launch Vehicle Based on the LED Visible Light Communication Technology  
*Yang Liu, Beijing Institute of Astronautical Systems Engineering, China*

## IAC-17.B2.IP.19

Application of Multipath Hemispherical Model in Multipath Error Reduction Method of Beidou Monitoring Receiver  
*Guangming LIU, National Key Laboratory of Integrated Information System Technology, Institute of Software, Chinese Academy of Sciences, China*

## IAC-17.B2.IP.20

Advanced MCM technology for inter-satellite link (ISL) space communication  
*Tong Yang, Institute of Satellite Application Engineering, China Academy of Space Technology(CAST), China*

## IAC-17.B2.IP.22

Development and prospect of satellite-based augmentation system  
*Jie Xin, Engineer, China*

## IAC-17.B2.IP.23

Research on interoperability features of satellite-based augmentation system  
*Jie Xin, Engineer, China*

## B3.IP. Interactive Presentations

September 28 2017, 12:45 — Hall J&K2

**Co-Chair(s):** Peter Batenburg, Airbus Defence and Space, The Netherlands;

### IAC-17.B3.IP.1

Spacecraft piloting performance assessment – A computational evaluation methodology for the SIMSKILL Experiment  
*Miquel Bosch Bruguera, Institute of Space Systems, Universität Stuttgart, Germany*

### IAC-17.B3.IP.3

A New Vision: Re-purposing the ISS to further humanity's progress in space beyond 2024  
*Daniel Glover, International Space University (ISU), United States*

### IAC-17.B3.IP.4

The Italian possible participation in the NASA Asteroid Redirect Mission (ARM): an update  
*Marco Tantardini, Italian Space Agency (ASI), Italy*

### IAC-17.B3.IP.6

Recent developments on DLR's Post-ISS concept  
*Stephan Siegfried Jahnke, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany*

### IAC-17.B3.IP.7

Free Space Optical Communication System for Extreme Environment Exploration Analogues  
*RHONDA LYONS, United States*

### IAC-17.B3.IP.8

Imagination and Space Exploration  
*Victoria Van Dyk, York University, Canada*

### IAC-17.B3.IP.9

Development prospects of suborbital space tourism  
*FENG OU, China Aerospace Science and Technology Corporation (CASC), China*

### IAC-17.B3.IP.11

Anthropomorphic Robots for Cosmonauts Support on Space Stations And Space Exploration Applying Prospects  
*Vladislav Sychkov, OJSC "SPA "Orbital systems", Russian Federation*

### IAC-17.B3.IP.12

Planning and Scheduling for the Poland Mars Analogue Simulation- PMAS 2017  
*Efstratia Salteri, Space Generation Advisory Council (SGAC), Germany*

### IAC-17.B3.IP.13

Operational Lessons Learned From Human-Robotic Partnership in Exogeology Analog Extravehicular Activity Simulation at Eifel Volcanic Region: ILEWG Euromoonmars  
*Mateusz Harasymczuk, ESA / University of Warsaw / Polish Air Force Academy, Poland*

### IAC-17.B3.IP.14

Human robotic partnership investigations during December 2016 ILEWG EuroMoonMars simulation campaign in Eifel volcanic area  
*Bernard Foing, ESA/ESTEC, ILEWG & VU Amsterdam, The Netherlands*

### IAC-17.B3.IP.15

The Realities of Human Operations in Deep Space  
*Michael Sarafin, National Aeronautics and Space Administration (NASA), United States*



### IAC-17.C2.IP.23

Model Updating of Thermo-Elastic Plates of Spacecrafts in the Hot and Cold Space Environments  
Kaipeng Sun, Shanghai Institute of Satellite Engineering, China

### IAC-17.C2.IP.24

Testing and modeling for the creep and recovery behavior of Kevlar cables  
Yaqiong Tang, , China

### IAC-17.C2.IP.25

Structural Dynamic Modification for Shock Response Spectra Test of a Fixture Based on Sensitivity Analysis of Anti-resonance Frequency  
DENG Changhua, Xi'an Aerospace Propulsion Institute, China

### IAC-17.C2.IP.26

Revealer1601-RH : A radiation hardened NoC-based Multicore Digital Signal Processor  
Hui Cao, Xi'an Microelectronics Technology Institute, China Academy of Space Electronics Technology (CASET), China Aerospace Science and Technology Corporation (CASC), China

### IAC-17.C2.IP.27

Paraffin-graphene/metal foam composite for thermal management in electronics  
Adriana Balan, University of Bucharest, Romania

### IAC-17.C2.IP.28

Experimental Studies on Supersonic Aerothermal Fluid-Structure Interaction  
Dennis Daub, DLR (German Aerospace Center), Germany

### IAC-17.C2.IP.29

application of composite sandwich structure with lattice cores in aircraft lightening design  
Zhenping Zhao, CALT,CASC, China

### IAC-17.C2.IP.30 (non-confirmed)

A new type of electro-hydraulic complex servo actuator and its algorithm research based on launch vehicle  
Zhongliang Zhang, Shanghai Aerospace Control Technology Institute, China

### IAC-17.C2.IP.31

A Fully Configurable Mass Dummy Design for Changing Spacecraft Structures  
Mehdi Sabzalian, Space Flight Laboratory, University of Toronto, Canada

### IAC-17.C2.IP.32

The prospect of additive manufacturing in primary structure of launch vehicle  
Ji Bin, Aerospace System Engineering Shanghai, China, China

### IAC-17.C2.IP.33

experiments on residual compressive strength after fatigue of carbon fiber fabric composites of spacecraft in hydrothermal environment  
Xuan Sun, , China

### IAC-17.C2.IP.34

Numerical Analysis of the Transient Response of Space Capsule Thermal Protection System for Re-entry Aerodynamic Heating  
Khadar Voli, Indian Space Research Organization (ISRO), India

### IAC-17.C2.IP.35 (non-confirmed)

Simulation Method for Unilateralism Coupling of Diffusive and Deformation  
YAO Dong, The 41st Institute of the Fourth Academy of CASC, China

### IAC-17.C2.IP.36

Modelling and Dynamics of the Deployment of Mesh Antennas  
Kangjia Fu, Tsinghua University, China

### IAC-17.C2.IP.37

Robust Shape Design of Tension Truss Antennas on Variation of Tension Tie Forces  
Zhihua Zhao, Tsinghua University, China

### IAC-17.C2.IP.38

Nonlinear elastic parameter identification of knitted wire mesh structure  
Tuanjie Li, Xidian University, China

### IAC-17.C2.IP.39 (non-confirmed)

Sprig driven expandable reflector for deployable antennas  
Cristian Ambrosini, , Italy

### IAC-17.C2.IP.40

the design of a lightweight robotic arm link using functionally graded materials: a case study  
Thomas McMaster, University of Strathclyde, Glasgow, United Kingdom

### IAC-17.C2.IP.41

probabilistic performances assessment for phase-change materials aided single-phase mechanically pumped fluid loops  
Jiaokun Cao, Key Laboratory of Space Utilization, Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences, China

### IAC-17.C2.IP.42

Waverider design with longitudinal stable self-trim characteristics  
Bingyan Chen, China Academy of Aerospace Aerodynamics(CAAA), China

### IAC-17.C2.IP.43

hypersonic simulation of mars entry atmosphere based on gun tunnel  
Hainan Jiang, China Academy of Aerospace Aerodynamics(CAAA), China

## C3.IP. Interactive Presentations

**September 28 2017, 12:45 — Hall J&K2**

**Co-Chair(s):** Koji Tanaka , ISAS, JAXA, Japan; Ming Li , China Academy of Space Technology (CAST), China;

### IAC-17.C3.IP.1

Utilization of Space Solar Power for the Moon  
Charles Esty, University of Maryland, College Park, United States

### IAC-17.C3.IP.2

Comparative Study of Power Generation Methods for Mars Mission: Potential of Space Solar Power (SSP) System  
Zeyu Zhang, University of Maryland, College Park, United States

### IAC-17.C3.IP.3

The analysis of the space environment effects on solar cells and its protection  
Jinpeng Han, China Academy of Launch Vehicle Technology, China

### IAC-17.C3.IP.6

Future Concepts for Space Solar Cells  
Ghanim Alotaibi, , Kuwait

## C4.IP. Interactive Presentations

**September 28 2017, 12:45 — Hall J&K2**

**Co-Chair(s):** Christophe Bonhomme , Centre National d'Etudes Spatiales (CNES), France; Elizabeth Driscoll , Aerojet Rocketdyne, United States; Elizabeth Jens , Jet Propulsion Laboratory - California Institute of Technology, United States; Jerrol Littles , Aerojet Rocketdyne, United States; Yen-Sen Chen , American Institute of Aeronautics and Astronautics (AIAA), Taiwan, China;

### IAC-17.C4.IP.1

Spacecraft-plasma interactions of a cubesat equipped with miniaturized feep thrusters  
Amenosis Lopez, TU Braunschweig, Germany

### IAC-17.C4.IP.2

Advanced Propulsion Control System(APCS) Model using Intelligent Techniques  
Elayaperumal Ezhilraj, Indian Space Research Organization (ISRO), India

### IAC-17.C4.IP.3

Transient Responses of Turbulent Heat Transfer of N-Decane at Supercritical Pressure and Temperature below 800 K  
Bo Ruan, School of Aeronautics and Astronautics, Dalian University of Technology, China

### IAC-17.C4.IP.5

wavelet packet analysis of time-frequency characteristic of the LOX/ Kerosene rocket engine due to heavy impact  
Feiping Du, Xi'an Aerospace Propulsion Institute, China

### IAC-17.C4.IP.6

Application of Particle-In-Cell Simulation Techniques in the Analysis and Optimisation of Magnetic Nozzle Geometries  
Alexander Ryan, University of New South Wales, Australia

### IAC-17.C4.IP.7

Multi-objective Design Optimization of the Cusped Field Thruster for Micro-Satellite Platforms  
Thomas Logan Fahey, RMIT University (Royal Melbourne Institute of Technology), Australia

### IAC-17.C4.IP.8

Study of Effect of Neutral Flow and Electron Transport in Wall Less Hall Thruster Concept  
Rajesh Natarajan, Bellatrix Aerospace Private Limited, India

### IAC-17.C4.IP.9

Control of Miniaturized Electro spray Ion Thrusters for CubeSat Designs  
Samuel Laprise, Ecole Polytechnique de Montreal, Canada

### IAC-17.C4.IP.11

Overview of Electric Propulsion Developments at TU Dresden for Micro and Small-Satellites  
Martin Tajmar, TU Dresden, Germany

### IAC-17.C4.IP.14

Closed-loop Thrust Control for Micropropulsion Systems  
Stefano Silvestrini, Delft University of Technology (TU Delft), The Netherlands

### IAC-17.C4.IP.15

choi-williams ditribution analysis for fault detection of the liquid propellant rocket engine  
Feiping Du, Xi'an Aerospace Propulsion Institute, China

### IAC-17.C4.IP.16

Numerical Simulation Study of Flow Characteristics and Modes in Methane Transverse Jet  
Zengkai Shi, , China

### IAC-17.C4.IP.18

Study of Ignition Transient in 2m Diameter Segmented SRM  
Jian-ru Wang, The 41st Institute of the Fourth Academy of CASC, China

### IAC-17.C4.IP.19

An additively-manufactured CNG/GOX aerospike rocket engine: Test results, performance and analysis  
Nicholas Mason-Smith, Monash University, Australia

### IAC-17.C4.IP.20

Study on auto-ignited hybrid rocket based on n2o oxidizer using catalytic ignition system  
Jincheol Kim, Chosun University, Korea, Republic of

### IAC-17.C4.IP.21

Early Studies and Fire Tests of a Green Liquid Apogee Engine Based on Decomposition of 98% Hydrogen Peroxide  
Pawel Surmacz, Institute of Aviation, Poland

### IAC-17.C4.IP.23

Effect of Prestrain on Dynamic Mechanical Properties of HTPB propellant  
Jiming CHENG, Northwestern Polytechnical University, China

### IAC-17.C4.IP.25

investigation of catalytic re-ignition process in hydrogen peroxide hybrid rocket motors  
Sheng Zhao, China Academy of Launch Vehicle Technology, China

### IAC-17.C4.IP.26

numerical simulation of catalytic decomposition and combustion process in an hydroxylammonium nitrate (han)-based monopropellant thruster  
Xiqiao Yu, Shanghai Insitute of Space Propulsion, China

### IAC-17.C4.IP.27

Assessment of combustion instability mechanisms based on an energy balance analysis  
Arnau Pons Lorente, Purdue University, United States

### IAC-17.C4.IP.28

Investigation on the Near-nozzle Field Flow of Liquid Jet in a Supersonic Crossflow  
Liyin Wu, China Aerodynamics Research and Development Center, China

### IAC-17.C4.IP.29

A Theoretical Study on Throttle Ranges of O/F Controllable Hybrid Rocket Propulsion Systems  
Kohei Ozawa, Kyushu Institute of Technology, Japan

### IAC-17.C4.IP.30

Numerical simulation of the start process of a han-based mono-propellant rocket thruster  
Dechuan Sun, School of Aeronautics and Astronautics, Dalian University of Technology, China

### IAC-17.C4.IP.31

Systematic performance analysis of cubesat propulsion systems using the high performance satellite dynamics simulator HPS  
Benny Rievers, ZARM - University of Bremen, Germany

### IAC-17.C4.IP.32

Development of 2,500 N class hydrogen peroxide/polyethylene hybrid rocket for lab-scale sounding rocket application  
Yongtae Yun, Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of

### IAC-17.C4.IP.33

Numerical Simulation of Influence of Injector Parameters on Combustion in LOX/Methane Engine  
Ping Jin, School of Astronautics, Beihang University, China

### IAC-17.C4.IP.34

Material Compatibility of Six Metal Alloys with HAN based Green Monopropellant Fuel Blend  
Saagar Malaichamy, Bellatrix Aerospace Private Limited., India

### IAC-17.C4.IP.35

particle damping characteristics of low and medium frequency oscillation in solid rocket motor  
Shaouan Wei, Northwestern Polytechnical University@NPU, China

### IAC-17.C4.IP.38

Shallow Water Tests of Secondary Injection Thrust Vector Control of Aerospike Nozzles  
Christian Bach, Dresden University of Technology (DUT) / Technische Universität Dresden, Germany

### IAC-17.C4.IP.39

Numerical and experimental study of supersonic film cooling with cracking hydrocarbon fuel as coolant  
Silong Zhang, Harbin Institute of Technology, China









Nr.	Session name	Date	Time	Room
A5.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>A6</b>	<b>15<sup>th</sup> IAA SYMPOSIUM ON SPACE DEBRIS</b>			
A6.1	Measurements	Mon, 25 Sep	15:15	Hall E1
A6.10-B4.10	Joint Small Satellite/Space Debris Session to promote the long-term sustainability of space	Fri, 29 Sep	11:00	Hall E2
A6.2	Modelling and Risk Analysis	Tue, 26 Sep	09:45	Hall E1
A6.3	Hypervelocity Impacts and Protection	Wed, 27 Sep	09:45	Hall E1
A6.4	Mitigation and Standards	Tue, 26 Sep	14:45	Hall E1
A6.5	Space Debris Removal Issues	Thu, 28 Sep	09:45	Hall E1
A6.6	Space Debris Removal Concepts	Thu, 28 Sep	14:45	Hall E1
A6.7	Operations in Space Debris Environment, Situational Awareness	Fri, 29 Sep	09:00	Hall E1
A6.8	Policy, Legal, Institutional and Economic Aspects of Space Debris Detection, Mitigation and Removal (joint session with Space Security Committee)	Fri, 29 Sep	11:00	Hall E1
A6.9	Orbit Determination and Propagation	Wed, 27 Sep	14:45	Hall E1
A6.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>A7</b>	<b>SYMPOSIUM ON FUTURE SPACE ASTRONOMY AND SOLAR-SYSTEM SCIENCE MISSIONS</b>			
A7.1	Space Agency Strategies and Plans	Mon, 25 Sep	15:15	Riverbank 5
A7.2	Science Goals and Drivers for Future Exoplanet, Space Astronomy, Physics, and Outer Solar System Science Missions	Tue, 26 Sep	09:45	Riverbank 5
A7.3	Technology Needs for Future Missions, Systems, and Instruments	Fri, 29 Sep	11:00	Riverbank 5
A7.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>B1</b>	<b>EARTH OBSERVATION SYMPOSIUM</b>			
B1.1	International Cooperation in Earth Observation Missions	Mon, 25 Sep	15:15	Hall E2
B1.2	Future Earth Observation Systems	Tue, 26 Sep	09:45	Hall E2
B1.3	Earth Observation Sensors and Technology	Wed, 27 Sep	09:45	Hall E2
B1.4	Earth Observation Data Management Systems	Fri, 29 Sep	09:00	Hall E2
B1.5	Earth Observation Applications and Economic Benefits	Thu, 28 Sep	14:45	Hall E2
B1.6	Big Data, Data Cubes and new platforms to exploit large-scale, multi-temporal EO Data	Thu, 28 Sep	09:45	Hall E2
B1.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>B2</b>	<b>SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM</b>			
B2.1	Advanced Space Communications and Navigation Systems	Mon, 25 Sep	15:15	Meeting Room L3
B2.2	Fixed and Broadcast Communications	Tue, 26 Sep	09:45	Meeting Room L3
B2.3	Mobile Satellite Communications and Navigation Technology	Tue, 26 Sep	14:45	Meeting Room L3
B2.4	Advanced Satellite Services	Wed, 27 Sep	09:45	Meeting Room L3
B2.5	Space-Based Navigation Systems and Services	Wed, 27 Sep	14:45	Meeting Room L3
B2.6	Near-Earth and Interplanetary Communications	Thu, 28 Sep	09:45	Meeting Room L3
B2.7	Advanced Technologies for Space Communications and Navigation	Fri, 29 Sep	11:00	Meeting Room L3
B2.8-GTS.3	Space Communications and Navigation Global Technical Session	Thu, 28 Sep	14:45	Riverbank 2
B2.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>B3</b>	<b>HUMAN SPACEFLIGHT SYMPOSIUM</b>			
B3.1	Governmental Human Spaceflight Programs (Overview)	Mon, 25 Sep	15:15	City Room 3
B3.2	Commercial Human Spaceflight Programs	Tue, 26 Sep	09:45	City Room 3
B3.3	Utilization & Exploitation of Human Spaceflight Systems	Tue, 26 Sep	14:45	City Room 3
B3.4-B6.5	Flight & Ground Operations of HSF Systems (A Joint Session of the Human Spaceflight and Space Operations Symposia)	Wed, 27 Sep	09:45	City Room 3
B3.5	Astronaut Training, Accommodation, and Operations in Space	Thu, 28 Sep	09:45	City Room 3
B3.6-A5.3	Human and Robotic Partnerships in Exploration - Joint session of the Human Spaceflight and Exploration Symposia	Thu, 28 Sep	14:45	City Room 3

Nr.	Session name	Date	Time	Room
B3.7	Advanced Systems, Technologies, and Innovations for Human Spaceflight	Fri, 29 Sep	09:00	City Room 3
B3.8-E7.7	Joint IAF/IISL Session on Legal Framework for Collaborative Space Activities	Fri, 29 Sep	11:00	City Room 3
B3.9-GTS.2	Human Spaceflight Global Technical Session	Wed, 27 Sep	14:45	Riverbank 2
B3.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>B4</b>	<b>24<sup>th</sup> IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS</b>			
B4.1	18th Workshop on Small Satellite Programmes at the Service of Developing Countries	Tue, 26 Sep	09:45	Panorama Room 1
B4.10-A6.10	Joint Small Satellite/Space Debris Session to promote the long-term sustainability of space	Fri, 29 Sep	11:00	Hall E2
B4.2	Small Space Science Missions	Mon, 25 Sep	15:15	Panorama Room 1
B4.3	Small Satellite Operations	Tue, 26 Sep	14:45	Panorama Room 1
B4.4	Small Earth Observation Missions	Wed, 27 Sep	09:45	Panorama Room 1
B4.5	Access to Space for Small Satellite Missions	Wed, 27 Sep	14:45	Panorama Room 1
B4.5A-C4.8	Joint Session between IAA and IAF for Small Satellite Propulsion Systems	Fri, 29 Sep	11:00	Hall E3
B4.6A	Generic Technologies for Small/Micro Platforms	Thu, 28 Sep	09:45	Panorama Room 1
B4.6B	Generic Technologies for Nano/Pico Platforms	Thu, 28 Sep	14:45	Panorama Room 1
B4.7	Highly Integrated Distributed Systems	Fri, 29 Sep	11:00	Panorama Room 1
B4.8	Small Spacecraft for Deep-Space Exploration	Fri, 29 Sep	09:00	Panorama Room 1
B4.9-GTS.5	Small Satellite Missions Global Technical Session	Tue, 26 Sep	14:45	Riverbank 2
<b>B5</b>	<b>SYMPOSIUM ON INTEGRATED APPLICATIONS</b>			
B5.1	Tools and Technology in Support of Integrated Applications	Fri, 29 Sep	09:00	Meeting Room L3
B5.2	Integrated Applications End-to-End Solutions	Thu, 28 Sep	14:45	Meeting Room L3
<b>B6</b>	<b>SPACE OPERATIONS SYMPOSIUM</b>			
B6.1	Ground Operations - Systems and Solutions	Mon, 25 Sep	15:15	City Room 4
B6.2	New Space Operations Concepts and Advanced Systems	Thu, 28 Sep	14:45	City Room 4
B6.3	Mission Operations, Validation, Simulation and Training	Fri, 29 Sep	09:00	City Room 1
B6.5-B3.4	Flight & Ground Operations of HSF Systems (A Joint Session of the Human Spaceflight and Space Operations Symposia)	Wed, 27 Sep	09:45	City Room 3
B6.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>C1</b>	<b>ASTRODYNAMICS SYMPOSIUM</b>			
C1.1	Attitude Dynamics (1)	Mon, 25 Sep	15:15	Hall A
C1.2	Attitude Dynamics (2)	Tue, 26 Sep	09:45	Hall A
C1.3	Guidance, Navigation & Control (1)	Tue, 26 Sep	14:45	Hall A
C1.4	Guidance, Navigation & Control (2)	Wed, 27 Sep	09:45	Hall A
C1.5	Guidance, Navigation & Control (3)	Wed, 27 Sep	14:45	Hall A
C1.6	Mission Design, Operations & Optimization (1)	Thu, 28 Sep	09:45	Hall A
C1.7	Mission Design, Operations & Optimization (2)	Thu, 28 Sep	14:45	Hall A
C1.8	Orbital Dynamics (1)	Fri, 29 Sep	09:00	Riverbank 6 (a&b)
C1.9	Orbital Dynamics (2)	Fri, 29 Sep	11:00	Riverbank 6 (a&b)
C1.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>C2</b>	<b>MATERIALS AND STRUCTURES SYMPOSIUM</b>			
C2.1	Space Structures I - Development and Verification (Space Vehicles and Components)	Mon, 25 Sep	15:15	Panorama Room 2
C2.2	Space Structures II - Development and Verification (Deployable and Dimensionally Stable Structures)	Tue, 26 Sep	09:45	Panorama Room 2
C2.3	Space Structures - Dynamics and Microdynamics	Tue, 26 Sep	14:45	Panorama Room 2
C2.4	Advanced Materials and Structures for High Temperature Applications	Wed, 27 Sep	09:45	Panorama Room 2



Nr.	Session name	Date	Time	Room
C2.5	Smart Materials and Adaptive Structures	Wed, 27 Sep	14:45	Panorama Room 2
C2.6	Space Environmental Effects and Spacecraft Protection	Thu, 28 Sep	09:45	Panorama Room 2
C2.7	Space Vehicles – Mechanical/Thermal/Fluidic Systems	Thu, 28 Sep	14:45	Panorama Room 2
C2.8	Specialised Technologies, Including Nanotechnology	Fri, 29 Sep	09:00	Panorama Room 2
C2.9	Advancements in Materials Applications and Rapid Prototyping	Fri, 29 Sep	11:00	Panorama Room 2
C2.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>C3 SPACE POWER SYMPOSIUM</b>				
C3.1	Space-Based Solar Power Architectures / Space & Energy Concepts	Mon, 25 Sep	15:15	City Room 1
C3.2	Wireless Power Transmission Technologies, Experiments and Demonstrations	Tue, 26 Sep	09:45	City Room 1
C3.3	Advanced Space Power Technologies and Concepts	Wed, 27 Sep	14:45	City Room 3
C3.4	Small and Very Small Advanced Space Power Systems	Thu, 28 Sep	14:45	City Room 2
C3.5-C4.7	Joint Session on Advanced and Nuclear Power and Propulsion Systems	Fri, 29 Sep	09:00	Hall E3
C3.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>C4 SPACE PROPULSION SYMPOSIUM</b>				
C4.1	Propulsion System (1)	Mon, 25 Sep	15:15	Hall E3
C4.10	Propulsion Technology (3)	Fri, 29 Sep	11:00	City Room 4
C4.2	Propulsion System (2)	Tue, 26 Sep	09:45	Hall E3
C4.3	Propulsion Technology (1)	Wed, 27 Sep	09:45	Hall E3
C4.4	Electric Propulsion	Wed, 27 Sep	14:45	Hall E3
C4.5	Propulsion Technology (2)	Thu, 28 Sep	09:45	Hall E3
C4.6	New Missions Enabled by New Propulsion Technology and Systems	Thu, 28 Sep	14:45	Hall E3
C4.7-C3.5	Joint Session on Advanced and Nuclear Power and Propulsion Systems	Fri, 29 Sep	09:00	Hall E3
C4.8-B4.5A	Joint Session between IAA and IAF for Small Satellite Propulsion Systems	Fri, 29 Sep	11:00	Hall E3
C4.9	Hypersonic Air-breathing and Combined Cycle Propulsion	Tue, 26 Sep	14:45	Hall E3
C4.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>D1 SPACE SYSTEMS SYMPOSIUM</b>				
D1.1	Innovative and Visionary Space Systems	Mon, 25 Sep	15:15	Riverbank 3
D1.2	Space Systems Architectures	Tue, 26 Sep	14:45	Riverbank 3
D1.3	Technologies to Enable Space Systems	Wed, 27 Sep	09:45	Riverbank 3
D1.4A	Space Systems Engineering - Methods, Processes and Tools (1)	Wed, 27 Sep	14:45	Riverbank 3
D1.4B	Space Systems Engineering - Methods, Processes and Tools (2)	Thu, 28 Sep	09:45	Riverbank 3
D1.5	Lessons Learned in Space Systems: Achievements, Challenges, Best Practices, Standards.	Fri, 29 Sep	09:00	Riverbank 3
D1.6	Cooperative and Robotic Space Systems	Fri, 29 Sep	11:00	Riverbank 3
D1.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>D2 SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM</b>				
D2.1	Launch Vehicles in Service or in Development	Mon, 25 Sep	15:15	Hall O
D2.2	Launch Services, Missions, Operations, and Facilities	Tue, 26 Sep	09:45	Hall O
D2.3	Upper Stages, Space Transfer, Entry and Landing Systems	Wed, 27 Sep	09:45	Hall O
D2.4	Future Space Transportation Systems	Wed, 27 Sep	14:45	Hall O
D2.5	Technologies for Future Space Transportation Systems	Thu, 28 Sep	09:45	Hall O
D2.6	Future Space Transportation Systems Verification and In-Flight Experimentation	Thu, 28 Sep	14:45	Hall O
D2.7	Small Launchers: Concepts and Operations	Tue, 26 Sep	14:45	Hall O
D2.8-A5.4	Space Transportation Solutions for Deep Space Missions	Fri, 29 Sep	09:00	Hall O
D2.9-D6.2	Joint-Session Creating Safe Transportation Systems for Sustainable Commercial Human Spaceflight	Fri, 29 Sep	11:00	Hall O

Nr.	Session name	Date	Time	Room
D2.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>D3 15<sup>th</sup> IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT</b>				
D3.1	Strategies & Architectures as the Framework for Future Building Blocks in Space Exploration and Development	Tue, 26 Sep	09:45	Riverbank 4
D3.2	Systems and Infrastructures to Implement Future Building Blocks in Space Exploration and Development	Wed, 27 Sep	09:45	Riverbank 4
D3.3	Novel Concepts and Technologies to Enable Future Building Blocks in Space Exploration and Development	Thu, 28 Sep	14:45	Riverbank 4
D3.4	Space Technology and System Management Practices and Tools	Thu, 28 Sep	09:45	Riverbank 4
D3.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>D4 15<sup>th</sup> IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE</b>				
D4.1	Innovative Concepts and Technologies	Mon, 25 Sep	15:15	Riverbank 4
D4.2	Contribution of Space Activities to Solving Global Societal Issues	Wed, 27 Sep	14:45	Riverbank 4
D4.3	Conceptualizing Space Elevators and Tethered Satellites	Thu, 28 Sep	14:45	Riverbank 3
D4.4	Strategies for Rapid Implementation of Interstellar Missions: Precursors and Beyond	Fri, 29 Sep	11:00	Riverbank 4
D4.5	Space Mineral Resources, Asteroid Mining and Lunar/Mars insitu	Fri, 29 Sep	09:00	Riverbank 4
<b>D5 50<sup>th</sup> IAA SYMPOSIUM ON SAFETY, QUALITY AND KNOWLEDGE MANAGEMENT IN SPACE ACTIVITIES</b>				
D5.1	Safety and Quality for "Low Cost" Space Programs	Wed, 27 Sep	09:45	Riverbank 5
D5.2	Knowledge management and collaboration in space activities	Thu, 28 Sep	09:45	Riverbank 5
D5.3	Prediction, Measurement and Effects of space environment on space missions	Thu, 28 Sep	14:45	Riverbank 5
D5.4	Cyber-security threats to space missions and countermeasures to address them	Fri, 29 Sep	09:00	Riverbank 5
<b>D6 SYMPOSIUM ON COMMERCIAL SPACEFLIGHT SAFETY ISSUES</b>				
D6.1	Commercial Space Flight Safety and Emerging Issues	Tue, 26 Sep	09:45	Riverbank 2
D6.2-D2.9	Joint-Session Creating Safe Transportation Systems for Sustainable Commercial Human Spaceflight	Fri, 29 Sep	11:00	Hall O
D6.3	Enabling safe commercial spaceflight: vehicles and spaceports	Thu, 28 Sep	09:45	Riverbank 2
<b>E1 SPACE EDUCATION AND OUTREACH SYMPOSIUM</b>				
E1.1	Ignition - Primary Space Education	Fri, 29 Sep	09:00	Panorama Room 3
E1.2	Lift Off - Secondary Space Education	Fri, 29 Sep	11:00	Panorama Room 3
E1.3	On Track - Undergraduate Space Education	Tue, 26 Sep	09:45	Panorama Room 3
E1.4	In Orbit - Postgraduate Space Education	Tue, 26 Sep	14:45	Panorama Room 3
E1.5	Enabling the Future - Developing the Space Workforce	Wed, 27 Sep	14:45	Panorama Room 3
E1.6	Calling Planet Earth - Space Outreach to the General Public	Mon, 25 Sep	15:15	Panorama Room 3
E1.7	New Worlds - Non-Traditional Space Education and Outreach	Thu, 28 Sep	09:45	Panorama Room 3
E1.8	Hands-on Space Education and Outreach	Wed, 27 Sep	09:45	Panorama Room 3
E1.9	Space Culture – Public Engagement in Space through Culture	Thu, 28 Sep	14:45	Panorama Room 3
E1.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>E2 45<sup>th</sup> STUDENT CONFERENCE</b>				
E2.1	Student Conference - Part 1	Tue, 26 Sep	14:45	Riverbank 4
E2.2	Student Conference - Part 2	Wed, 27 Sep	09:45	Riverbank 2
E2.3-GTS.4	Student Team Competition	Mon, 25 Sep	15:15	Riverbank 2
E2.4	Educational Pico and Nano Satellites	Fri, 29 Sep	09:00	Riverbank 2
<b>E3 30<sup>th</sup> IAA SYMPOSIUM ON SPACE POLICY, REGULATIONS AND ECONOMICS</b>				
E3.1	International Cooperation - a cornerstone of 50 years UN Space Law and space diplomacy	Tue, 26 Sep	09:45	City Room 4
E3.2	Private Endeavour in Space Exploration	Tue, 26 Sep	14:45	City Room 4



Nr.	Session name	Date	Time	Room
E3.3	The Demand Side of the Space Economic Equation: Understanding and Evaluating the Changing Market Dynamics in Space Activities	Wed, 27 Sep	09:45	City Room 4
E3.4	Assuring a Safe, Secure and Sustainable Space Environment for Space Activities	Wed, 27 Sep	14:45	City Room 4
E3.5-E7.6	32nd Joint IAA/IISL Round Table: Technological and legal challenges for on-orbit servicing.	Thu, 28 Sep	09:45	City Room 4
E3.6	Strategic Risk Management for successful space programmes	Fri, 29 Sep	09:00	City Room 4
E3.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>E4</b>	<b>51<sup>st</sup> IAA HISTORY OF ASTRONAUTICS SYMPOSIUM</b>			
E4.1	Memoirs & organisational histories	Mon, 25 Sep	15:15	Meeting Room L2
E4.2	Scientific & technical histories	Thu, 28 Sep	14:45	Meeting Room L2
E4.3A	History of Australia's Contribution to Astronautics	Thu, 28 Sep	09:45	Meeting Room L2
E4.3B	"Can you believe they put a man on the Moon?"	Fri, 29 Sep	11:00	Meeting Room L2
<b>E5</b>	<b>28<sup>th</sup> IAA SYMPOSIUM ON SPACE AND SOCIETY</b>			
E5.1	Architecture for humans in space: design, engineering, concepts and mission planning	Tue, 26 Sep	14:45	City Room 1
E5.2	Models for Successfully Applying Space Technology Beyond Its Original Intent	Wed, 27 Sep	09:45	City Room 1
E5.3	Contemporary Arts Practice and Outer Space: A Multi-Disciplinary Approach	Wed, 27 Sep	14:45	City Room 1
E5.4	Space Assets and Disaster Management	Thu, 28 Sep	09:45	City Room 1
E5.5	Space Societies, Professional Associations and Museums	Thu, 28 Sep	14:45	City Room 1
E5.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>E6</b>	<b>BUSINESS INNOVATION SYMPOSIUM</b>			
E6.1	New space individuals, projects, programs, or business units: innovation, entrepreneurship & investment at the microscopic level of analysis	Tue, 26 Sep	09:45	Riverbank 3
E6.2	New space industry segments, firms, actor groups, and multiple programs: innovation, entrepreneurship & investment at the mesoscopic level of analysis	Tue, 26 Sep	14:45	Riverbank 5
E6.3	New space at the national, international, and overall industry levels: innovation, entrepreneurship & investment at the macroscopic level of analysis	Wed, 27 Sep	14:45	Riverbank 5
E6.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>E7</b>	<b>60<sup>th</sup> IISL COLLOQUIUM ON THE LAW OF OUTER SPACE</b>			
E7.1	9th Nandasiri Jasentuliyana Keynote Lecture on Space Law and Young Scholars Session	Tue, 26 Sep	09:45	Meeting Room L2
E7.2	'NewSpace', New Laws/ How governments can foster new space activities	Tue, 26 Sep	14:45	Meeting Room L2
E7.3	Refugees and the role of space communications/Status and Practice of Charter for Man-made Disasters	Wed, 27 Sep	09:45	Meeting Room L2
E7.4	Space law Developments in Asia-Pacific: Diverging national space legislation with regard to the applicability of space law to suborbital flights	Wed, 27 Sep	14:45	Riverbank 3
E7.5	Current Developments in Space Law	Fri, 29 Sep	09:00	Meeting Room L2
E7.6-E3.5	32nd Joint IAA/IISL Round Table: Technological and legal challenges for on-orbit servicing	Thu, 28 Sep	09:45	City Room 4
E7.7-B3.8	Joint IAF/IISL Session on Legal Framework for Collaborative Space Activities	Fri, 29 Sep	11:00	City Room 3
E7.IP	Interactive Presentations	Thu, 28 Sep	12:45	Hall J&K2
<b>E8</b>	<b>IAA MULTILINGUAL ASTRONAUTICAL TERMINOLOGY SYMPOSIUM</b>			
E8.1	Multilingual Astronautical Terminology	Fri, 29 Sep	11:00	City Room 1
<b>GTS</b>	<b>GLOBAL TECHNICAL SYMPOSIUM</b>			

Nr.	Session name	Date	Time	Room
GTS.2-B3.9	Human Space Flight Global Technical Session	Wed, 27 Sep	14:45	Riverbank 2
GTS.3-B2.8	Space Communications and Navigation Global Technical Session	Thu, 28 Sep	14:45	Riverbank 2
GTS.4-E2.3	Student Team Competition	Mon, 25 Sep	15:15	Riverbank 2
GTS.5-B4.9	Small Satellite Missions Global Technical Session	Tue, 26 Sep	14:45	Riverbank 2





## IAC-17.A1.5.2

Characterization of Bubble Detectors Used in Space Radiation Dosimetry: Charged Particle  
*Alexander Miller, UOIT, Canada*

## IAC-17.A1.5.3 (non-confirmed)

Main results on the neutron characteristics measured inside the Russian orbital space stations  
*Sergey Khulapko, IBMP and RSC-Energia, Russian Federation*

## IAC-17.A1.5.4

Feasibility of a novel TLD based personal microdosimeter for dosimetry and risk assessment of astronauts enduring long-term habitat in space stations  
*Bhaskar Mukherjee, University of Sydney, Australia*

## IAC-17.A1.5.5 (non-confirmed)

Status and Future Plans for Medipix-Based Radiation Monitoring Devices on ISS, Orion and Beyond...  
*Lawrence Pinsky, University of Houston, United States*

## IAC-17.A1.5.6

Deep-Space Radiation Environment Assessment with a Novel Spacecraft and a Newer Payload  
*Premkumar Saganti, Prairie View A&M University, United States*

## IAC-17.A1.5.7

The Matroshka-AstroRad Radiation Experiment (MARE) Aboard Orion EM-1  
*Razvan Giza, Lockheed Martin Space Systems Company, United States*

## IAC-17.A1.5.8 (non-confirmed)

the research of central neural system of rats model localized  $^{56}\text{Fe}^{26+}$  heavy ion radiation induced damage effects  
*Hao Wang, Beijing Institute of Technology, China*

## IAC-17.A1.5.9

serum microRNAs as noninvasive indicators for space radiation  
*Wenjun Wei, Institute of Modern Physics, Chinese Academy of Sciences, China*

## IAC-17.A1.5.10 (non-confirmed)

genomic instability induced by high energy charged particles  
*Rosalin Goss, National Aeronautics and Space Administration (NASA)/Johnson Space Center, United States*

## IAC-17.A1.5.11

Impact of Whole Body Irradiation on the Intestinal Microbiome-Considerations for Space Flight  
*Fathi Karouia, NASA ARC/UCSF, United States*

## IAC-17.A1.5.12

phits modeling of martian radiation environment  
*Michael Pfeifer, Kansas State University, United States*

## IAC-17.A1.5.13

Staying Below Radiation Exposure Limits: Maximum Levels of Solar Energetic Proton Event Fluence  
*Lawrence Townsend, University of Tennessee, United States*

## A1.6. Astrobiology and Exploration

**September 28 2017, 09:45 — City Room 2**

**Co-Chair(s):** *Co-Chair(s): Petra Rettberg, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;*

### IAC-17.A1.6.1

An Historic Choice of Number: the Planetary Protection Requirement for Exploring Ocean Worlds  
*Brent Sherwood, Caltech/JPL, United States*

### IAC-17.A1.6.2

Search for life on icy moons – what do we need to know for planetary protection?  
*Petra Rettberg, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany*

## IAC-17.A1.6.3

Potential Scientific, Practical, and Cultural Implications of Discovering Life in Our Solar System  
*John D. Rummel, SETI Institute, United States*

## IAC-17.A1.6.4

Shallow transient liquid water environments on present-day Mars, and their implications for life.  
*Eriita Jones, University of South Australia, Australia*

## IAC-17.A1.6.5

The BOSS Experiment of the EXPOSE-R2 Mission: Biofilm versus planktonic cells  
*Corinna Panitz, RWTH Aachen University, Germany*

## IAC-17.A1.6.6

BOSS\_Cyano experiment on the EXPOSE-R2 space mission: enhanced survival of Chroococciopsis biofilms to space and simulated Mars conditions compared to planktonic counterparts  
*Daniela Billi, University of Rome "Tor Vergata", Italy*

## IAC-17.A1.6.7

Effects of spaceflight and simulated microgravity on microbial growth and secondary metabolism  
*Bing Huang, Chinese PLA General Hospital, China*

## IAC-17.A1.6.8

Design of a Spaceflight Biofilm Experiment  
*Luis Zea, University of Colorado Boulder, United States*

## IAC-17.A1.6.9

Recent development of a bioinspired antimicrobial surface - a preventive technology for extended stays in confined space environments  
*Matthias Dünne, OHB System AG-Bremen, Germany*

## IAC-17.A1.6.10

Anti-microbial Polymer Development for Spacecraft Cabin Disease & System Contamination  
*Jason Armstrong, Boeing, Australia*

## IAC-17.A1.6.11 (non-confirmed)

Ensuring long term survival of life and ecosystems amidst a 6th mass species extinction on earth  
*Veerle Ronsse, The Netherlands*

## A1.7. Life Support, habitats and EVA Systems

**September 29 2017, 09:00 — City Room 2**

**Co-Chair(s):** *Klaus Slenzka, OHB System AG-Bremen, Germany; Rapporteur(s): Chiaki Mukai, Japan Aerospace Exploration Agency (JAXA), Japan;*

### IAC-17.A1.7.1

constructing a fully functional planetary base on earth  
*Carolyn Newton, University of North Dakota, United States*

### IAC-17.A1.7.2

Biological Challenges of True Space Settlement  
*John C. Mankins, ARTEMIS Innovation Management Solutions, LLC, United States*

### IAC-17.A1.7.3

Full inclusion feasibility of human metabolites' products into BTLSS matter turnover  
*Yegor Morozov, Institute of Biophysics, Russian Academy of Sciences, Siberian Branch; Siberian State Aerospace University, Russian Federation*

### IAC-17.A1.7.5

The Atmospheric Regeneration and Regulation in 4-crew and 180-day Controlled Ecological Life Support System (CELSS) Integration Experiment  
*Xinhong Li, Space Institute of Southern China (Shenzhen), China*

## IAC-17.A1.7.6

Microalgae Cultivation in Space for Future Exploration Missions: Results of the Breadboard Activities for a Long Term Photobioreactor Spaceflight Experiment on the International Space Station  
*Stefan Belz, University of Stuttgart, Germany*

## IAC-17.A1.7.7

Algal Research in Space  
*Tobias Niederwieser, University of Colorado Boulder, United States*

## IAC-17.A1.7.9

Effects of Microgravity and Solar Radiation on Growth of a Photosynthetic Microorganism  
*Morgan Taverner, University of Manitoba, Canada*

## IAC-17.A1.7.10

chlamydomonas reinhardtii in a closed system  
*Sandra Podhajsky, OHB System AG-Bremen, Germany*

## IAC-17.A1.7.11

uncaged-revealed: (natural) human torpor  
*S. M., Marvels-X, Australia*

## A1.8. Biology in Space

**September 29 2017, 11:00 — City Room 2**

**Co-Chair(s):** *Fengyuan Zhuang, Beihang University, China; Rapporteur(s): Cora Thiel, University of Zurich, Switzerland;*

### IAC-17.A1.8.1

LONG-TERM EVOLUTION STUDIES OF *E. COLI* MG1655 UNDER THE COMBINED STRESS OF LOW SHEAR MODELED MICROGRAVITY (LSMMG) AND THE BROAD SPECTRUM ANTIBIOTIC CHLORAMPHENICOL  
*Fathi Karouia, NASA ARC/UCSF, United States*

### IAC-17.A1.8.2 (non-confirmed)

genomic instability induced by high energy charged particles  
*Rosalin Goss, National Aeronautics and Space Administration (NASA)/Johnson Space Center, United States*

### IAC-17.A1.8.3

Microgravity and inflammation: the effects on human endothelial cells  
*Ludmila Buravkova, Institute of Biomedical Problems, Russian Academy of Sciences, Russian Federation*

### IAC-17.A1.8.4

The regulation of transcription efficiency in mice' different cell types under 37-day spaceflight at US ISS  
*Irina Ogneva, IBMP, Russian Federation*

### IAC-17.A1.8.6

The Effects of Long-Duration Spaceflight on Bone and Cartilage  
*Elizabeth Blaber, NASA Ames Research Center/USRA, United States*

### IAC-17.A1.8.9

Adaptation to microgravity in cells of the immune system  
*Cora S. Thiel, University of Zurich, Switzerland*

### IAC-17.A1.8.12 (non-confirmed)

Studies of plant gene expression and function stimulated by space microgravity  
*Jinying Lu, China Academy of Space Technology (CAST) Shenzhen Space Biotechnology Group, China*

## A2. MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM

**Coordinator(s):** *Nickolay N. Smirnov, Moscow Lomonosov State University, Russian Federation;*

**Secretary(s):** *Anastassii Nikonova, Russian Academy of Sciences, Russian Federation;*

**Vice-Coordinator(s):** *Gabriel Pont, Centre National d'Etudes Spatiales (CNES), France;*

## A2.1. Gravity and Fundamental Physics

**September 25 2017, 15:15 — Hall B**

**Co-Chair(s):** *Antonio Viviani, Università degli Studi della Campania "Luigi Vanvitelli", Italy; Hanns Selig, ZARM - University of Bremen, Germany;*  
**Rapporteur(s):** *Qi Kang, National Microgravity Laboratory, Institute of Mechanics, Chinese Academy of Sciences., China;*

### IAC-17.A2.1.1

Microscope : first satellite dedicated to measure the principle of equivalence in space  
*Valerio CIPOLLA, Centre National d'Etudes Spatiales (CNES), France*

### IAC-17.A2.1.2

BOOST: A Test of Special Relativity  
*Lisa Wörner, University of Bremen, Germany*

### IAC-17.A2.1.3

ATOMIC CLOCKS ENSEMBLE IN SPACE OPERATIONS. THE ISS EXTERNAL SCIENTIFIC PAYLOAD LOOKING FOR EXPERIMENTAL CONFIRMATIONS ON THE GENERAL RELATIVITY THEORY  
*Mauro Augelli, Centre National d'Etudes Spatiales (CNES), France*

### IAC-17.A2.1.4

Deployment Simulation for LISA Gravitational Wave Mission  
*An-Ming Wu, National Space Organization, Taiwan, China*

### IAC-17.A2.1.5

Microscope: A space-based test of the Weak Equivalence Principle  
*Stefanie Bremer, ZARM - University of Bremen, Germany*

### IAC-17.A2.1.6

High performance solar radiation pressure modeling for a test of the gravitational redshift using the Galileo navigation satellites  
*Felix Finke, ZARM, University of Bremen, Germany*

### IAC-17.A2.1.7

MICROSCOPE Mission: preliminary results  
*Phuong-Anh Huynh, Office National d'Etudes et de Recherches Aérospatiales (ONERA), France*

### IAC-17.A2.1.8

Challenges of relativistic geodesy  
*Claus Lämmerzahl, ZARM Fab GmbH, Germany*

## A2.2. Fluid and Materials Sciences

**September 26 2017, 09:45 — Hall B**

**Co-Chair(s):** *Nickolay N. Smirnov, Moscow Lomonosov State University, Russian Federation; Satoshi Matsumoto, Japan Aerospace Exploration Agency (JAXA), Japan;*  
**Rapporteur(s):** *Thomas Driebe, DLR (German Aerospace Center), Germany;*

### IAC-17.A2.2.2

Integrated Analysis of Hypersonic Aerothermodynamics and Thermal Response for Mars Entry Vehicles along the Trajectory  
*Xiaofeng Yang, China Aerodynamics Research and Development Center, China*

### IAC-17.A2.2.3

Laminar diffusion flame propagation over thermally destructing material  
*Nickolay N. Smirnov, Moscow Lomonosov State University, Russian Federation*



**IAC-17.A2.2.4**  
Oscillation Characteristics of Buoyant-Thermocapillary Convection in An Open Annular Pool  
*Li DUAN, National Microgravity Laboratory, Institute of Mechanics, Chinese Academy of Sciences., China*

**IAC-17.A2.2.6**  
Computer visualization of fluid displacement instability in porous medium  
*Valeriy Nikitin, Moscow Lomonosov State University, Russian Federation*

**IAC-17.A2.2.7**  
Materials Science Research Progress of the Chinese Manned Space Program  
*Yan Liu, Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences, China*

**IAC-17.A2.2.11**  
The effect of external magnetic field on dynamics of two-dimensional isotropic MHD  
*Mahzad Chitsaz, K. N. Toosi University of Technology, Iran*

### A2.3. Microgravity Experiments from Sub-Orbital to Orbital Platforms

**September 27 2017, 09:45 — Hall B**

**Co-Chair(s):** Raffaele Savino, , Italy; Rainer Willnecker, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;

**Rapporteur(s):** Peter Hofmann, OHB System AG - Munich, Germany;

**IAC-17.A2.3.2**  
The MAIUS Sounding Rocket Missions – Recent Results, Lessons Learned and Future Activities  
*Jens Grosse, University of Bremen - ZARM, Germany*

**IAC-17.A2.3.3**  
Results from the PerWaves microgravity experiment on-board MAXUS-9  
*Andrew Higgins, McGill University, Canada*

**IAC-17.A2.3.4**  
Flat Plate Pulsating Heat Pipe with self-rewetting fluid in parabolic flight conditions  
*Anselmo Cecere, Università degli Studi di Napoli "Federico II", Italy*

**IAC-17.A2.3.5**  
Microgravity tests in preparation of a Tethered Electromagnetic Docking space demonstration  
*Lorenzo Olivieri, CISAS – "G. Colombo" Center of Studies and Activities for Space, University of Padova, Italy*

**IAC-17.A2.3.6**  
Microgravity validation for xenon propellant distributions  
*Álvaro Tomás Soria-Salinas, Luleå University of Technology, Sweden*

**IAC-17.A2.3.7**  
PACMAN Experiment: on-ground test results as baseline for parabolic flight demonstration  
*Matteo Duzzi, CISAS – "G. Colombo" Center of Studies and Activities for Space, University of Padova, Italy*

**IAC-17.A2.3.8**  
Space experiment preparation: SELF-rewetting fluid for ENERgy management (SELENE)  
*Wassilis Tzevelecos, Université Libre de Bruxelles, Belgium*

**IAC-17.A2.3.9**  
DREAM Project as a first sub-orbital experiment to examine a drilling process in microgravity conditions.  
*Dorota Budzyn, Wrocław University of Technology, Poland*

**IAC-17.A2.3.10**  
analysis of scaled robotic arm manipulators under microgravity conditions  
*Nicole Chaves, Instituto Tecnológico de Costa Rica, Costa Rica*

**IAC-17.A2.3.11**  
microgravity diffusion flames spreading over a thick solid fuel in low-velocity flows  
*Shuang-Feng Wang, NML, Institute of Mechanics, Chinese Academy of Sciences, China*

**IAC-17.A2.3.12**  
The Pattern Transformation of Thermocapillary Convection in An Open Annular Pool on SJ-10 Satellite  
*Qi Kang, National Microgravity Laboratory, Institute of Mechanics, Chinese Academy of Sciences., China*

### A2.4. Science Results from Ground Based Research

**September 27 2017, 14:45 — Hall B**

**Co-Chair(s):** Antonio Viviani, Università degli Studi della Campania "Luigi Vanvitelli", Italy; Valentina Shevtsova, Université Libre de Bruxelles, Belgium;  
**Rapporteur(s):** Nickolay N. Smirnov, Moscow Lomonosov State University, Russian Federation;

**IAC-17.A2.4.1**  
The quantum of energy transported during evaporation: Investigation of a fundamental constant  
*Aaron H. Persad, University of Toronto, Canada*

**IAC-17.A2.4.2**  
Near-critical density filling of the SF6 fluid cell for the ALI-R-DECLIC experiment in weightlessness  
*Carole Lecoutre, CNRS-ICMBC, France*

**IAC-17.A2.4.4**  
Ground Measurements of Molecular Diffusion in Multicomponent Liquid Systems in the Frame of the DCMIX Research Program  
*Quentin Galand, Université Libre de Bruxelles, Belgium*

**IAC-17.A2.4.5**  
Simulations of hydrodynamic processes for astrophysical objects in 3D statement on meshes of high resolution  
*Boris Rybakin, Scientific research Institute for System Studies Russian Academy of Sciences, Russian Federation*

**IAC-17.A2.4.6 (non-confirmed)**  
The effects of the space environment on seismic data collection: Regolith type, atmosphere and gravity  
*Michael Dello-Iacovo, University of New South Wales, Australia*

**IAC-17.A2.4.7**  
Research on Dynamic Scale of Floating Pedestal Manipulator System in Ground Microgravity Simulated Experimental Environment  
*Zhanxia Zhu, National Key Laboratory of Aerospace Flight Dynamics, Northwestern Polytechnical University, Xi'an, China*

**IAC-17.A2.4.8 (non-confirmed)**  
Experimental structure for Cosmic Radiation's interaction on spacecraft with spinning artificial gravity  
*Yair Israel Piña López, Universidad Nacional Autónoma de México, Mexico*

### A2.5. Facilities and Operations of Microgravity Experiments

**September 28 2017, 14:45 — Hall B**

**Co-Chair(s):** Gabriel Pont, Centre National d'Etudes Spatiales (CNES), France; Rainer Willnecker, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;

**Rapporteur(s):** Satoshi Matsumoto, Japan Aerospace Exploration Agency (JAXA), Japan;

**IAC-17.A2.5.1**  
The GraviTower Bremen - Prototype: A Novel Actively Driven Drop Tower System  
*Thorben Könemann, ZARM Fab GmbH, Germany*

**IAC-17.A2.5.2**  
development of a low cost sounding rocket propelled by a hybrid motor  
*Michal Pakosz, Institute of Aviation, Poland*

**IAC-17.A2.5.3**  
MAIUS-1 – An Overview on the Vehicle, Subsystem Design and Flight Results  
*Andreas Stamminger, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany*

**IAC-17.A2.5.5**  
MiGrOp - Parabolic Flight with Light Aircraft - a Progress Report  
*Hanns Sellig, GERADTS GMBH, Germany*

**IAC-17.A2.5.6**  
Parabolic Flights with Gliders as an Innovative Low Cost Platform for Microgravity and Hypergravity Research  
*Vladimir Pletser, Chinese Academy of Sciences, China*

**IAC-17.A2.5.7**  
Suborbital Payload Flights on Blue Origin's New Shepard Vehicle  
*Erika Wagner, Blue Origin LLC, United States*

**IAC-17.A2.5.8**  
FIRST MIDDLE EAST AIRCRAFT PARABOLIC FLIGHTS FOR ISU PARTICIPANT EXPERIMENTS  
*Vladimir Pletser, Chinese Academy of Sciences, China*

**IAC-17.A2.5.9**  
A novel navigation scheme of simulating non-cooperative target's long-duration, six-DOFs measurements in magnetism–buoyancy hybrid microgravity environments  
*Jichao Liu, National Key Laboratory of Aerospace Flight Dynamics, Northwestern Polytechnical University, Xi'an, China*

**IAC-17.A2.5.10**  
Emerging Microgravity Platforms and their Capabilities Compared to the Traditional Offering  
*Guerric de Crombrughe, Independent consultant, Belgium*

### A2.6. Microgravity Sciences Onboard the International Space Station and Beyond – Part 1

**September 29 2017, 09:00 — Meeting Room L1 (a&b)**

**Co-Chair(s):** Bernard Zappoli, Centre National d'Etudes Spatiales (CNES), France; Peter Hofmann, OHB System AG - Munich, Germany;

**Rapporteur(s):** Angelika Diefenbach, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany;

**IAC-17.A2.6.1**  
DECLIC : a new and promising life aboard the ISS  
*Remi Canton, Centre National d'Etudes Spatiales (CNES), France*

**IAC-17.A2.6.2**  
Fluidics : Fluid Dynamic in space experiment  
*Jean MIGNOT, Centre National d'Etudes Spatiales (CNES), France*

**IAC-17.A2.6.3**  
ANITA2 Flight Model Development – A status report of the multicomponent ISS Air Analyser  
*Peter Hofmann, OHB System AG - Munich, Germany*

**IAC-17.A2.6.4**  
Access to Space: a new approach by the United Nations Office for Outer Space Affairs  
*Ayami Kojima, United Nations Office for Outer Space Affairs, Austria*

**IAC-17.A2.6.5 (non-confirmed)**  
The Design of Standard Controller for Microgravity Science Experiments: General Requirement and Solution  
*Teng Xie, Chinese Academy of Sciences, China*

**IAC-17.A2.6.8**  
OHM Microgravity Payloads: An insight into Plasma Kristall-4  
*Armin Stettner, OHB System AG, Germany*

### A2.7. Microgravity Sciences Onboard the ISS and Beyond

**September 29 2017, 11:00 — Meeting Room L1 (a&b)**

**Co-Chair(s):** Angelika Diefenbach, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany; Cora S. Thiel, University of Zurich, Switzerland; Peter Graef, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany; Satoshi Matsumoto, Japan Aerospace Exploration Agency (JAXA), Japan;

**IAC-17.A2.7.3**  
osteoprotective effects of osthole in hindlimb suspension rat model  
*Jinpeng He, Institute of Modern Physics, Chinese Academy of Sciences, China*

**IAC-17.A2.7.4**  
circulating miRNAs as potential biomarkers for skeletal muscle atrophy  
*Xiaoping Chen, China Astronaut Research and Training Center, China*

**IAC-17.A2.7.5**  
The intestinal microbiota contributes to colonic epithelial changes in simulated microgravity mouse model  
*Qing Ge, Peking University Health Science Center, China*

**IAC-17.A2.7.7**  
shaken not stirred: comparative studies using 2D-clinostat and random positioning machine  
*Sonja Brungs, German Aerospace Center (DLR), Germany*

**IAC-17.A2.7.9**  
Current Trends in High Throughput Methods for In-Situ Space Research  
*Fathi Karouia, NASA ARC/UCSF, United States*

### A3. SPACE EXPLORATION SYMPOSIUM

**Coordinator(s):** Bernard Foing, ESA/ESTEC, ILEWG & VU Amsterdam, The Netherlands; Christian Sallaberger, Canadensys Aerospace Corporation, Canada;

#### A3.1. Space Exploration Overview

**September 25 2017, 15:15 — Hall N**

**Co-Chair(s):** Christian Sallaberger, Canadensys Aerospace Corporation, Canada; Kathy Laurini, National Aeronautics and Space Administration (NASA), United States;

**Rapporteur(s):** Keyur Patel, National Aeronautics and Space Administration (NASA)/Jet Propulsion Laboratory, United States; Norbert Frischauf, Austria;

**IAC-17.A3.1.1**  
Scientific Opportunities Enabled by Human Exploration Beyond Low-Earth Orbit  
*Ben Bussey, NASA HQ, United States*





## IAC-17.A3.3B.4

Emirates Mars Mission (EMM) Instruments Design, Operations, and Data  
Suhail Aldhafri, Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates

## IAC-17.A3.3B.5 (non-confirmed)

Overview of the ChemCam Instrument Onboard the Mars Science Laboratory Curiosity Rover  
Ryan Jackson, University of New Mexico, United States

## IAC-17.A3.3B.6

DEVELOPMENT OF A VERY DEMANDING SPECTROMETER FOR EXOMARS MISSION  
Juan F. Cabrero Gomez, ISDEFE/ESA, Spain

## IAC-17.A3.3B.7

Spacecraft Contamination Control Challenges for Space Missions with Organic Compound Detection capabilities and for potential Sample Return  
Carlos Soares, NASA Jet Propulsion Laboratory, United States

## IAC-17.A3.3B.8

Design, development and qualification of a gas based dust removal tool for mars exploration missions  
Elizabeth Jens, Jet Propulsion Laboratory - California Institute of Technology, United States

## IAC-17.A3.3B.9

The Median Mars Mission Using Impactors - Searching for Life on Mars  
Robert Brand, Private, Australia

## IAC-17.A3.3B.10

Deployable aero-decelerator heatshield configurations to enable high-mass payloads at Mars  
Lisa Peacocke, Imperial College London, United Kingdom

## IAC-17.A3.3B.11

Task Oriented Onboard Planning Approach for Mars Rovers  
Hao Jin, Beijing Institute of Technology, China

## IAC-17.A3.3B.12

Canada's Space Exploration Rovers: GN&C Field Trial Results  
Joseph Nsasi Bakambu, MDA Space Missions, Canada

## IAC-17.A3.3B.13

optic flow-based navigation system for planetary rovers  
Naoto Kobayashi, Kyushu University, Japan

## IAC-17.A3.3B.14

Motigravity: a new VR system to increase the performance and safety in Mars mission  
Antonio Del Mastro, Italian Mars Society, Italy

## A3.4A. Small Bodies Missions and Technologies (Part 1)

September 28 2017, 09:45 - Hall N

**Co-Chair(s):** Stephan Ulamec, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany; Susan McKenna-Lawlor, Space Technology (Ireland) Ltd., Ireland;

**Rapporteur(s):** Marc D. Rayman, Jet Propulsion Laboratory - California Institute of Technology, United States; Norbert Frischauf, Austria;

### IAC-17.A3.4A.1 (non-confirmed)

KEYNOTE: Technology Needs for Exploiting Asteroid Resources  
Roger X. Lenard, LPS, United States

### IAC-17.A3.4A.2

Dawn at Ceres: The First Exploration of the First Dwarf Planet  
Marc D. Rayman, Jet Propulsion Laboratory - California Institute of Technology, United States

### IAC-17.A3.4A.3

The Operations Legacy of the Rosetta Mission  
Paolo Ferri, European Space Agency (ESA), Germany

### IAC-17.A3.4A.5

Tiny, but interesting: Analyzing dust particles on and off small bodies  
Martin Hilchenbach, Max-Planck-Institut für Solar System Research, Germany

### IAC-17.A3.4A.6 (non-confirmed)

Lessons learned from SD2 operations on comet 67/P  
Amalia Ercoli Finzi, Politecnico di Milano, Italy

### IAC-17.A3.4A.7

Hayabusa2-Ryugu Proximity Operation Planning and Landing Site Selection  
Tomohiro Yamaguchi, Japan Aerospace Exploration Agency (JAXA), Japan

### IAC-17.A3.4A.8

mascot - preparations for its landing in 2018: a status update from ground and space one year ahead of the landing on ryugu  
Christian Ziach, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

### IAC-17.A3.4A.9

French Contributions to HAYABUSA2-MASCOT: Philae mission inheritance?  
Aurélie Moussi, Centre National d'Etudes Spatiales (CNES), France

## A3.4B. Small Bodies Missions and Technologies (Part 2)

September 29 2017, 11:00 - Hall N

### IAC-17.A3.4B.2

Asteroid Impact and Deflection Assessment (AIDA) - The Double Asteroid Redirection Test (DART) Mission  
Cheryl Reed, The Johns Hopkins University Applied Physics Laboratory, United States

### IAC-17.A3.4B.3

MASCOT2 - a small body lander to investigate the interior of 65803 Didymos' Moon in the frame of AIDA/AIM  
Caroline Lange, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

### IAC-17.A3.4B.4

Trajectory analysis for Cubesat landing on Didymos in context of AIM mission  
Mugurel Balan, Institute of Space Science, Romania

### IAC-17.A3.4B.5

Development and testing of a pyro-driven Launcher for harpoon-based comet sample acquisition  
Stefan Völk, DLR (German Aerospace Center), Germany

### IAC-17.A3.4B.6

The D-MEN sampling device - Extracting and collecting asteroid material for sample return  
Martin Schimmerohn, Fraunhofer EMI, Germany

### IAC-17.A3.4B.7

DESTINY+: Technology Demonstration and Exploration of Asteroid 3200 Phaethon  
Kazutaka Nishiyama, Japan Aerospace Exploration Agency (JAXA), Japan

### IAC-17.A3.4B.8

Detection of Two Near-Earth Asteroids with a Southern Hemisphere Planetary Radar System  
Craig Benson, University of New South Wales ADFA, Australia

## IAC-17.A3.4B.9

Ilias: a tour to trojan asteroids  
Michèle Lavagna, Politecnico di Milano, Italy

## IAC-17.A3.4B.10

SCORPION: A Low-Cost Multi-Phase and Multi-Objective Asteroid Mission  
Francisco da Silva Pais Cabral, G.M.V. Space and Defence, S.A., Spain

## A3.5. Solar System Exploration

September 28 2017, 14:45 - Hall N

**Co-Chair(s):** Junichiro Kawaguchi, Japan Aerospace Exploration Agency (JAXA), Japan; Mariella Graziano, GMV Aerospace & Defence SAU, Spain;  
**Rapporteur(s):** Alain Ouellet, Canadian Space Agency, Canada; Charles E. Cockrell Jr., National Aeronautics and Space Administration (NASA), United States;

### IAC-17.A3.5.1

Solar polar observation mission and its orbit design  
Takehiro Koyanagi, The University of TOKYO, Graduate school, Japan

### IAC-17.A3.5.2

Analysis of balloon and sail system trajectories within extra-terrestrial atmospheres  
Christopher Yoder, North Carolina State University, United States

### IAC-17.A3.5.3

SIMBIO-SYS for Bepi Colombo: Key Enabling Technologies for Mercury exploration  
Iacopo Ficai Veltroni, Leonardo Spa, Italy

### IAC-17.A3.5.4

the mercury orbiter radio science experiment (more) on-board the esa/jaxa bepicolombo mission to mercury.  
Giulia Schettino, IFAC-CNR, Italy

### IAC-17.A3.5.5

Venus Long-Life Surface Package (VL2SP)  
Christer Fuglesang, KTH, Sweden

### IAC-17.A3.5.6

EDEM - Europa Direct Encounter Mission. Possible scenario of an ultra-strong momentum exchange tether application for a future landing mission to Europa  
Vadym Pasko, Yuzhnoye State Design Office, Ukraine

### IAC-17.A3.5.8

Europa and Enceladus Plume Sampling Using Rotating Tether System  
Graham Dorrington, RMIT University, Australia, Australia

### IAC-17.A3.5.9

Simulation of precise and safe landing near a plume source in a tiger stripe canyon on the south pole of Enceladus  
Konstantinos Konstantinidis, Universität der Bundeswehr München, Germany

## A4. 46th IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) - The Next Steps

**Coordinator(s):** Claudio Maccone, International Academy of Astronautics (IAA) and Istituto Nazionale di Astrofisica (INAF), Italy;

## A4.1. SETI 1: SETI Science and Technology

September 26 2017, 14:45 - Hall B

**Co-Chair(s):** Ian Morrison, Swinburne University of Technology, Australia; Michael Albert Garrett, University of Manchester, United Kingdom;  
**Rapporteur(s):** Andrew Siemion, University of California / ASTRON / Radboud University, United States;

### IAC-17.A4.1.1

All-sky radio SETI  
Mike Garrett, University of Manchester, United Kingdom

### IAC-17.A4.1.2

The Breakthrough Listen Search for Extraterrestrial Technologies  
Andrew Siemion, University of California / ASTRON / Radboud University, United States

### IAC-17.A4.1.3

the breakthrough listen targeted search: GBT/I-band  
J. Emilio Enriquez, UC Berkeley / Radboud University Nijmegen, United States

### IAC-17.A4.1.4

Breakthrough Listen: SETI observations of nearby stars and the galactic plane with the Parkes telescope  
Daniel Price, U.C. Berkeley, United States

### IAC-17.A4.1.6

Main results of the SETI-observations with the RATAN-600 radio telescope in 2015 and 2016 sessions.  
Alexander Panov, Skobeltsyn Institute of Nuclear Physics, Russian Federation

### IAC-17.A4.1.7

SETI through future developments of the Parkes Radio Telescope  
James Green, CSIRO, Australia

### IAC-17.A4.1.8

SETI activities in Sardinia: status and ongoing development  
Andrea Melis, INAF - Istituto Nazionale di Astrofisica, Italy

### IAC-17.A4.1.9

development of new observational and signal-processing methodologies for SETI  
Abhijit Nath, University of Cape Town, South Africa

### IAC-17.A4.1.10

Exploring optical SETI's middle ground  
Richard Stanton, Jet Propulsion Laboratory, United States

## A4.2. SETI 2: SETI and Society

September 28 2017, 09:45 - Hall B

**Co-Chair(s):** Carol Oliver, University of New South Wales, Australia; Morris Jones, Independent Space Analyst, Australia; Paul Davies, Arizona State University, United States;

### IAC-17.A4.2.1

Dealing with Fringe SETI and Media Sensationalism  
Morris Jones, Australia

### IAC-17.A4.2.2

Dr Bobbie Vaile: A short life dedicated to SETI research and education  
Carol Oliver, University of New South Wales, Australia

### IAC-17.A4.2.3

"La vida en el universo": the Oxford Templeton Visiting Fellowship to Peru about SETI and Bioastronomy.  
Paolo Musso, University of Insubria (Italy) and Universidad Católica Sedes Sapientiae (Peru), Italy





### IAC-17.A6.1.5

The Difference Method: A simple and effective on-board algorithm for space debris detection  
*Lionel Métraller, Astronomical Institute University of Bern (AIUB), Switzerland*

### IAC-17.A6.1.6

Broadband Array Spectrograph System (BASS) thermal IR observations of Low Earth Orbit (LEO) and Geosynchronous Earth Orbit (GEO) objects in sunlit and darkness conditions  
*Mark A. Skinner, United States*

### IAC-17.A6.1.7

WISE IR Observations of Titan Rocket Bodies and Debris at GEO  
*Patrick Seitzer, University of Michigan, United States*

### IAC-17.A6.1.8

Operational and inactive intact objects in GEO as sources of HAMR debris - first clear evidence  
*Vladimir Agapov, Central Research Institute of Machine Building (TSNIIMASH), Russian Federation*

### IAC-17.A6.1.9

Attitude State Evolution of Space Debris Determined from Optical Light Curve Observations  
*Abdul Rachmann, Astronomical Institute University of Bern (AIUB), Switzerland*

### IAC-17.A6.1.10

Revisiting Microparticulate Flux in the Low Earth Orbit: Comparison between Direct Measurement of Micro-Craters on the Tanpopo Capture Panels and the Turandot Flux Model for the International Space Station in 2015-2016  
*Yoshiro Oda, Hosei University, Japan*

### IAC-17.A6.2.8

Drag and solar sail deorbiting: re-entry time versus cumulative collision probability  
*Camilla Colombo, Politecnico di Milano, Italy*

### IAC-17.A6.2.9

Statistical comparison of ISO recommended thermosphere models and space weather proxy forecasting on re-entry predictions  
*Benjamin Bastida Virgili, European Space Agency (ESA), Germany*

### IAC-17.A6.2.10 (non-confirmed)

new aerothermodynamic models and atmospheric re-entry analysis for concave geometry elements of space debris  
*Ysolde PREVEREAUD, ONERA - The French Aerospace Lab, France*

### IAC-17.A6.2.11

Gas-Kinetic Unified Algorithm for Boltzmann Model Equation and Applications to Aerodynamics during Low-Orbit Flight and Falling Disintegration of TG-type Spacecraft  
*Zhi-Hui Li, China Aerodynamics Research and Development Center, China*

## A6.3. Hypervelocity Impacts and Protection

**September 27 2017, 09:45 — Hall E1**

**Co-Chair(s):** Frank Schaefer, Fraunhofer - Institut für Kurzezeitdynamik, Ernst-Mach-Institut (EMI), Germany; Norman Fitz-Coy, University of Florida, United States;

**Rapporteur(s):** Alessandro Francesconi, University of Padova - DII/CISAS, Italy;

### IAC-17.A6.3.1

Review of MMOD Shielding of the Chinese Space Station  
*Jun Yan, China Academy of Space Technology (CAST), China*

### IAC-17.A6.3.3 (non-confirmed)

hypervelocity impact damage pattern recognition in aluminum alloy plates based on d-s evidence theory and bp neural network  
*Cao Wuxiong, School of Astronautics, Harbin Institute of Technology, China*

### IAC-17.A6.3.4

Study on the performance of shielding configuration for reducing the fixing weight of fiber layer  
*Fa-wei Ke, China Aerodynamics Research and Development Center, China*

### IAC-17.A6.3.6

Characterizing DebrisSat Fragments: So many fragments, so much data, and so little time  
*Bungo Shiotani, University of Florida, United States*

### IAC-17.A6.3.7

Optical Fragment Tracking in Hypervelocity Impact Experiments  
*Erkai Watson, Fraunhofer - Institut für Kurzezeitdynamik, Ernst-Mach-Institut (EMI), Germany*

### IAC-17.A6.3.8

Experimental investigation on the damage characteristic of solar array under millimeter size orbital debris hypervelocity impact  
*Zizheng GONG, Beijing Institute of Spacecraft Environment Engineering, CAST, China*

### IAC-17.A6.3.9

Microwave Emission from Hypervelocity Impacts Using Aluminum and Nylon for Target and Projectile Materials  
*Yuki Mando, The Graduate University for Advanced Studies, Japan*

## A6.4. Mitigation and Standards

**September 26 2017, 14:45 — Hall E1**

**Co-Chair(s):** Christian Cazaux, Centre National d'Etudes Spatiales (CNES), France; David Finkleman, International Academy of Astronautics, United States;

**Rapporteur(s):** Holger Krag, European Space Agency (ESA), Germany;

### IAC-17.A6.4.1

Evaluating the environmental criticality of massive objects in LEO for debris mitigation and remediation  
*Carmen Pardini, ISTI-CNR, Italy*

### IAC-17.A6.4.2

MAJOR TRENDS FOR MITIGATION OF SPACE DEBRIS IN NEAR-EARTH SPACE IN THE RUSSIAN FEDERATION  
*Igor Usovik, Central Research Institute of Machine Building (TSNIIMASH), Russian Federation*

### IAC-17.A6.4.3

End-of-life disposal of Geosynchronous satellites  
*Ioannis Gkolias, Politecnico di Milano, Italy*

### IAC-17.A6.4.4

Drag enhancement for spacecraft using numerous ultra-thin wires arranged into drag-wire webs of various configurations  
*Aishwarya Manjunath, PES University, India*

### IAC-17.A6.4.5

Sentinel-1C&D Spacecraft Uncontrolled Re-entry Predictions  
*Ramon Torres, European Space Agency (ESA), The Netherlands*

### IAC-17.A6.4.6

Design for Demise: Systems-level techniques to reduce re-entry casualty risk  
*David Riley, Deimos Space UK Ltd, United Kingdom*

### IAC-17.A6.4.7

Feasibility assessment of a containment tether to reduce LEO satellites' on-ground casualty area  
*Jan-Christian Meyer, OHB System AG-Bremen, Germany*

### IAC-17.A6.4.8

Heat transfer and attitude investigation of a flat plate in a hypersonic flow for the DEBRISK survivability modelling tool  
*Pierre Omalry, CNES, France*

### IAC-17.A6.4.9

CleanSat - Coordinated approach reshaping technology development for space  
*Andrew Wolahan, ESTEC, European Space Agency, The Netherlands*

### IAC-17.A6.4.10

Considering cost of de-orbiting maneuvers in long-term scenarios  
*Carsten Wiedemann, TU Braunschweig, Institute of Space Systems, Germany*

## A6.5. Space Debris Removal Technologies

**September 28 2017, 09:45 — Hall E1**

**Co-Chair(s):** Benjamin Bastida Virgili, European Space Agency (ESA), Germany; Fabio Santoni, University of Rome "La Sapienza", Italy;

**Rapporteur(s):** Fabrizio Piergentili, University of Rome "La Sapienza", Italy; ;

### IAC-17.A6.5.1

End-to-end On Ground System Demonstration of combined technologies for Debris Removal applications  
*Pablo Colmenarejo, GMV Aerospace & Defence SAU, Spain*

### IAC-17.A6.5.2

A Passively Stable Pyramid Sail for the Deorbit of Small Satellite Constellations  
*Alexandra Long, Georgia Institute of Technology, School of Aerospace Engineering, United States*

### IAC-17.A6.5.3

Standardized passive deorbiting device for multiple cubesat class SC: from 1U to 12U  
*Niccolò Bellini, N.P.C. New Production Concept, Italy*

### IAC-17.A6.5.4

development of a solid rocket motor for an active deorbitation system  
*Michał Pakosz, Institute of Aviation, Poland*

### IAC-17.A6.5.5

laboratory demonstration of space debris removal by a bi-directional helicon plasma thruster  
*Kazunori Takahashi, Tohoku University, Japan*

### IAC-17.A6.5.6

Contact Dynamics of Net Capturing of Space Debris  
*Minghe Shan, Delft University of Technology (TU Delft), The Netherlands*

### IAC-17.A6.5.8

comparison of efficiency of two de-orbiting schemes for admission in leo  
*Dmitriy Grishko, Bauman Moscow State Technical University, Russian Federation*

### IAC-17.A6.5.9

Low thrust trajectory optimization for multiple space debris removal  
*Xun Pan, Northwestern Polytechnical University, NPU, China*

### IAC-17.A6.5.10

Taxonomy and Analysis of Issues Facing Post Mission Disposal Concepts  
*Emma Kerr, University of Strathclyde, United Kingdom*

### IAC-17.A6.5.11

Increased Debris Cloud Density Due to Precession of Argument of Perigee  
*Joel Slotten, United States*

## A6.6. Space Debris Removal Concepts

**September 28 2017, 14:45 — Hall E1**

**Co-Chair(s):** Luisa Innocenti, European Space Agency (ESA), France; Nicolas Bérend, ONERA - The French Aerospace Lab, France;

**Rapporteur(s):** Balbir Singh, Manipal Institute of Technology, Manipal University, India;

### IAC-17.A6.6.1

CubeSats for Active Orbital Debris Removal  
*M. Reza Emami, University of Toronto, Canada*

### IAC-17.A6.6.2

Light Weight Robot Arm for Capturing Space Debris  
*Shin-Ichiro Nishida, Tottori University, Japan*

### IAC-17.A6.6.3

Space Debris Manoeuvre with Adaptive Optics Using a Ground-based Telescope  
*Doris Grosse, Australian National University, Australia*

### IAC-17.A6.6.4

The RemoveDebris ADR Mission: Launch from the ISS, Operations and Experimental Timelines  
*Jason Forshaw, Surrey Space Centre, University of Surrey, United Kingdom*

### IAC-17.A6.6.5

Simulation and prototyping of the Clean Space One Capture System  
*Xavier Collaud, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland*

### IAC-17.A6.6.6

Investigation of the potential applications of shape memory alloys for space debris remediation applications  
*Louis Wei-yu Feng, University of Cape Town, South Africa*

## A6.2. Modelling and Risk Analysis

**September 26 2017, 09:45 — Hall E1**

**Co-Chair(s):** Carmen Pardini, ISTI-CNR, Italy; Daniel Oltrogge, Analytical Graphics, Inc., United States;

**Rapporteur(s):** Marlon Sorge, The Aerospace Corporation, United States;

### IAC-17.A6.2.1

Preliminary Analysis of Two Years of the Massive Collision Monitoring Activity  
*Darren McKnight, Integrity Applications Incorporated (IAI), United States*

### IAC-17.A6.2.2

Mitigation Measures for Large Constellations  
*Hugh Lewis, University of Southampton, United Kingdom*

### IAC-17.A6.2.3

Towards State Uncertainty Accuracy Requirements for Actionable GEO Collision Risk Assessments  
*Sven Kevin Flegel, Space Environment Research Centre Ltd. (SERC), Australia*

### IAC-17.A6.2.4

A Comprehensive Assessment of Collision Risk in Geosynchronous Earth Orbit  
*Daniel Oltrogge, Analytical Graphics, Inc., United States*

### IAC-17.A6.2.5

Analysis of Initial Debris Fragment Characterization from DebrisSat  
*Marlon Sorge, The Aerospace Corporation, United States*

### IAC-17.A6.2.6

Evolution of fragmentation cloud in highly eccentric orbit and its interaction with objects in low Earth orbit  
*Stefan Frey, Politecnico di Milano, Italy*

### IAC-17.A6.2.7

Dynamical mapping of the LEO region for passive disposal design  
*Elisa Maria Alessi, IFAC-CNR, Italy*



- IAC-17.A6.6.7**  
tethered systems in adr: satleash microgravity experiment and future developments  
*Vincenzo Pesce, Politecnico di Milano, Italy*
- IAC-17.A6.6.8**  
The difficulty in designing an Active Debris Removal mission: results of the ESA's e.Deorbit Detailed Design phase – ESA's debris removal mission  
*Robin Biesbroek, ESA european space agency, The Netherlands*
- IAC-17.A6.6.9**  
Characterizing the impact of rotational velocity on a laser-based debris removal system  
*Evan Gjesvold, North Dakota State University, United States*
- IAC-17.A6.6.10**  
Next Steps in Preserving Geostationary Orbit  
*Mark Hemsell, The British Interplanetary Society, United Kingdom*

## A6.7. Operations in Space Debris Environment, Situational Awareness

- September 29 2017, 09:00 — Hall E1**  
**Co-Chair(s):** Juan Carlos Dolado Perez, Centre National d'Etudes Spatiales (CNES), France; T.S. Kelso, Center for Space Standards and Innovation, United States;  
**Rapporteur(s):** Carsten Wiedemann, TU Braunschweig, Institute of Space Systems, Germany;
- IAC-17.A6.7.1**  
Artificial Intelligence in Support to Space Traffic Management  
*Massimiliano Vasile, University of Strathclyde, United Kingdom*
- IAC-17.A6.7.2**  
Covariance Matrix Uncertainty Analysis and Correction  
*Juan Carlos Dolado Perez, Centre National d'Etudes Spatiales (CNES), France*
- IAC-17.A6.7.3**  
Open Source Collision Avoidance Maneuver Planning Tool RASIT ABAY, UNSW Australia, Australia
- IAC-17.A6.7.4**  
Architectural description of the Spanish Space Surveillance and Tracking System  
*Jose Maria Hermoso, CDTI (Centre for the development of Industrial Technology), Spain*
- IAC-17.A6.7.5**  
Distributed Fusion Sensor Networks for Space Situational Awareness  
*Steve Gehly, RMIT University (Royal Melbourne Institute of Technology), Australia*
- IAC-17.A6.7.6**  
Automated Resident Space Object catalogue construction and maintenance using optical sensor management  
*Nicholas Moretti, Inovor Technologies, Australia*
- IAC-17.A6.7.7**  
Space Debris Detection in Multi-Object Tracking  
*Zhengyang Mao, National Key Laboratory of Aerospace Flight Dynamics, Northwestern Polytechnical University, Xi'an, China*
- IAC-17.A6.7.8**  
Research on monitoring effectiveness of optical satellite constellation  
*Gongqiang Li, Chinese Academy of Sciences, China*
- IAC-17.A6.7.9**  
Challenges Identifying Newly Launched Objects  
*T.S. Kelso, Center for Space Standards and Innovation, United States*

## A6.8. Policy, Legal, Institutional and Economic Aspects of Space Debris Detection, Mitigation and Removal (joint session with Space Security Committee)

- September 29 2017, 11:00 — Hall E1**  
**Co-Chair(s):** Darren McKnight, Integrity Applications Incorporated (IAI), United States; Serge Plattard, European Space Policy Institute (ESPI), Austria;  
**Rapporteur(s):** Alexander Soucek, European Space Agency (ESA), France;
- IAC-17.A6.8.1 (non-confirmed)**  
30 Years of European Efforts in Dealing with Space Debris  
*Walter Flury, Switzerland*
- IAC-17.A6.8.2**  
Not all space debris is junk – a comprehensive management strategy for culturally significant spacecraft.  
*Alice Gorman, Flinders University, Australia*
- IAC-17.A6.8.4**  
Analysis of legal & policy issues for future Operational Debris Mitigation Systems  
*Annamaria Nassisi, Thales Alenia Space Italia, Italy*
- IAC-17.A6.8.5**  
Economic Benefits of Reusable Launch Vehicles for Space Debris Removal  
*Matthew Richardson, University of Tokyo, Japan*
- IAC-17.A6.8.6**  
Economic Valuation of Active Space Debris Removal  
*Olga Rozanova, Toulouse Business School, France*
- IAC-17.A6.8.7**  
Space Debris: The Landmines of Earth Orbit?  
*Stephen Coleman, UNSW Australia, Australia*
- IAC-17.A6.8.8**  
Consent Not Required (CNR): Making The Case That Consent Is Not Required Under Customary International Law For Removal Of Outer Space Debris Smaller Than 10 cm(2)  
*Marc Carns, United States*
- IAC-17.A6.8.9**  
Small Spacecraft: Rules and Frames Should be built From Space Security Aspect  
*Shengjun Zhang, China Academy of Launch Vehicle Technology (CALT), China*

## A6.9. Orbit Determination and Propagation

- September 27 2017, 14:45 — Hall E1**  
**Co-Chair(s):** Heiner Klinkrad, European Space Agency (ESA), Germany; Moriba Jah, University of Arizona, United States;  
**Rapporteur(s):** Hugh G. Lewis, University of Southampton, United Kingdom;
- IAC-17.A6.9.1**  
Effects of Thermosphere Total Density Perturbations on LEO Orbits During Severe Conditions Using SLR Data and TLE data sets.  
*Florent Deleflie, Observatoire de Paris, France*
- IAC-17.A6.9.2**  
Debris Shape Approximation using Ballistic Coefficient Estimation  
*John McVey, The Aerospace Corporation, United States*
- IAC-17.A6.9.3**  
Dynamical evolution analysis of standard geostationary transfer orbits injected by Chinese launchers  
*Yue Wang, Beihang University, China*

- IAC-17.A6.9.4**  
Bayesian filtering using directional statistics for space debris tracking problem  
*Shambo Bhattacharjee, University of Leeds, United Kingdom*
- IAC-17.A6.9.5**  
A LED-based Technology to improve the orbit determination of LEO satellite  
*Silvia Masillo, Sapienza - University of Rome, Italy*
- IAC-17.A6.9.6**  
Estimation of orbital parameters of broken-up objects from in-situ debris measurement  
*Yutaka Kodama, Kyushu University, Japan*
- IAC-17.A6.9.9**  
Analysis of Adaptive Gauss Mixture Unscented Kalman Filter with Sparse Optical Observations for Orbit Determination  
*Yang Yang, RMIT University (Royal Melbourne Institute of Technology), Australia*
- IAC-17.A6.9.10**  
Debris Object Orbit Initialization using the Probabilistic Admissible Region with Asynchronous Heterogeneous Observations  
*Waqar Zaidi, Applied Defense Solutions, Inc., United States*
- IAC-17.A6.9.11**  
Satellite Orbital Determination using the Desert Fireball Network  
*Trent Jansen-Sturgeon, Curtin University, Australia*

## A6.10-B4.10. Joint Small Satellite/Space Debris Session to promote the long-term sustainability of space

- September 29 2017, 11:00 — Hall E2**  
**Co-Chair(s):** Alex da Silva Curiel, Surrey Satellite Technology Ltd (SSTL), United Kingdom; Daniel Oltrogge, Analytical Graphics, Inc., United States; Rene Laufer, Baylor University / University of Cape Town, United States;  
**Rapporteur(s):** Christian Cazaux, Centre National d'Etudes Spatiales (CNES), France;
- IAC-17.A6.10-B4.10.1**  
Norms of Behavior for Small Satellite Operations - Basic Principles  
*Brian Weeden, Secure World Foundation, United States*
- IAC-17.A6.10-B4.10.2**  
To launch or not to launch - responsibilities of small satellites for a sustainable space environment  
*Jonas Radtke, Technische Universität Braunschweig, Germany*
- IAC-17.A6.10-B4.10.3**  
Examination of Constellation Deployments Relative to Debris Mitigation: The Rest of the Story...  
*Darren McKnight, Integrity Applications Incorporated (IAI), United States*
- IAC-17.A6.10-B4.10.4**  
Mega-constellations vulnerability assessment  
*Lorenzo Olivieri, CISAS – “G. Colombo” Center of Studies and Activities for Space, University of Padova, Italy*
- IAC-17.A6.10-B4.10.7**  
MAXIMIZING POST MISSION DISPOSAL OF MEGA CONSTELLATIONS SATELLITES REACHING END OF OPERATIONAL LIFETIME  
*Miki Ito, ASTROSCALE JAPAN Inc., Japan*
- IAC-17.A6.10-B4.10.8**  
LEDSAT: in-orbit demonstration mission for LED-based cluster launch early identification and improved LEO surveillance  
*Alice Pellegrino, Sapienza - University of Rome, Italy*
- IAC-17.A6.10-B4.10.9**  
EOL Operations of the D-SAT Satellite: an In-Orbit Demonstration of Satellite Controlled Re-entry  
*Alessio Fanfani, D-Orbit, Italy*

- IAC-17.A6.10-B4.10.11**  
Design of a Rigid Boom Electro Dynamic/ Drag-Sail (RBEDDS) Hybrid Deorbiting System  
*Alexandru Cornogolub, Surrey Space Centre, University of Surrey, United Kingdom*
- IAC-17.A6.10-B4.10.12**  
Autonomy and Operational Concept for Self-Removal of Spacecraft: Status detection, removal triggering and passivation.  
*Alexandra Wander, Universität der Bundeswehr München, Germany*

## A7. SYMPOSIUM ON FUTURE SPACE ASTRONOMY AND SOLAR-SYSTEM SCIENCE MISSIONS

- Coordinator(s):** Jakob van Zyl, National Aeronautics and Space Administration (NASA), United States;
- A7.1. Space-Agencies Long-Term Views**  
**September 25 2017, 15:15 — Riverbank 5**  
**Co-Chair(s):** Jakob van Zyl, National Aeronautics and Space Administration (NASA), United States; Pietro Ubertini, INAF, Italy;  
**Rapporteur(s):** Brent Sherwood, Caltech/JPL, United States;
- IAC-17.A7.1.1**  
The Square Kilometre Array: Australia's mega-science project  
*Sarah Pearce, CSIRO, Australia*
- IAC-17.A7.1.2**  
Technology Challenges and Results of LISA Pathfinder  
*Cesar Garcia Marirrodiga, ESTEC, European Space Agency, The Netherlands*
- IAC-17.A7.1.3**  
The TESS Mission: Instrument Noise Characterization for Precise Photometric Performance Evaluation and Science Sensitivity Analysis  
*Akshata Krishnamurthy, Massachusetts Institute of Technology (MIT), United States*
- IAC-17.A7.1.4**  
Preparing the mirror technology for the Athena x-ray telescope  
*Eric Wille, ESA, The Netherlands*
- IAC-17.A7.1.5**  
Balance in NASA's Space Science Program and the Roles of Extended Missions and Large Strategic Missions  
*Michael Moloney, National Academies of Sciences, Engineering, and Medicine, United States*
- IAC-17.A7.1.6**  
Program Options to Explore Ocean Worlds  
*Brent Sherwood, Caltech/JPL, United States*
- IAC-17.A7.1.7**  
Ocean Worlds, Icy Bodies, and RTG Concepts for Exploration  
*David Woerner, Jet Propulsion Laboratory - California Institute of Technology, United States*
- A7.2. Science Goals and Drivers for Future Exoplanet, Space Astronomy, Physics, and Outer Solar System Science Missions**  
**September 26 2017, 09:45 — Riverbank 5**  
**Co-Chair(s):** Brent Sherwood, Caltech/JPL, United States; Pietro Ubertini, INAF, Italy;  
**Rapporteur(s):** Eric Wille, ESA, The Netherlands;













#### IAC-17.B4.3.2

Potential new allocations to small satellite TT&C and regulatory status of small satellites  
*Martin Buscher, Technische Universität Berlin, Germany*

#### IAC-17.B4.3.3

Analysis of the communication anomaly during e-st@r-2 mission operations  
*Sabrina Corpino, Politecnico di Torino, Italy*

#### IAC-17.B4.3.6

Effective Continuous Transmission Scheme for Bandwidth limited Satellite Applications  
*Manfred Ehresmann, Institute of Space Systems, Universität Stuttgart, Germany*

#### IAC-17.B4.3.7

TECHNICAL CAPABILITIES OF SDR BASED GROUND STATION FOR MULTI-SATELLITE COMMUNICATIONS  
*Ghulam JAFFER, University of the Punjab, Pakistan*

#### IAC-17.B4.3.8

Advances in Modulation and Communication Protocols for Small Satellite Ground Stations  
*Alexander Kleinschrodt, University Wuerzburg, Germany*

#### IAC-17.B4.3.9

Intensive Care for Premature Satellites  
*Tobias Lesch, German Aerospace Centre (DLR), Germany*

#### IAC-17.B4.3.10

Onboard autonomous management system of SPARK Earth observation microsatellites  
*Rui Xu, Beijing Institute of Technology, China*

#### IAC-17.B4.3.11

Communication architecture and operation strategies for the electrically propelled CubeSat and re-entry capsule system CAPE  
*Andreas Hornig, University of Stuttgart, Germany*

#### IAC-17.B4.3.12

SmallSat Navigation via the Deep Space Network, Part I: Lunar Transport  
*Jeffrey Stuart, Jet Propulsion Laboratory - California Institute of Technology, United States*

#### IAC-17.B4.3.13

SONATE - A Nanosatellite for Autonomy  
*Hakan Kayal, University Wuerzburg, Germany*

#### IAC-17.B4.3.14

GOMX-4B, the most advance nanosatellite for IOD purposes  
*Laura León Pérez, GomSpace ApS, Denmark*

### B4.4. Small Earth Observation Missions

**September 27 2017, 09:45 — Panorama Room 1**

**Co-Chair(s):** *Larry Paxton, The Johns Hopkins University Applied Physics Laboratory, United States;*  
**Rapporteur(s):** *Carsten Tobehn, European Space Agency (ESA), The Netherlands;*

#### IAC-17.B4.4.1

Technological Experiments on the DLR-BIROS Satellite for the Next Generation of Earth Observation Missions  
*Winfried Halle, DLR (German Aerospace Center), Germany*

#### IAC-17.B4.4.2

One year of BEESAT-4 operation: Long-term analysis of housekeepings, GPS and attitude control data  
*Sascha Weiss, TU Berlin, Germany*

#### IAC-17.B4.4.3

The Australian INSPIRE-2 / AU03 CubeSat for the QB50 Project  
*Iver Cairns, University of Sydney, Australia*

#### IAC-17.B4.4.4

Images from nSight - a 2U Earth Observation and atmospheric science CubeSat  
*Francois Malan, Space Commercial Services, South Africa*

#### IAC-17.B4.4.5

The case for Video Imaging from space  
*Alex da Silva Curriel, Surrey Satellite Technology Ltd (SSTL), United Kingdom*

#### IAC-17.B4.4.6

Design considerations in rapid-revisit small satellite constellations  
*Rachel Bird, Surrey Satellite Technology Ltd (SSTL), United Kingdom*

#### IAC-17.B4.4.8

In-orbit demonstration of a miniaturised hyperspectral instrument with onboard high-level data processing  
*Chris van Dijk, Cosine Research BV, The Netherlands*

#### IAC-17.B4.4.9

RAAF – M1: UNSW Canberra – Royal Australian Air Force Space Situational Awareness and ISR Pathfinder Mission  
*Simon Barraclough, UNSW Australia, Australia*

#### IAC-17.B4.4.10

SuperView-1 01/02: A Pair of 0.5m resolution Remote Sensing Satellites with Excellent Image Quality, Multi-imaging Modes, and High Agile Ability for the Commercial Application  
*Zhiming Zhao, DFH Satellite Co. Ltd., China*

#### IAC-17.B4.4.11

A UK-South African Partnership & a Novel Approach to Wildfire Detection in the Southern African Region  
*Pamela Anderson, Clyde Space Ltd, United Kingdom*

#### IAC-17.B4.4.12

A Mission Design for GNSS RO/R Microsatellite Constellation  
*Guey-Shin Chang, National Space Organization, Taiwan, China*

### B4.5. Access to Space for Small Satellite Missions

**September 27 2017, 14:45 — Panorama Room 1**

**Co-Chair(s):** *Alex da Silva Curriel, Surrey Satellite Technology Ltd (SSTL), United Kingdom; Philip Davies, Deimos Space UK Ltd, United Kingdom;*  
**Rapporteur(s):** *Jeffery Emdee, The Aerospace Corporation, United States;*

#### IAC-17.B4.5.1

Facility for Australian Space Testing (FAST) on the International Space Station - An Opportunity for Small Scientific and Educational Programs  
*Patrick Neumann, Space Industry Association of Australia, Australia*

#### IAC-17.B4.5.2

New Zealand Enters the Commercial Small Satellite Sector: Challenges and Affordability  
*Maria A Pozza, Lane Neave Lawyers, New Zealand*

#### IAC-17.B4.5.3

NASA's Space Launch System: SmallSat Deployment to Deep Space  
*Kimberly Robinson, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, United States*

#### IAC-17.B4.5.4

LAUNCH OPPORTUNITIES AND PACKAGE SOLUTION  
*Mila Savelyeva, JSC Glavcosmos, Russian Federation*

#### IAC-17.B4.5.5

The changing launcher landscape – a review of the launch market for small satellites  
*Alex da Silva Curriel, Surrey Satellite Technology Ltd (SSTL), United Kingdom*

#### IAC-17.B4.5.6

Vertical Launch of Small Satellites from the UK  
*Philip Davies, Deimos Space UK Ltd, United Kingdom*

#### IAC-17.B4.5.8

the non-pyrotechnic door release mechanism applied to multi-satellites launching  
*Jiaolong Zhang, Northwestern Polytechnical University, China*

#### IAC-17.B4.5.9

Finding NewSpace Utilizing LOTUS: Lander/Orbiter Trans-Upper Stage  
*Chrishma Singh-Derewa, National Aeronautics and Space Administration (NASA)/Jet Propulsion Laboratory, United States*

#### IAC-17.B4.5.10

Predicting Transmissibility of Rail-Type CubeSat Deployers with Isolation  
*David Pignatelli, California Polytechnic State University, United States*

#### IAC-17.B4.5.12

Structure of Payload Fairing and Adapter for Launching Multiple Satellites in One Mission  
*Qian Xu, China Academy of Launch Vehicle Technology, China*

#### IAC-17.B4.5.13

Atmospheric reentry stability analysis of the space vehicle SARA  
*ELCIO JERONIMO DE OLIVEIRA, Institute of Aeronautics and Space (IAE), Brazil*

### B4.6A. Generic Technologies for Small/Micro Platforms

**September 28 2017, 09:45 — Panorama Room 1**

**Co-Chair(s):** *Jian Guo, Delft University of Technology (TU Delft), The Netherlands; Philip Davies, Deimos Space UK Ltd, United Kingdom;*

#### IAC-17.B4.6A.1

ALL-ELECTRIC MINI-PLATFORM AND VERY-LEO HI-RES CONSTELLATION  
*Vincenzo Stanzione, Sitael Spa, Italy*

#### IAC-17.B4.6A.2

Application of Plug-and-Play Integrated Micro-Propulsion System for Micro-Satellite Based on Additive Material Manufacturing  
*Liu Yiwei, China*

#### IAC-17.B4.6A.3

Integrating a large nanosatellite from CubeSat components – Challenges and solutions  
*Clemens Horch, Fraunhofer EMI, Germany*

#### IAC-17.B4.6A.4

A low cost self-powered wireless attitude sensor for CubeSats  
*Miao Feng, Shaanxi Engineering Laboratory for Microsatellites, Northwestern Polytechnical University, China*

#### IAC-17.B4.6A.5

The development of a passive de-orbit subsystem for small and micro satellites  
*Thomas Sinn, HPS GmbH, Germany*

#### IAC-17.B4.6A.7

a newly androgynous design of soft docking mechanism for micro/small satellites  
*Xiang Zhang, College of Aerospace Science and Engineering, National University of Defense Technology, China*

#### IAC-17.B4.6A.9

A Redundant and Integrated Avionics for 12U CubeSat  
*Guanghui Liu, Northwestern Polytechnical University, China*

#### IAC-17.B4.6A.10

Micro- and Nano- Re-entry Spacecraft Technology Developments  
*Sean Tuttle, UNSW Australia, Australia*

#### IAC-17.B4.6A.11

on-ground verification of attitude control system for 50-kg-class microsatellites using a hardware-in-the-loop-simulator  
*Shinya Fujita, Tohoku University, Japan*

#### IAC-17.B4.6A.12

Scalability and Modularity as Dimensions of Flexibility of a Microsatellite Platform  
*Michael Jetzschmann, German Aerospace Center (DLR), Germany*

### B4.6B. Generic Technologies for Nano/Pico Platforms

**September 28 2017, 14:45 — Panorama Room 1**

**Co-Chair(s):** *Joost Elstak, Airbus Defence and Space Netherlands, The Netherlands; Zeger de Groot, Innovative Solutions in Space BV, The Netherlands;*  
**Rapporteur(s):** *Andy Vick, RAL Space, United Kingdom;*

#### IAC-17.B4.6B.1

STARS-Elevator Mission Plan for Tether Deployment and Climber Translation  
*Masahiro Nohmi, Shizuoka University, Japan*

#### IAC-17.B4.6B.2

Managing high thermal loads in small satellites - Analysis, design, and verification of a 3D-printed radiator  
*Max Gulde, Fraunhofer EMI, Germany*

#### IAC-17.B4.6B.3

Development and Testing of New Thin-Film Solar Cell (TFSC) Technology: Flight Results from the AISAT-1N TFSC Payload  
*Craig Underwood, Surrey Space Centre, University of Surrey, United Kingdom*

#### IAC-17.B4.6B.4

The Exo-Brake As A De-Orbit Mechanism: Analysis and Recent Flight Experience through SOAREX and TechEdSat Flight Tests  
*Ali Guarneros Luna, NASA, United States*

#### IAC-17.B4.6B.5

Design and test of World's smallest satellite reaction wheel  
*Tom Vergoossen, Delft University of Technology (TU Delft), The Netherlands, The Netherlands*

#### IAC-17.B4.6B.6

Highly integrated communications, power management, and attitude determination and control side panel for CubeSats  
*Sebastian Grau, Technische Universität Berlin, Germany*

#### IAC-17.B4.6B.7

A Picosatellite Swarm for Technology Demonstration  
*Frank Baumann, Technische Universität Berlin, Germany*

#### IAC-17.B4.6B.8

AMMEQ-1: A 3U Cubesat System Design for Technology Demonstration of QKD  
*EuGene Kim, University of Sydney, Australia*

#### IAC-17.B4.6B.9

Development of a functional electroplated thermoplastic satellite structure for cubesats  
*Barnaby Osborne, International Space University (ISU), France*

#### IAC-17.B4.6B.10

In-Orbit Database and Distributed Computing based on Tiny 2 Language  
*Slavi Dombrovski, Zentrum für Telematik, Germany*

#### IAC-17.B4.6B.12

an innovative modularized smartphone satellite with foldable configuration  
*Chunlin Gong, Northwestern Polytechnical University, NPU, China*



**IAC-17.B4.6B.13**  
Gene Expression Measurement Module (GEMM)- the door to high-throughput in-situ analyses of biological systems.  
*Fathi Karouia, NASA ARC/UCSF, United States*

**IAC-17.B4.6B.14**  
duplicated voting processors for the low cost radiation hardening of computers  
*Sebastian Cline, , Canada*

**IAC-17.B4.6B.15**  
Thermoelectric generation for a self-powering autonomous sensor in a small satellite  
*Jorge Machin Llanos, Delft University of Technology (TU Delft), The Netherlands*

## B4.7. Highly Integrated Distributed Systems

**September 29 2017, 11:00 — Panorama Room 1**

**Co-Chair(s):** Michele Grassi, University of Naples "Federico II", Italy; Rainer Sandau, International Academy of Astronautics, Germany;  
**Rapporteur(s):** Jaime Esper, National Aeronautics and Space Administration (NASA), United States; Marco D'Errico, Seconda Università di Napoli, Italy;

**IAC-17.B4.7.2**  
Lean Hardware Update Process for a Modular Satellite Platform  
*Stefan Junk, Technische Universität Berlin, Germany*

**IAC-17.B4.7.3**  
a design of femto-satellite for space distributed collaborative measurement  
*Lei Yang, , China*

**IAC-17.B4.7.4**  
A reliable and energy efficient network topology control strategy for cooperative work in multi-layered satellite cluster networks  
*Qing Chen, Research Center of Satellite Technology, Harbin Institute of Technology, China*

**IAC-17.B4.7.5**  
Real time detection system for MDA with hyperspectral camera mounted small satellites  
*Daiki Nakaya, , Japan*

**IAC-17.B4.7.6**  
Leveraging software-defined small satellites in cost effective constellations  
*Alex da Silva Curiel, Surrey Satellite Technology Ltd (SSTL), United Kingdom*

**IAC-17.B4.7.7**  
Robust Trajectory Planning for Multiple Spacecraft with Electric Propulsion  
*Yaohua Guo, Northwestern Polytechnical University, China*

**IAC-17.B4.7.8**  
Integrated SmallSats and Unmanned Vehicles for Networking in Remote Locations  
*Roger Birkeland, Norwegian University of Science and Technology, Norway*

**IAC-17.B4.7.9**  
Integrated framework for high fidelity simulation of distributed systems of satellites and ground vehicles  
*Andreas Freimann, University Wuerzburg, Germany*

**IAC-17.B4.7.10**  
Decentralized Control of Swarm of Nanosatellites with Communication Restrictions using Aerodynamic Forces  
*Danil Ivanov, Keldysh Institute of Applied Mathematics, RAS, Russian Federation*

**IAC-17.B4.7.12**  
Nanosatellite Platform Considerations for Machine-to-Machine Communications Applications:  
*Peter Anderson, Clyde Space Ltd, United Kingdom*

## B4.8. Small Spacecraft for Deep-Space Exploration

**September 29 2017, 09:00 — Panorama Room 1**

**Co-Chair(s):** Leon Alkalai, National Aeronautics and Space Administration (NASA)/Jet Propulsion Laboratory, United States; Rene Laufer, Baylor University / University of Cape Town, United States;

**IAC-17.B4.8.1**  
Low-Cost Small Spacecraft to Explore the Edge of the Solar System  
*Jordi Puig-Suari, California Polytechnic State University, United States*

**IAC-17.B4.8.2**  
LUCIANUS: a lunar CubeSat mission for Moon and deep space exploration  
*Paolo Lunghi, Politecnico di Milano, Italy*

**IAC-17.B4.8.3**  
"Deep-Space CubeSats on Exploration Mission One"  
*Christopher Moore, National Aeronautics and Space Administration (NASA), United States*

**IAC-17.B4.8.4**  
Development of telecommunication systems and ground support for EM-1 interplanetary CubeSats missions: Lunar IceCube and LunaH-Map  
*Alessandra Babuscia, Jet Propulsion Laboratory - California Institute of Technology, United States*

**IAC-17.B4.8.5**  
Near Earth Asteroid Scout: NASA's Solar Sail Mission to a NEA  
*Les Johnson, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, United States*

**IAC-17.B4.8.7**  
Low-cost asteroid mining using small spacecraft  
*Pablo Calla, International Space University (ISU), France*

**IAC-17.B4.8.8**  
Companion NanoSat for Mars Moon Exploration Missions  
*Alexander Pfaff, , Germany*

**IAC-17.B4.8.9**  
Experimental design of small practical Mars rotorcraft  
*Graham Mann, Murdoch University, Australia*

**IAC-17.B4.8.10**  
nacomi - a communication system study for interplanetary nanosatellites  
*Rebecca Axén, Julius Maximilians Universität Würzburg, Germany*

**IAC-17.B4.8.11**  
Design Considerations for Deep Space CubeSat Deployment Systems  
*David Pignatelli, California Polytechnic State University, United States*

## B4.9-GTS.5. Small Satellite Missions Global Technical Session

**September 26 2017, 14:45 — Riverbank 2**

**Co-Chair(s):** Alex da Silva Curiel, Surrey Satellite Technology Ltd (SSTL), United Kingdom; Rhoda Shaller Hornstein, , United States;

**IAC-17.B4.9-GTS.5.1**  
**KEYNOTE: Small satellites: an initiative and a continuous support by the IAA**  
*Pierre Molette, , France*

**IAC-17.B4.9-GTS.5.3**  
*birds project: development and operation summary of a cubesat constellation project*  
*Maisun Ibn Monowar, LaSEINE, Kyushu Institute of Technology, Japan*

**IAC-17.B4.9-GTS.5.4**  
*A CubeSat Constellation for Maritime Surveillance*  
*Antonella Simonetti, OHB Italia SpA, Italy*

**IAC-17.B4.9-GTS.5.6**  
*Reconstruction of the Earth Orbit Parameters from A Miniaturized Temperature Sensor Onboard the Delfi-C3 CubeSat*  
*Lorenzo Pasqualetto Cassinis, TU Delft, The Netherlands*

**IAC-17.B4.9-GTS.5.7**  
*Nanosatellite Vibration Test Equipment*  
*Victor Romero, Image Processing Research Laboratory (INTI-Lab), Universidad de Ciencias y Humanidades - UCH, Peru*

**IAC-17.B4.9-GTS.5.8**  
*Design and Development of a Three-axis Controlled Helmholtz Cage as an in-house Magnetic Field Simulator for CubeSats.*  
*Tushar Goyal, Birla Institute of Technology and Science(BITS)-Pilani, India*

**IAC-17.B4.9-GTS.5.9**  
*Spire's story*  
*Megan Kane, Spire Global, Inc., United States*

**IAC-17.B4.9-GTS.5.10**  
*A Review of De-orbit Techniques for the Advancement of On-Orbit Manufacturing*  
*Ali Guarneros Luna, NASA, United States*

## B4.10-A6.10. Joint Small Satellite/Space Debris Session to promote the long-term sustainability of space

**September 29 2017, 11:00 — Hall E2**

**Co-Chair(s):** Alex da Silva Curiel, Surrey Satellite Technology Ltd (SSTL), United Kingdom; Daniel Oltrogge, Analytical Graphics, Inc., United States; Rene Laufer, Baylor University / University of Cape Town, United States;  
**Rapporteur(s):** Christian Cazaux, Centre National d'Etudes Spatiales (CNES), France;

**IAC-17.B4.10-A6.10.1**  
Norms of Behavior for Small Satellite Operations - Basic Principles  
*Brian Weeden, Secure World Foundation, United States*

**IAC-17.B4.10-A6.10.2**  
To launch or not to launch - responsibilities of small satellites for a sustainable space environment  
*Jonas Radtke, Technische Universität Braunschweig, Germany*

**IAC-17.B4.10-A6.10.3**  
Examination of Constellation Deployments Relative to Debris Mitigation: The Rest of the Story...  
*Darren McKnight, Integrity Applications Incorporated (IAI), United States*

**IAC-17.B4.10-A6.10.4**  
Mega-constellations vulnerability assessment  
*Lorenzo Olivieri, CISAS - "G. Colombo" Center of Studies and Activities for Space, University of Padova, Italy*

**IAC-17.B4.10-A6.10.7**  
MAXIMIZING POST MISSION DISPOSAL OF MEGA CONSTELLATIONS SATELLITES REACHING END OF OPERATIONAL LIFETIME  
*Miki Ito, ASTROSCALE JAPAN Inc., Japan*

**IAC-17.B4.10-A6.10.8**  
LEDSAT: in-orbit demonstration mission for LED-based cluster launch early identification and improved LEO surveillance  
*Alice Pellegrino, Sapienza - University of Rome, Italy*

**IAC-17.B4.10-A6.10.9**  
EOL Operations of the D-SAT Satellite: an In-Orbit Demonstration of Satellite Controlled Re-entry  
*Alessio Fanfani, D-Orbit, Italy*

**IAC-17.B4.10-A6.10.11**  
Design of a Rigid Boom Electro Dynamic/ Drag-Sail (RBEDDS) Hybrid Deorbiting System  
*Alexandru Cornogolub, Surrey Space Centre, University of Surrey, United Kingdom*

**IAC-17.B4.10-A6.10.12**  
Autonomy and Operational Concept for Self-Removal of Spacecraft: Status detection, removal triggering and passivation.  
*Alexandra Wander, Universität der Bundeswehr München, Germany*

## B5. SYMPOSIUM ON INTEGRATED APPLICATIONS

**Coordinator(s):** Larry Paxton, The Johns Hopkins University Applied Physics Laboratory, United States; Roberta Mugellesi-Dow, European Space Agency (ESA), United Kingdom;

### B5.1. Tools and Technology in Support of Integrated Applications

**September 29 2017, 09:00 — Meeting Room L3**

**Co-Chair(s):** Carsten Tobehn, European Space Agency (ESA), The Netherlands; Larry Paxton, The Johns Hopkins University Applied Physics Laboratory, United States; Roberta Mugellesi-Dow, European Space Agency (ESA), United Kingdom;  
**Rapporteur(s):** David Y. Kusnierkiewicz, The John Hopkins University, United States;

**IAC-17.B5.1.1**  
Business case development for precision agriculture applications using UAV and space borne platforms.  
*Maria de Roche, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland*

**IAC-17.B5.1.2**  
A fuzzy logic controller with Internet of Things (IoT) capabilities and COTS components for monitoring and mitigation climate change effects on sensible tropical crops  
*Arys Carrasquilla-Batista, Instituto Tecnológico de Costa Rica, Costa Rica*

**IAC-17.B5.1.3**  
Space for maritime surveillance: myth, reality of future?  
*Olivier Autran, Thales Alenia Space, France*

**IAC-17.B5.1.4**  
The Future of Internet of Things and their Applicability to Space  
*Arif Goktug Karacalioglu, International Space University, France*

**IAC-17.B5.1.5**  
Scope of Space Technologies in Internet of Things (IoT) Applications  
*Arun Subramanian Venkataraman, , India*

**IAC-17.B5.1.6**  
Spatio-Temporal based Framework for Video Retrieval System  
*Tahir Mushtaq, University of Management and Technology (UMT), Pakistan*









## C2.5. Smart Materials and Adaptive Structures

**September 27 2017, 14:45 — Panorama Room 2**

**Co-Chair(s):** Hiroshi Furuya, Tokyo Institute of Technology, Japan; Pavel M. Trivailo, RMIT University, Australia, Australia;  
**Rapporteur(s):** Paolo Gaudenzi, Sapienza University of Rome, Italy;

### IAC-17.C2.5.1

Demonstration of Sparse Aperture Configuration for Imaging Satellites  
*Jae Jun Kim, Naval Postgraduate School, United States*

### IAC-17.C2.5.2

Design of a smart tailored stiffness nonlinear spring  
*Mohammed K. Abbas, Northwestern Polytechnical University, China*

### IAC-17.C2.5.3

Novel 2-collinear-DoF strut prototype for spacecraft micro-vibration mitigation  
*Alessandro Stabile, University of Surrey, United Kingdom*

### IAC-17.C2.5.4

implementation and application of digital-controlled piezoelectric vibration absorbers to truss structures  
*Satoshi Yamada, Osaka Prefecture University, Japan*

### IAC-17.C2.5.5

Augmented Adaptive Motion Control and Vibration Optimal Control for Free-floating Flexible Space Manipulators with An Elastic Base  
*Xiaoyan Yu, Fuzhou University, China*

### IAC-17.C2.5.6

Modeling and design of a nonlinear aeroelastic energy harvester  
*Marco Eugeni, Università di Roma "La Sapienza", Italy*

### IAC-17.C2.5.7

A Novel Shape Memory Alloy Actuator for Solar Sailing Attitude Control  
*Xiaofeng Wu, University of Sydney, Australia*

### IAC-17.C2.5.8

evaluation of optical properties of advanced reflectivity control device for solar sail by numerical simulation  
*Hirokazu Ishida, The University of TOKYO, Graduate school, Japan*

### IAC-17.C2.5.9

Attitude control of a rigid flexible satellite by using reaction wheel and piezoelectric material for passive control of the elastic vibration  
*Ijar M. Da Fonseca, ITA-DCTA, Brazil*

### IAC-17.C2.5.11

New thermal protection systems for space launchers: icephobic coating for cryogenic rocket engine  
*Luca Mazzola, CIRA Italian Aerospace Research Centre, Italy*

### IAC-17.C2.5.13 (non-confirmed)

Use of smart material for efficient and safer sub orbital space flights  
*AMANJOT SINGH, India*

## C2.6. Space Environmental Effects and Spacecraft Protection

**September 28 2017, 09:45 — Panorama Room 2**

**Co-Chair(s):** Giuliano Marino, CIRA Italian Aerospace Research Centre, Italy;  
**Rapporteur(s):** Kyeum-rae Cho, Pusan National University, Korea, Republic of;

### IAC-17.C2.6.1 (non-confirmed)

configuration of experimental set up for out gassing evaluation of spacecraft materials  
*Rajeev Vaghmare, Indian Space Research Organization (ISRO), India*

### IAC-17.C2.6.2

HYPERVELOCITY DEBRIS IMPACT DAMAGE OF SPACE COMPOSITE STRUCTURES  
*Andrea Delfini, Sapienza Università di Roma, Italy*

### IAC-17.C2.6.3

Experimental Study on Acoustic Emission Signal Characteristics of Space Debris Hypervelocity Impact on Manned Spacecraft with Partition Frames  
*Xiangyang Hou, Institute of Manned Space System Engineering, China Academy of Space Technology (CAST), China*

### IAC-17.C2.6.4

Modelling and laboratory testing of radiation effects on space borne electronic components  
*Holly Snell, University of Cape Town, South Africa*

### IAC-17.C2.6.6

Numerical simulations of radiative heat effects at a plasma wind-tunnel flow under Mars entry conditions  
*Javier Garcia Garrido, Universität der Bundeswehr München, Germany*

### IAC-17.C2.6.9 (non-confirmed)

An Italian Technology for LSI-based CMC Control Surfaces for Re-entry Vehicles  
*Mario De Stefano Fumo, CIRA Italian Aerospace Research Centre, Italy*

### IAC-17.C2.6.12

Analysis of Radiation Environment and its Effect on Spacecraft in Different Orbits  
*Md Mahbubur Rahman, Skolkovo Institute of Science and Technology, Russian Federation*

## C2.7. Space Vehicles – Mechanical/Thermal/Fluidic Systems

**September 28 2017, 14:45 — Panorama Room 2**

**Co-Chair(s):** Brij Agrawal, Naval Postgraduate School, United States; Oleg Alifanov, Moscow Aviation Institute, Russian Federation;  
**Rapporteur(s):** Guoliang Mao, Beijing Institute of Aerodynamics, China;

### IAC-17.C2.7.1

A novel design approach for space components: application to a multifunctional panel  
*Carlo Ferro, Politecnico di Torino, Italy*

### IAC-17.C2.7.2

thermal optical analysis of LAPAN's IR camera  
*Bustanul Arifin, Indonesian National Institute of Aeronautics and Space (LAPAN), Indonesia*

### IAC-17.C2.7.3

The Building Block of Small Space Mechanisms and Robots - A Micro Actuator with High Torque/Weight Ratio  
*Rui Li, Beijing Institute of Control Engineering, China Academy of Space Technology, China*

### IAC-17.C2.7.4

Lightweight Means of Actuation for Use in Space-Based Robotics Applications  
*Scott Brady, University of Strathclyde, Glasgow, United Kingdom*

### IAC-17.C2.7.5

Experimental study of Heat Switch Radiator using Shape Memory Alloy for High Insulation System  
*Shunsaku Eguchi, Tokyo University of Science, Japan*

### IAC-17.C2.7.6

A STUDY OF ELECTROMAGNETIC ENVIRONMENTAL EFFECTS ON SPACE LAUNCH SYSTEMS BY MEANS OF REVERBERATION CHAMBER  
*Andrea Delfini, Sapienza Università di Roma, Italy*

### IAC-17.C2.7.7

Coupled Thermodynamic and Structural Optimization of a Cryogenic Upper Stage into GEO  
*Marco Vietze, Universität der Bundeswehr München, Germany*

### IAC-17.C2.7.8

Enhancement of Thermal Control Performance by Using Liquid Metal Radiator  
*Tae-Yong Park, Chosun University, Korea, Republic of*

### IAC-17.C2.7.9

A trade-off study on the mechanical support structure of the MASCO-2 small body lander package  
*Michael Lange, DLR (German Aerospace Center), Germany*

### IAC-17.C2.7.11

design and on-board validation of pumped two-phase fluid loop for high heat flux removal  
*Xingang Yu, China*

### IAC-17.C2.7.12 (non-confirmed)

The design of a satellite with a structure of Rubik's cube  
*Qi Chen, CAST, China*

### IAC-17.C2.7.13

compression failure mechanisms in sandwich panels with corrugated channel cores  
*Zhenyu Zhao, Xi'an Jiaotong University, China*

### IAC-17.C2.7.14

Aeroheating Analysis of RCS Jet Interaction Effects on the RLV  
*Xiaoyan Li, CALT, CAS, China*

## C2.8. Specialised Technologies, Including Nanotechnology

**September 29 2017, 09:00 — Panorama Room 2**

**Co-Chair(s):** Mario Marchetti, University of Rome "La Sapienza", Italy; Pierre Rochus, CSL (Centre Spatial de Liège), Belgium;  
**Rapporteur(s):** Bangcheng Ai, China Aerospace Science and Industry Corporation, China;

### IAC-17.C2.8.1

Enhanced Capillary Performance of Hierarchical Micro/Nano-scale Wick Structures in Flat Heat Pipe  
*Yan Li, China Aerospace Science and Industry Corporation (CASIC), China*

### IAC-17.C2.8.2

Novel fabrication of Graphene Oxide supported TiO<sub>2</sub> catalyst using HTM and ALD  
*Simranjit Grewal, The National AeroSpace Training And Research Center (THE NASTAR CENTER), United States*

### IAC-17.C2.8.3

Multifunctional carbon nanotubes filled carbon fiber epoxy composite for satellite structural applications  
*Fawad Tariq, Pakistan Space and Upper Atmosphere Research Commission, Pakistan*

### IAC-17.C2.8.4

STUDY AND CHARACTERIZATION OF CERAMIC SHELL STRUCTURES FOR HIGH TEMPERATURE SPACE APPLICATIONS  
*Marta Albano, Agenzia Spaziale Italiana (ASI), Italy*

### IAC-17.C2.8.6

Research on Calibration Method of Space-borne High Temperature Strain Sensor  
*Ke Liu, China Academy of Launch Vehicle Technology (CALT), China*

### IAC-17.C2.8.7

Integrating Graphene Aerogels into Polymer Derived Ceramics: A Quest for Understanding Thermoelectric Interfacial Phenomena  
*Elizabeth Barrios, University of Central Florida, United States*

### IAC-17.C2.8.8

Spintronics: Towards more efficient sensing and storage devices  
*Seyed Ali Nasser, Space Generation Advisory Council (SGAC), Canada*

### IAC-17.C2.8.9

Lightly loaded reusable thermal interface for space applications  
*Jens Riesselmann, Technische Universität Berlin, Germany*

### IAC-17.C2.8.11

Evaluation of IR emitter with periodic array for spacecraft radiator  
*Kana Ohya, Keio University, Japan*

### IAC-17.C2.8.12

CNT and BNNT Enhancement of Polymer-Matrix Composites for Space Applications  
*Behnam Ashrafi, National Research Council, Canada*

## C2.9. Advancements in Materials Applications and Rapid Prototyping

**September 29 2017, 11:00 — Panorama Room 2**

**Co-Chair(s):** Behnam Ashrafi, National Research Council, Canada; Giuliano Marino, CIRA Italian Aerospace Research Centre, Italy;  
**Rapporteur(s):** James Tucker, Southern Research Institute, United States;

### IAC-17.C2.9.2

NASA Additive Manufacturing Initiatives: In Space Manufacturing and Rocket Engines  
*Raymond G. Clinton, NASA Marshall, United States*

### IAC-17.C2.9.4

The Development Path Study of Additive Manufacturing in Space on Chinese Manned Spacecraft  
*Wei Zhang, Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences, China*

### IAC-17.C2.9.5

a methodology for design of lightweight parts in harsh environments  
*Thomas McMaster, University of Strathclyde, Glasgow, United Kingdom*

### IAC-17.C2.9.6

Self-Replicating 3D Printed Satellites  
*Andrew Jones, North Dakota State University, United States*

### IAC-17.C2.9.7

Using additive/subtractive processing in the freeform fabrication of bi-metallic components  
*Sean Sporie, United States*

### IAC-17.C2.9.8

spacecraft designers' guide to using additive manufacturing processes for large metallic spacecraft structures  
*Didunoluwa Obilade, Cranfield University, Cranfield UK, United Kingdom*

### IAC-17.C2.9.9

system level experimental characterization of a deployable boom in carbon fiber-reinforced plastic  
*Susanna Laurenzi, Sapienza University of Rome, Italy*

### IAC-17.C2.9.10

ADDITIVE LAYER MANUFACTURING FOR ENTRY CAPSULES.  
*Roberto Gardi, CIRA Italian Aerospace Research Centre, Italy*

### IAC-17.C2.9.12

Preliminary design and evaluation of radiowave transmissive MLI for spacecraft  
*Kota Tomioka, Keio University, Japan*

**IAC-17.C2.9.13**  
ADVANCING SOLAR SINTERING FOR BUILDING A BASE ON THE MOON  
*Anna Barbara Imhof, Liquefier Systems Group (LSG), Austria*

### C3. SPACE POWER SYMPOSIUM

**Coordinator(s): Koji Tanaka, ISAS, JAXA, Japan; Ming Li, China Academy of Space Technology (CAST), China;**

#### C3.1. Space-Based Solar Power Architectures / Space & Energy Concepts

**September 25 2017, 15:15 — City Room 1**  
**Co-Chair(s):** John C. Mankins, ARTEMIS Innovation Management Solutions, LLC, United States; Leopold Summerer, European Space Agency (ESA), The Netherlands;  
**Rapporteur(s):** Koji Tanaka, ISAS/JAXA, Japan; Nobuyuki Kaya, Kobe University, Japan;

**IAC-17.C3.1.1**  
KEYNOTE: Implications of Advances in Hyper-Modular Space Solar Power Architectures for Terrestrial Energy and the Development & Settlement of Space  
*John C. Mankins, ARTEMIS Innovation Management Solutions, LLC, United States*

**IAC-17.C3.1.2**  
Competition winner presentation  
*Koji Tanaka, ISAS, JAXA, Japan*

**IAC-17.C3.1.3**  
Space Solar Power International Student Competition Winner  
*John C. Mankins, ARTEMIS Innovation Management Solutions, LLC, United States*

**IAC-17.C3.1.4**  
System Study of Modified Tethered SPS and Scenario of Space Demonstrations  
*Koji Tanaka, ISAS, JAXA, Japan*

**IAC-17.C3.1.5 (non-confirmed)**  
Challenges and Some Possible Solutions for Space Solar Power Station Design  
*Jin Huang, Xidian University, China*

**IAC-17.C3.1.6**  
Concepts for Near-Term Provision of Power via Space Solar to Remote Areas  
*Paul Jaffe, Naval Research Laboratory, United States*

**IAC-17.C3.1.7**  
High Power Electric Power Generation, Transmission and Management of MR-SPS  
*Xinbin Hou, CAST, China*

**IAC-17.C3.1.8**  
EXPONENTIAL POPULATIONS OF SOLAR POWER SATELLITES TENDING TO ZERO SPECIFIC COST  
*Alex Ellery, Space Exploration and Engineering Group, Carleton University, Canada*

**IAC-17.C3.1.9**  
Peter Glaser lecture  
*Koji Tanaka, ISAS, JAXA, Japan*

#### C3.2. Wireless Power Transmission Technologies, Experiments and Demonstrations

**September 26 2017, 09:45 — City Room 1**  
**Co-Chair(s):** Ming Li, China Academy of Space Technology (CAST), China; Nobuyuki Kaya, Kobe University, Japan;  
**Rapporteur(s):** Massimiliano Vasile, University of Strathclyde, United Kingdom;

**IAC-17.C3.2.1**  
The Feasibility of Applying Space Solar Power for Forward Operating Bases  
*Alexander Walts, University of Maryland, College Park, United States*

**IAC-17.C3.2.2**  
Experiments on Direction Finding using Array Antenna and On-board calibration of phase error for Solar Power Satellite  
*Mudassir Raza, The Graduate University for Advanced Studies[SOKENDAI], Japan*

**IAC-17.C3.2.3**  
Multi-interface Matching Design of High Efficiency Rectenna for Microwave Power Transmission Systems  
*Shi-Wei Dong, Xi'an Institute of Space Radio Technology, China*

**IAC-17.C3.2.4**  
High Frequency Microwave Power Transmission System Design for Space Application  
*Yazhou Dong, China Academy of Space Technology (CAST), China*

**IAC-17.C3.2.5**  
ReBeam Space - Creating an Intercontinental Wireless Energy Network  
*Gadhadar Reddy, NoPo Nanotechnologies Private Limited, India*

**IAC-17.C3.2.7**  
Improved Performance of a Rectenna Array for Wireless Power Transportation  
*DOUYERE Alexandre, University of La Réunion, La Réunion*

**IAC-17.C3.2.8**  
Criteria for Comparing Power Beaming Demonstrations  
*Paul Jaffe, Naval Research Laboratory, United States*

**IAC-17.C3.2.9**  
*the current status of microwave power transmission for ssps and industry application*  
*Shoichiro Mihara, Japan Space Systems (J-spacesystems), Japan*

#### C3.3. Advanced Space Power Technologies and Concepts

**September 27 2017, 14:45 — City Room 3**  
**Co-Chair(s):** Gary Pearce Barnhard, National Space Society, United States; Lee Mason, National Aeronautics and Space Administration (NASA)/Glenn Research Center, United States;  
**Rapporteur(s):** Koji Tanaka, ISAS, JAXA, Japan; Matthew Perren, Airbus Defence & Space, United Kingdom;

**IAC-17.C3.3.1**  
Performance Evaluation of Electricity Generation Systems Based on Semiconductor Thermoelectric Generators for Hypersonic Vehicles  
*Kunlin Cheng, Harbin Institute of Technology, China*

**IAC-17.C3.3.2**  
the active cooling design for the thermoelectric devices with great heat flux density  
*Shenzhan Zhang, Beijing Aerospace Technology Institute, China*

**IAC-17.C3.3.4 (non-confirmed)**  
A quick-charge lithium-ion battery with high specific energy  
*Yi Zuo, China*

**IAC-17.C3.3.6**  
Planetary Exploration Habitat Energy Requirements and Forecasting  
*Simon Engler, University of Hawaii, United States*

**IAC-17.C3.3.7**  
O'Moon: Power production and storage for a lunar modular power infrastructure  
*Lukas Hoffmann, Germany*

**IAC-17.C3.3.8**  
Energy transmission on a modular satellite  
*Anja Kohfeldt, Technische Universität Berlin, Germany*

**IAC-17.C3.3.9**  
Powering Small Satellites using Space Plasma  
*Hemant Ganti, Manipal Institute of Technology, Manipal University, India*

#### C3.4. Small and Very Small Advanced Space Power Systems

**September 28 2017, 14:45 — City Room 2**  
**Co-Chair(s):** Massimiliano Vasile, University of Strathclyde, United Kingdom; Shoichiro Mihara, Japan Space Systems (J-spacesystems), Japan;  
**Rapporteur(s):** Tanaka Koji, ISAS/JAXA, Japan;

**IAC-17.C3.4.1**  
The Lightweight Integrated Solar Array and anTenna (LISA-T) - Big Power for Small Spacecraft  
*Les Johnson, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, United States*

**IAC-17.C3.4.2**  
Energy-Optimal Control of Deployable Solar Panels for a Class of Nanosatellites  
*Bryan Pawlina, University of British Columbia, Canada*

**IAC-17.C3.4.3 (non-confirmed)**  
Design and Implementation of an Electrical Power Subsystem for a Hyperspectral Imaging Microsatellite  
*Trevor Kwan, University of Sydney, Australia*

**IAC-17.C3.4.5**  
Electronic Power System for Small Satellites  
*Rohan Nag, India*

#### C3.5-C4.7.Joint Session on Advanced and Nuclear Power and Propulsion Systems

**September 29 2017, 09:00 — Hall E3**  
**Co-Chair(s):** Jerome Breteau, European Space Agency (ESA), France; Leopold Summerer, European Space Agency (ESA), The Netherlands;  
**Rapporteur(s):** Constanze Syring, ArianeGroup, Germany; Elizabeth Driscoll, Aerojet Rocketdyne, United States; Koji Tanaka, Japan Aerospace Exploration Agency (JAXA), Japan; Vito Salvatore, CIRA Italian Aerospace Research Center, Capua, Italy; Youngbin Yoon, Seoul National University, Korea, Republic of;

**IAC-17.C3.5-C4.7.2**  
Utilization of Gas Core Nuclear Reactors for Interstellar Probes and for Interstellar Missions  
*Ugur Guven, UN CSSTEAP, United States*

**IAC-17.C3.5-C4.7.3**  
Design and Development of Nuclear Thermal Propulsion Systems  
*Michael Houts, NASA Marshall Space Flight Center, United States*

**IAC-17.C3.5-C4.7.4**  
Thorium based nuclear energy generation to power Martian settlements  
*SOURAV KARMAKAR, IIIT-H (research intern), India*

**IAC-17.C3.5-C4.7.5**  
Comparison of nuclear technologies for the design of a 1MW to 3MW compact power plant for multiple space uses.  
*Pierre EVELLIN, International Space University (ISU), France*

**IAC-17.C3.5-C4.7.6**  
Nuclear Systems Kilopower Project Overview  
*Donald Palac, NASA Glenn Research Center, United States*

**IAC-17.C3.5-C4.7.9**  
New Possibilities of Solar Power Propulsion Systems  
*Sergey Finogenov, Moscow Aviation Institute (National Research University, MAI), Russian Federation*

**IAC-17.C3.5-C4.7.10**  
The SpaceDrive Project – Developing Revolutionary Propulsion at TU Dresden  
*Martin Tajmar, TU Dresden, Germany*

**IAC-17.C3.5-C4.7.11**  
Improved Performance Estimates for the Solar Wind Ion Focusing Thruster  
*Thomas Gemmer, North Carolina State University, United States*

### C4. SPACE PROPULSION SYMPOSIUM

**Coordinator(s):** Christophe Bonhomme, Centre National d'Etudes Spatiales (CNES), France; Giorgio Saccoccia, European Space Agency (ESA), The Netherlands; Helen Webber, Reaction Engines Ltd., United Kingdom; Riheng Zheng, China Aerospace Science & Industry Corporation (CASIC), China; Toru Shimada, Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency, Japan;

#### C4.1. Propulsion System (1)

**September 25 2017, 15:15 — Hall E3**  
**Co-Chair(s):** Christophe Bonhomme, Centre National d'Etudes Spatiales (CNES), France; Patrick Danous, Snecma, France;  
**Rapporteur(s):** Akira Ogawara, Mitsubishi Heavy Industries, Ltd., Japan; Vanniyaperumal Narayanan, Indian Space Research Organization (ISRO), India;

**KEYNOTE:**  
**IAC-17.C4.1.1**  
Development Status of the Cryogenic Oxygen/Hydrogen YF -77 Engine for Long-March 5  
*Dayong Zheng, Beijing Aerospace Propulsion Institute, China*

**IAC-17.C4.1.2**  
Prometheus : European Next Generation Liquid Rocket Engine  
*Christophe Bonhomme, Centre National d'Etudes Spatiales (CNES), France*

**IAC-17.C4.1.3**  
progress summary of engineering model firing tests in le-9 engine development  
*Masaki Adachi, Mitsubishi Heavy Industries, Ltd., Japan*

**IAC-17.C4.1.4**  
Design and Development Status of LE-9 Engine for H3 Launch Vehicle  
*Hideto Kawashima, JAXA, Japan*

**IAC-17.C4.1.5**  
An Overview on the Turbopump Roadmap for the Lumen Demonstrator Engine and on the new Turbine Test Facility  
*Tobias Traudt, DLR (German Aerospace Center), Germany*





**IAC-17.C4.5.12**  
Challenges in Realizing Instrumentation and Remote control systems for Testing Cryogenic Engine and stage  
*Elayaperumal Ezhilrajran, Indian Space Research Organization (ISRO), India*

**IAC-17.C4.5.13**  
sensitivity analysis of static parameters for the lox/kerosene rocket engine  
*Haohai Xu, School of Astronautics, Northwestern Polytechnical University, China*

## C4.6. New Missions Enabled by New Propulsion Technology and Systems

**September 28 2017, 14:45 — Hall E3**  
**Co-Chair(s):** *Giorgio Saccoccia, European Space Agency (ESA), The Netherlands; Jerrol Littles, Aerojet Rocketdyne, United States;*  
**Rapporteur(s):** *Alexander Lovtsov, SSC Keldysh Research Centre, Russian Federation; Elena Toson, Space Generation Advisory Council (SGAC), Italy;*

**IAC-17.C4.6.2 (non-confirmed)**  
Application for Spacecraft in Very Low Orbits Based on Air-Breathing Electric Propulsion System  
*Xiaoye Wang, Lanzhou Institute of Physics, China Academy of Space technology, China*

**IAC-17.C4.6.3**  
Design and Development of a Sublimating Solid Propellant Tank for CubeSat and PocketQube Applications  
*Didier Maxence, Delft University of Technology (TU Delft), The Netherlands*

**IAC-17.C4.6.4**  
Electrodynamic wing for LEO spacecraft propulsion  
*Jianguo Huang, Beijing Institute of Spacecraft Environment Engineering, China*

**IAC-17.C4.6.5**  
SYSTEM ANALYSIS AND TEST-BED FOR AN ATMOSPHERE-BREATHING ELECTRIC PROPULSION SYSTEM USING AN INDUCTIVE PLASMA THRUSTER  
*Francesco Romano, Institute of Space Systems, Universität Stuttgart, Germany*

**IAC-17.C4.6.6**  
Feasibility of an Integrated Solar Thermal Power and Propulsion System for Small Satellites  
*Fiona Leverone, Delft University of Technology (TU Delft), The Netherlands, The Netherlands*

**IAC-17.C4.6.7**  
Electric propulsion for high-power deep space transportation system: investigation on mutual influences and preliminary sizing  
*Martina Mammarella, Politecnico di Torino, Italy*

**IAC-17.C4.6.8**  
Stationkeeping with an electrospray propulsion system for low lunar polar mission on a 6U CubeSat  
*Michele Benetti, Politecnico di Milano, Italy*

**IAC-17.C4.6.9**  
Unique Advantages of Hybrid Rocket Technology for Mars Missions  
*Arif Karabeyoglu, Koc University, United States*

**IAC-17.C4.6.10**  
Finding NewSpace: Mission Scenarios Utilizing LOTUS: Lander/ Orbiter Trans-Upper Stage  
*Chrishma Singh-Derewa, National Aeronautics and Space Administration (NASA)/Jet Propulsion Laboratory, United States*

**IAC-17.C4.6.11**  
Overview and Analysis of Msaile and Esail Propulsion for Interplanetary Missions  
*Harijono Djodihardjo, Indonesia*

**IAC-17.C4.6.12**  
Increasing the Accuracy of Electric Sail Mission Performance Estimates  
*Thomas Gemmer, North Carolina State University, United States*

## C4.7-C3.5.Joint Session on Advanced and Nuclear Power and Propulsion Systems

**September 29 2017, 09:00 — Hall E3**  
**Co-Chair(s):** *Jerome Breteau, European Space Agency (ESA), France; Leopold Summerer, European Space Agency (ESA), The Netherlands;*  
**Rapporteur(s):** *Constanze Syring, ArianeGroup, Germany; Elizabeth Driscoll, Aerojet Rocketdyne, United States; Koji Tanaka, Japan Aerospace Exploration Agency (JAXA), Japan; Vito Salvatore, CIRA Italian Aerospace Research Center, Capua, Italy; Youngbin Yoon, Seoul National University, Korea, Republic of;*

**IAC-17.C4.7-C3.5.2**  
Utilization of Gas Core Nuclear Reactors for Interstellar Probes and for Interstellar Missions  
*Ugur Guven, UN CSSTEAP, United States*

**IAC-17.C4.7-C3.5.3**  
Design and Development of Nuclear Thermal Propulsion Systems  
*Michael Houts, NASA Marshall Space Flight Center, United States*

**IAC-17.C4.7-C3.5.4**  
Thorium based nuclear energy generation to power Martian settlements  
*SOURAV KARMAKAR, IIIT-H (research intern), India*

**IAC-17.C4.7-C3.5.5**  
Comparison of nuclear technologies for the design of a 1MW to 3MW compact power plant for multiple space uses.  
*Pierre EVELLIN, International Space University (ISU), France*

**IAC-17.C4.7-C3.5.6**  
Nuclear Systems Kilopower Project Overview  
*Donald Palac, NASA Glenn Research Center, United States*

**IAC-17.C4.7-C3.5.9**  
New Possibilities of Solar Power Propulsion Systems  
*Sergey Finogenov, Moscow Aviation Institute (National Research University, MAI), Russian Federation*

**IAC-17.C4.7-C3.5.10**  
The SpaceDrive Project – Developing Revolutionary Propulsion at TU Dresden  
*Martin Tajmar, TU Dresden, Germany*

**IAC-17.C4.7-C3.5.11**  
Improved Performance Estimates for the Solar Wind Ion Focusing Thruster  
*Thomas Gemmer, North Carolina State University, United States*

## C4.8. Joint Session between IAA and IAF for Small Satellite Propulsion Systems

**September 29 2017, 11:00 — Hall E3**  
**Co-Chair(s):** *Arnau Pons Lorente, Space Generation Advisory Council (SGAC), Spain; Jeffery Emdee, The Aerospace Corporation, United States;*  
**Rapporteur(s):** *Elena Toson, Space Generation Advisory Council (SGAC), Italy; Elizabeth Jens, Jet Propulsion Laboratory - California Institute of Technology, United States;*

**IAC-17.C4.8-B4.5A.1 (non-confirmed)**  
KEYNOTE: Progress and challenges of small satellite propulsion systems  
*Luis Gomes, Surrey Satellite Technology Ltd (SSTL), United Kingdom*

**IAC-17.C4.8-B4.5A.2**  
The Pocket Rocket electro-thermal plasma thruster for 'CubeSat' nano-satellites  
*Christine Charles, Australia*

**IAC-17.C4.8-B4.5A.3**  
A low-cost Helicon Propulsion System to boost small satellite missions.  
*Marco Manente, Italy*

**IAC-17.C4.8-B4.5A.4**  
mems based micro-propulsion system for cubesats and pocketcubes  
*Vidhya Pallichadath, Delft Institute Of Technology (TU Delft), The Netherlands*

**IAC-17.C4.8-B4.5A.7**  
Recent development of Hydroxylammonium Nitrate (HAN) green liquid monopropellant in Malaysia  
*Jit Kai Chin, University of Nottingham Malaysia Campus, Malaysia*

**IAC-17.C4.8-B4.5A.8**  
Design and Testing of a Hybrid Rocket Motor to Enable Interplanetary CubeSat Missions  
*Elizabeth Jens, Jet Propulsion Laboratory - California Institute of Technology, United States*

**IAC-17.C4.8-B4.5A.9**  
Multi-variable Optimization of Gaseous Oxygen Hybrid Rocket Motors for Small Satellite Propulsion  
*Flora Mechentel, Stanford University, United States*

**IAC-17.C4.8-B4.5A.10**  
development of gap/ap solid propulsion system for ultra-small satellite  
*Ayana Banno, Chiba Institute of Technology, Japan*

**IAC-17.C4.8-B4.5A.14**  
self-pressurized small-satellite propulsion system using supercritical phase transition  
*Ralf Boden, Department of Engineering, The University of Tokyo, Japan*

## C4.9. Hypersonic Air-breathing and Combined Cycle Propulsion

**September 26 2017, 14:45 — Hall E3**  
**Co-Chair(s):** *Helen Webber, Reaction Engines Ltd., United Kingdom; Riheng Zheng, China Aerospace Science & Industry Corporation (CASIC), China;*  
**Rapporteur(s):** *Salvatore Borrelli, CIRA Italian Aerospace Research Centre, Italy;*

**IAC-17.C4.9.1**  
analysis on the performance of a hypersonic inward turning inlet with three combined channels  
*Chengxiang Zhu, Xiamen University, China*

**IAC-17.C4.9.2**  
Highly reliable life time evaluation approaches for ramjet booster stage of next reusable launch vehicle  
*Ren Jiawan, China*

**IAC-17.C4.9.3**  
Development of optical diagnostics for the characterization of high-velocity combustion  
*Owen Pryor, University of Central Florida, United States*

**IAC-17.C4.9.4**  
A Pre-cooled and Fuel-rich Pre-burned Mixed-flow Turbofan Cycle for Ground-to-Ma5 Engines  
*Wei Zhao, Chinese Academy of Sciences, China*

**IAC-17.C4.9.5**  
Thermodynamic Analysis of Helium System Cycle for the Precooled Air-breathing Combined Engine  
*Yan Zhu, Xi'an Aerospace Propulsion Institute, China*

**IAC-17.C4.9.6**  
Successful Flight Testing of Scramjet Engine Over Wide Range of Test Conditions  
*Lazar T. Chitilappilly, Vikram Sarabhai Space Centre (VSSC),*

**IAC-17.C4.9.7**  
An efficient approach for tomographic reconstruction in combustion diagnostics  
*Junling Song, Equipment Academy, China*

**IAC-17.C4.9.9**  
Researches on Rocket-Based Combined-Cycle Inlet in Northwestern Polytechnical University  
*Lei Shi, Northwestern Polytechnical University, NPU, China*

**IAC-17.C4.9.10**  
Performance Optimization Method of Turbocharged Solid Propellant Ramjet (TSPR)  
*Wei Wang, 1. Systems Engineering Institute of Sichuan Aerospace; 2. Science and Technology on Combustion, Internal Flow and Thermal-Structure Laboratory, Northwestern Polytechnical University, China*

**IAC-17.C4.9.11**  
a novel liquid rocket-ramjet combined-cycle engine enhanced by a compact internal air turborocket  
*Duo Zhang, Northwestern Polytechnical University, China*

**IAC-17.C4.9.13**  
Tomography for two-dimensional gas temperature distribution based on tunable diode laser absorption spectroscopy  
*Fei XING, Xiamen University, China*

**IAC-17.C4.9.15**  
Performance Analysis of RBCC-Based TSTO Space Transportation Systems via Multi-Objective Design Optimisation  
*Philipp Klink, RMIT University (Royal Melbourne Institute of Technology), Australia*

**IAC-17.C4.9.16**  
Performance of High Mach Number Scramjets - Tunnel vs Flight  
*Will Landsberg, University of Queensland, Australia*

**IAC-17.C4.9.17**  
Modeling Scramjet Supersonic Combustion via Eddy Dissipation Model  
*Jimmy-John Hoste, University of Strathclyde, United Kingdom*

## C4.10. Propulsion Technology (3)

**September 29 2017, 11:00 — City Room 4**  
**Co-Chair(s):** *Norbert Puettmann, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany; Riheng Zheng, China Aerospace Science & Industry Corporation (CASIC), China;*  
**Rapporteur(s):** *Angelo Cervone, Delft University of Technology (TU Delft), The Netherlands; Jerrol Littles, Aerojet Rocketdyne, United States;*

**IAC-17.C4.10.1**  
Development of a Water Propulsion System for Small Satellites  
*Nicholas Harmansa, IRS, University of Stuttgart, Germany*

**IAC-17.C4.10.2**  
Analysis of the pressure surge during fast transient in evacuated spacecraft feedlines  
*Cristiano Bombardieri, DLR (German Aerospace Center), Germany*







### D3. 15<sup>th</sup> IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT

**Coordinator(s):** Alain Pradier , European Space Agency (ESA), The Netherlands; John C. Mankins , ARTEMIS Innovation Management Solutions, LLC, United States;

#### D3.1. Strategies & Architectures as the Framework for Future Building Blocks in Space Exploration and Development

**September 26 2017, 09:45 — Riverbank 4**

**Co-Chair(s):** John C. Mankins , ARTEMIS Innovation Management Solutions, LLC, United States; Maria Antonietta Perino , Thales Alenia Space Italia, Italy;  
**Rapporteur(s):** Anouck Girard , University of Michigan, United States;

**IAC-17.D3.1.1**  
Gateway Earth: A Pragmatic Modular Architecture for Space Access and Exploration  
Matjaz Vidmar, The University of Edinburgh, United Kingdom

**IAC-17.D3.1.2**  
A Holistic Integration of the Global Space Engineering Sector  
Jonathan Faull, International Space University (ISU), Ireland

**IAC-17.D3.1.4**  
DEEP SPACE INDUSTRIALIZATION: Key to Sustainable Exploration, Development and Settlement of the Solar System  
Robert Pittman, NASA Ames Research Center, United States

**IAC-17.D3.1.5**  
MaMBA – Moon and Mars Base Analog  
Christiane Heinicke, VU Amsterdam, ILEWG, The Netherlands

**IAC-17.D3.1.7**  
Review and Analysis of (European) Building Blocks for a Future Moon Village  
David Binns, European Space Agency (ESA), The Netherlands

#### D3.2. Systems and Infrastructures to Implement Future Building Blocks in Space Exploration and Development

**September 27 2017, 09:45 — Riverbank 4**

**Co-Chair(s):** Paivi Jukola , Aalto University, Finland; Scott Hovland , European Space Agency (ESA), The Netherlands;  
**Rapporteur(s):** William H. Siegfried , The Boeing Company, United States;

**IAC-17.D3.2.1**  
Additive Construction with Mobile Emplacement (ACME)  
Robert Mueller, National Aeronautics and Space Administration (NASA), United States

**IAC-17.D3.2.2 (non-confirmed)**  
Energy Considerations for In-Situ Resource Utilization in a future Space-Based Economy  
Mansoor Shar, International Space University (ISU), France

**IAC-17.D3.2.3**  
Master Plan 01: Options and variations for design of complex infrastructure systems  
Paivi Jukola, Aalto University, Finland

**IAC-17.D3.2.4**  
Mars Molniya Orbit Atmospheric Resource Mining  
Robert Mueller, National Aeronautics and Space Administration (NASA), United States

**IAC-17.D3.2.5**  
Concepts of large size space construction on a way of direct curing in space orbit  
Alexey Kondyurin, University of Sydney, Australia

**IAC-17.D3.2.6**  
The First Commercial Airlock Module: Building the Commercial Space Market  
Jeffrey Manber, Nanoracks LLC, United States

**IAC-17.D3.2.7**  
Mechanical design of a modular experiment carrier for a terrestrial analog demo mission and its potential for future space exploration  
Stephan Siegfried Jahnke, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

**IAC-17.D3.2.8**  
O'Moon: System- and programme-level feasibility analysis for a modular power infrastructure on the Moon  
Enrique Garcia Bourne, O'SOL, France

**IAC-17.D3.2.10**  
How the ALINA spacecraft could enable development of a scalable lunar communication and navigation infrastructure  
Karsten Becker, PTScientists, Germany

#### D3.3. Novel Concepts and Technologies to Enable Future Building Blocks in Space Exploration and Development

**September 28 2017, 14:45 — Riverbank 4**

**Co-Chair(s):** Alain Pradier , European Space Agency (ESA), The Netherlands; Christopher Moore , National Aeronautics and Space Administration (NASA), United States;  
**Rapporteur(s):** Alain Dupas , European Bank for Reconstruction and Development, France; Junjiro Onoda , Japan Society for Aeronautics and Space Sciences (JSASS), Japan;

**IAC-17.D3.3.1**  
Overview of NASA Technology Development for In-Situ Resource Utilization (ISRU)  
Diane Linne, NASA Glenn Research Center, United States

**IAC-17.D3.3.2**  
Network of Nano-Landers for In-Situ Characterization of Asteroid Impact Studies  
Himangshu Kalita, University of Arizona, United States

**IAC-17.D3.3.3**  
Working on Venus and Beyond – SiC electronics for extreme environments  
Christer Fuglesang, KTH, Sweden

**IAC-17.D3.3.5**  
Scalability analysis of legged robots for space exploration  
Hendrik Kolvenbach, ETHZ, Switzerland

**IAC-17.D3.3.6**  
Research on Intelligent Floating Mars Explorer With Distributed Networked Technology  
Ji Li, China Academy of Launch Vehicle Technology, China

**IAC-17.D3.3.7**  
Visual Navigation Technology Combining Star Trackers and Proximity Cameras  
Emanuele Medaglia, University of Rome "La Sapienza", Italy

**IAC-17.D3.3.8**  
ispace's 2017 Lunar Mission and Future ISRU Roadmap  
Kyle Acierno, Japan

**IAC-17.D3.3.10**  
O'Moon: Mechanical and thermal design of a modular deployable generator to build a lunar power infrastructure  
Swara Rahurkar, Space Engineering Department, Germany

**IAC-17.D3.3.11**  
GreenSat: CubeSat Platform for Biological and Agricultural Experiments  
Benjamin Koschnick, UNSW Australia, Australia

#### D3.4. Space Technology and System Management Practices and Tools

**September 28 2017, 09:45 — Riverbank 4**

**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-17.D3.4.1**  
Virtual Reality to assist the engineering decision-making process: improving the Concurrent Design approach  
Loris Franchi, Politecnico di Torino, Italy

**IAC-17.D3.4.2**  
Systems Analysis Modeling of Novel Space Solar Power Concepts  
John C. Mankins, ARTEMIS Innovation Management Solutions, LLC, United States

**IAC-17.D3.4.3**  
EUROPEAN APPROACH FOR SPACE EXPLORATION TECHNOLOGY PROCUREMENT: METHODOLOGIES AND TOOLS  
Giorgio Saccoccia, European Space Agency (ESA), The Netherlands

**IAC-17.D3.4.4**  
Innovation at Airbus Safran Launchers with a focus on idea creation  
Nadja Wolf, Airbus Safran Launchers GmbH, Germany

**IAC-17.D3.4.7**  
The Hardware Development Tool Stack for Future Space Exploration  
Simon Vanden Bussche, Valispace, Germany

**IAC-17.D3.4.8**  
The Concept of On-Orbit-Servicing for Next Generation Space System Development and its Key Technologies  
Yury Razoumny, Peoples's Friendship University of Russia, Russian Federation

**IAC-17.D3.4.9**  
Study on output evaluation method of Space science project PEI HAN, Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences, China

**IAC-17.D3.4.10**  
The Australian Defence Science & Technology Space Program  
Nick Stacy, Defence Science and Technology Organisation (DSTO), Australia

### D4. 15<sup>th</sup> IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE

**Coordinator(s):** Giuseppe Reibaldi , International Academy of Astronautics (IAA), France; Yu Lu , China Academy of Launch Vehicle Technology, China, China;

#### D4.1. Innovative Concepts and Technologies

**September 25 2017, 15:15 — Riverbank 4**

**Co-Chair(s):** Giorgio Saccoccia , European Space Agency (ESA), The Netherlands; Roger X. Lenard , LPS, United States;  
**Rapporteur(s):** Wang Xiaowei , China Academy of Launch Vehicle Technology, China;

**IAC-17.D4.1.2**  
This is Not Your Grandfather's Satellite - Future Space craft design and operation deploying Robotics Technologiesff- A DLR Vision - Bernd Sommer, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

**IAC-17.D4.1.3**  
Future Proofing Australia: Innovative Science and Technology Development Areas to meet Australia's Space Needs  
Crystal Forrester, Defence Science and Technology Group (DST Group), Australia

**IAC-17.D4.1.4**  
panacea for time travel problems - black holes, white holes and wormholes  
Aditya Mishra, University of Petroleum and Energy Studies, India

**IAC-17.D4.1.5**  
Approaches to Solving the Problem of Switching Over of the Intersatellite Links of a Spacecraft in a Packet Switching Satellite Network  
Tatyana V. Labutkina, Dnepropetrovsk National University named after Oles' Gonchar, Ukraine

**IAC-17.D4.1.8**  
Concept shifting from Public to Private GNSS providers  
Aurthur Vimalachandran Thomas Jayachandran, Samara University, Russian Federation

**IAC-17.D4.1.10**  
A New, International Space Agency  
Yalda Mousavinia, Space Cooperative Inc., United States

**IAC-17.D4.1.11**  
Dyson Sphere used for wireless transmission of energy  
Pulak Srivastava, University of Petroleum and Energy Studies, India

#### D4.2. Contribution of Space Activities to Solving Global Societal Issues

**September 27 2017, 14:45 — Riverbank 4**

**Co-Chair(s):** Giuseppe Reibaldi , International Academy of Astronautics (IAA), France; Yu Lu , China Academy of Launch Vehicle Technology, China, China;  
**Rapporteur(s):** Paivi Jukola , Aalto University, Finland;

**IAC-17.D4.2.1**  
Space for Development Profile and Space Solutions Compendium: Targeting the space needs of countries  
Jorge Del Rio Vera, United Nations Office for Outer Space Affairs, Austria

**IAC-17.D4.2.2**  
Space supporting regional challenges: the example of the "5 A" (Arctic, Antarctic, Alps, Atlantic, Africa)  
Isabelle Duvaux-Bechon, European Space Agency (ESA), France

**IAC-17.D4.2.3**  
An assessment of new and upcoming space-based and space-derived systems on the Corporate Social Responsibility practices of oil & gas sector corporations  
Bethany Downer, International Space University (ISU), Canada

**IAC-17.D4.2.4**  
The role of national space strategies in addressing global societal challenges through outer space  
Helena Correia Mendonça, Vieira de Almeida & Associados, Portugal

**IAC-17.D4.2.5**  
The Space Technology to Solving Societal Issues In Bolivia: An Overview  
Natalia Indira Vargas-Cuentas, Beihang University (BUAA), China

## IAC-17.D4.2.7

Blueprint for Society: Systems Engineering from Space to Earth  
Becca Ebert, *University of Puget Sound, United States*

## IAC-17.D4.2.8

Why space colonies will not solve terrestrial problems  
Sebastian Hettrich, *Space Generation Advisory Council (SGAC), Germany*

## IAC-17.D4.2.9

Ecodesigning space missions to reduce the environmental impact  
Andrew Wolahan, *ESTEC, European Space Agency, The Netherlands*

## IAC-17.D4.2.10

Colonisation of Space or War? "Show us the jobs, save the planet and win the election!!!" the economic, environmental and political imperative to marketing the space industry through a Martian Analog in Central Australia  
Jannene Kyytönen, *Australia*

## IAC-17.D4.2.12

ENSURING LONG TERM SURVIVAL OF LIFE AND ECOSYSTEMS: AVOIDING A 6TH GLOBAL EXTINCTION OF LIFE ON EARTH  
Veerle Ronsse, *The Netherlands*

## IAC-17.D4.2.13

Contributions of Space Activities to Solving Global Social Issues  
Mu YANG, *China Great Wall Industry Corporation, China*

## IAC-17.D4.2.14

Promoting International Co-operation in the Age of Global Space Governance - A Study on On-Orbit Servicing Operations  
S.W. Chiu, *University of Cambridge, United Kingdom*

## D4.3. Conceptualizing Space Elevators and Tethered Satellites

September 28 2017, 14:45 — Riverbank 3

**Co-Chair(s):** Akira Tsuchida, *Earth-Track Corporation, Japan*; Peter Swan, *International Space Elevator Consortium, United States*;

**Rapporteur(s):** Robert E Penny, *Cholla Space Systems, United States*;

### IAC-17.D4.3.1

How the Space Elevator Grew into a Galactic Harbour  
Peter Swan, *International Space Elevator Consortium, United States*

### IAC-17.D4.3.2

Critical Technologies for Space Elevator's GEO Nodes, Earth Port, Gates and Communications  
Yoichi Ishikawa, *Obayashi Corporation, Japan*

### IAC-17.D4.3.3

Suggestions of Research Areas and Future Experiments - Status Report of IAA SG3.24  
Yuto Suzuki, *Japan Manned Space Systems Corporation, Japan*

### IAC-17.D4.3.4

Verification of Space Elevator Technologies; Present Status and Future Plan in Japan  
Yoshiki Yamagiwa, *Shizuoka University, Japan*

### IAC-17.D4.3.5

Development and Driving Experiment of Climber Mechanism for Heavy Load in Space Elevator  
Fumihito Inoue, *Shonan Institute of Technology, Japan*

### IAC-17.D4.3.6

Design of reel-type tether deployment mechanism and analysis of tether deployment dynamics in the microsatellite STARS-E for verifying the basic technology of space elevator  
Kenji Nakashima, *Japan*

## IAC-17.D4.3.7

An assessment of the technological feasibility of applying GEO-based solar pumped lasers for feeding the Space Elevator exoatmospheric climber  
Vadym Pasko, *Yuzhnoye State Design Office, Ukraine*

## IAC-17.D4.3.8

Space Elevator GEO Node, Apex Anchor, and Communications Architecture  
Peter Swan, *International Space Elevator Consortium, United States*

## IAC-17.D4.3.9

Thermal Study for the STARS-E Climber's Mission  
Tomohiro Kakuta, *Nihon University, Japan*

## IAC-17.D4.3.11

Conceptual Design and Technology Roadmap for a Lunar Space Elevator  
Kaveh Razzaghi, *Politecnico di Torino - Thales Alenia Space Italia, Italy*

## IAC-17.D4.3.12

APPLICATIONS OF A TETHER FIXED IN THE MOON TO MANEUVER SPACECRAFTS.  
Jorge Nascimento, *INPE - National Institute for Space Research, Brazil*

## IAC-17.D4.3.13

Dynamics Research of Initial Tether Deployment of Lunar Space Elevator  
Xiaohui Wang, *Beihang University, China*

## IAC-17.D4.3.14

Regarding the Effect of a Climber's Motion on the Tethered Satellite System  
Shun Yokota, *Nihon University, Japan*

## IAC-17.D4.3.15

Towing of Space Debris Using a Tether  
Arun Misra, *Mc Gill Institute for Aerospace Engineering (MIAE), Canada*

## IAC-17.D4.3.16

Utilization of Space Elevator in Education and Outreach  
Minoru SATO, *Tokai University, Japan*

## D4.4. Strategies for Rapid Implementation of Interstellar Missions: Precursors and Beyond

September 29 2017, 11:00 — Riverbank 4

**Co-Chair(s):** Giancarlo Genta, *Politecnico di Torino, Italy*; Mae Jemison, *100 Year Starship, United States*;

**Rapporteur(s):** Louis Friedman, *The Planetary Society, United States*;

### IAC-17.D4.4.1

A Vision for Planetary and Exoplanets Science: Exploration of the Interstellar Medium – the Space between Stars  
Leon Alkalai, *National Aeronautics and Space Administration (NASA)/Jet Propulsion Laboratory, United States*

### IAC-17.D4.4.2

Near-Term Exploration of the Interstellar Medium  
Ralph L. McNutt, Jr., *Johns Hopkins University Applied Physics Laboratory, United States*

### IAC-17.D4.4.3

High-Speed Magnetic-Sail Interstellar Precursor Missions Enabled by Metastable Metallic Hydrogen  
Adam Crowl, *Australia*

### IAC-17.D4.4.4

The breakthrough initiatives: a new search for life in the universe.  
S. Pete Worden and Pete Klupar1 Break-through Prize Foundation, 3000 Sand Hill Road, 4-180, Menlo Park, CA 94025, USA, pete@breakthroughprize.org.  
Peter Klupar, *Breakthrough Initiatives, United States*

## IAC-17.D4.4.5

Earth-to-orbit Beamed Energy eXperiment (EBEX)  
Les Johnson, *National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, United States*

## IAC-17.D4.4.6

Effects of Enhanced Graphene Reflection on Performance of Sun-Launched Starwisp Probes  
Gregory Matloff, *New York City College of Technology, United States*

## IAC-17.D4.4.7

Case Study of a Mission to Epsilon Eridani: Unmanned Interstellar Probe Using Gas Core Nuclear Reactors with Early 21st Century Technology  
Ugur Guven, *UN CSSTEAP, United States*

## IAC-17.D4.4.8

Interstellar Flight via the Extraction of Orbital Energy from Asteroids using Lorentz-Force-Actuated Ricochet Maneuvers of Pellet Streams  
Andrew Higgins, *McGill University, Canada*

## IAC-17.D4.4.9

Unsupervised Learning to Compensate for High Latency in Interstellar and Other Planetary Exploration  
Andrew Jones, *North Dakota State University, United States*

## D4.5. Space Mineral Resources, Asteroid Mining and Lunar/Mars insitu

September 29 2017, 09:00 — Riverbank 4

**Co-Chair(s):** Peter Swan, *International Space Elevator Consortium, United States*; Roger X. Lenard, *LPS, United States*;

**Rapporteur(s):** Susan McKenna-Lawlor, *Space Technology (Ireland) Ltd., Ireland*;

### IAC-17.D4.5.1

Selling Water at Earth Moon L-1  
Peter Swan, *International Space Elevator Consortium, United States*

### IAC-17.D4.5.2

Mining Requirements for Asteroid Ore Extraction  
Scott Dorrington, *UNSW Australia, Australia*

### IAC-17.D4.5.3

Power as A Resource  
Roger X. Lenard, *LPS, United States*

### IAC-17.D4.5.4

FFC Cambridge process and metallic 3D printing for deep in-situ resource utilisation - a match made on the Moon  
Alex Ellery, *Space Exploration and Engineering Group, Carleton University, Canada*

### IAC-17.D4.5.5

International and US Law on Space Mineral Resources  
Robin Frank, *National Aeronautics and Space Administration (NASA), United States*

### IAC-17.D4.5.7 (non-confirmed)

Exploitation of Space Mineral Resources: Energetic particle radiation issues  
Susan McKenna-Lawlor, *Space Technology Ireland Ltd., Ireland*

### IAC-17.D4.5.9 (non-confirmed)

Developing Water Extraction Mining Model for ISRU to Support A Mars Colony  
Serkan Saydam, *UNSW Australia, Australia*

### IAC-17.D4.5.12

moon inc. : the new zealand model of granting legal personality to natural resources applied to space  
Eytan Tepper, *Institute of Air and Space Law, McGill University, Canada*

## IAC-17.D4.5.14

National Legislation for Space Resource Utilisation  
Devanshu Ganatra, *India*

## IAC-17.D4.5.15

Tethered spacecraft in an asteroid gravitational environment  
Alexander Burov, *A.A.Dorodnynyn Computing Centre, FRC Computer Science and Control, Russian Academy of Sciences & Higher School of Economics, Russian Federation*

## D5. 50<sup>th</sup> IAA SYMPOSIUM ON SAFETY, QUALITY AND KNOWLEDGE MANAGEMENT IN SPACE ACTIVITIES

**Coordinator(s):** Jeanne Holm, *University of California, United States*; Roberta Mugellesi-Dow, *European Space Agency (ESA), United Kingdom*;

## D5.1. Safety and Quality for "Low Cost" Space Programs

September 27 2017, 09:45 — Riverbank 5  
**Co-Chair(s):** Alexander S. Filatyev, *Central Aero-HydroDynamic Institute, Russian Federation*; Manola Romero, *3AF, France*;

**Rapporteur(s):** David Finkleman, *International Academy of Astronautics, United States*;

### IAC-17.D5.1.3

On Implementing a Balanced Approach to Safety and Mission Assurance for Low-cost Space Missions  
Steven Arnold, *The Johns Hopkins University Applied Physics Laboratory, United States*

### IAC-17.D5.1.4

Research on approach of reliability design and evaluation for space launch systems based on mission sections  
LIWEI WANG, *Beijing Institute of Space Launch Technology, China*

### IAC-17.D5.1.6

Design of the Spacecraft Health Management Ground Support System Based-on Big Data  
Hongzheng Fang, *China Aerospace Science & Industry Academy, China*

### IAC-17.D5.1.8

A SUCCESSFUL COST-EFFECTIVE TAS-I STRATEGY FOR SATELLITES THERMAL VACUUM TEST MANAGEMENT  
Grazia Bitetti, *Thales Alenia Space Italia (TAS-I), Italy*

### IAC-17.D5.1.9

Challenges and Novel Approaches for Testing Large Numbers of Small Satellites  
Oliver Ruf, *Zentrum für Telematik, Germany*

## D5.2. Knowledge Management and Collaboration in Space Activities

September 28 2017, 09:45 — Riverbank 5  
**Co-Chair(s):** Lionel Baize, *Centre National d'Etudes Spatiales (CNES), France*; Roberta Mugellesi-Dow, *European Space Agency (ESA), United Kingdom*;

**Rapporteur(s):** Jeanne Holm, *University of California, United States*; Patrick Hambloch, *University of Alabama in Huntsville, United States*;

### IAC-17.D5.2.1

Space mission design supported by knowledge based systems: autonomous decision making in early design phases  
Loris Franchi, *Politecnico di Torino, Italy*



### IAC-17.E1.1.7

A learning method based on a mission to Mars for primary school children  
*Lucie Poulet, Université Clermont Auvergne, France*

### IAC-17.E1.1.8

The Benefits Of Prepared Kits For Education  
*Jacob Adams, University of Alabama in Huntsville, United States*

### IAC-17.E1.1.9

Using a space flown relic to approach space to basic education schools and foster space culture.  
*Mario Arreola, Agencia Espacial Mexicana (AEM), Mexico*

### IAC-17.E1.1.11

How holistic interactive experience can inspire the younger generation through voluntary engagement  
*Fatima AlAydaroo, UAE Space Agency, United Arab Emirates*

## E1.2. Lift-Off - Secondary Space Education

**September 29 2017, 11:00 — Panorama Room 3**

**Co-Chair(s):** *Andrea Jaime , OHB System AG - Munich, Germany; Seyed Ali Nasser, Space Generation Advisory Council (SGAC), Canada;*

**Rapporteur(s):** *Carlos Duarte , Agencia Espacial Mexicana (AEM), Mexico; Christopher Vasko , European Space Agency (ESA), France;*

### IAC-17.E1.2.2

Implementation of Space-Oriented Interactive Curriculum Units in Australian Secondary Schools  
*Alexander Linossier, Technische Universität Berlin, Germany*

### IAC-17.E1.2.4

The Midwestern USA CubeSat High School Outreach Program  
*Gilbert Fiedler, North Dakota State University, United States*

### IAC-17.E1.2.5

from class to community : undergraduate student team stem outreach via high altitude balloon  
*Norilmi Ismail, Universiti Sains Malaysia, Malaysia*

### IAC-17.E1.2.6

Impact of Hands-on Professional Development Workshop in North Dakota on Secondary Teacher Confidence in Space Sciences  
*Caitlin Nolby, Department of Space Studies, University of North Dakota, United States*

### IAC-17.E1.2.7

Measuring the effectiveness of authentic astronomy projects for secondary students through analysis of their interest, motivation, confidence and content acquisition.  
*Mark Gargano, St Joseph's School, Australia*

### IAC-17.E1.2.8

expanded education using the falcon telescope network international sites  
*Kimberlee Gresham, Universities Space Research Association, United States*

### IAC-17.E1.2.9

Inspiring the Next Generation in Space through Space Outreach in Nigeria  
*Mofoluso Fagbeja, National Space Research and Development Agency (NASRDA), Nigeria*

### IAC-17.E1.2.10

Utilization of Can Satellite Training Kits to Promote Space Education and Systems Engineering to High School Students  
*Rogel Mari Sese, National Space Development Program/Regulus SpaceTech, The Philippines*

### IAC-17.E1.2.11

Augmenting Pupil's Reality from Space – Learning with Digital Media based on Earth Observation Data from the ISS  
*Johannes Schultz, Ruhr-University Bochum, Germany*

### IAC-17.E1.2.12

the effects of space education in "the period for integrated studies" on formal education - cases of two schools in shimosuwa town-  
*Daisuke Taniguchi, JAXA, Japan*

### IAC-17.E1.2.13

High School Students Coding for Space: the Zero Robotics Competition  
*Benjamin Morrell, University of Sydney, Australia*

## E1.3. On Track - Undergraduate Space Education

**September 26 2017, 09:45 — Panorama Room 3**

**Co-Chair(s):** *Camille Alleyne , NASA, United States; Hubert Diez, CNES, France;*

**Rapporteur(s):** *Michal Kunes , Czech Space Office, Czech Republic;*

### IAC-17.E1.3.1

An international and interdisciplinary approach on learning how to design a space station  
*Gisela Detrell, Institute of Space Systems, University of Stuttgart, Germany*

### IAC-17.E1.3.2

evaluating the impacts of space club futa in promoting space science and technology in nigeria  
*Oniosun Temidayo Isaiah, Federal University of Technology Akure, Ondo state, Nigeria, Nigeria*

### IAC-17.E1.3.3

nano-satellite outreach program's first cubeSat mission  
*Amel Amin, Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates*

### IAC-17.E1.3.4

Developing and Conducting a Science Education Program on Human Space Activities  
*Masaki Nakamiya, Kyoto University, Japan*

### IAC-17.E1.3.5

SATPRUST: SATELLITE PROTOTYPE FOR UNDERGRADUATE STUDENTS  
*Cristian Chavez, Pontificia Universidad Catolica de Chile, Chile*

### IAC-17.E1.3.6

Development of CanSat Kit for Undergraduate Space Education in Nepal  
*Rakesh Chandra Prajapati, ORION Space, Nepal*

### IAC-17.E1.3.7

The benefit of project based courses as a "First Contact" between students and space industry  
*Roger Birkeland, Norwegian University of Science and Technology, Norway*

### IAC-17.E1.3.8

From the Classroom to Space: Training the Next Generation of Space Engineers with the SABRE CubeSat Platform  
*Joe Kleespies, University of Florida, United States*

### IAC-17.E1.3.9

SERA-3, the third supersonic experimental rocket inside PERSEUS project  
*Kévin MATHIS, Centre National d'Etudes Spatiales (CNES), France*

### IAC-17.E1.3.10

Space Education Program of the Tokyo University of Science A trial for hands-on space education using realistic materials  
*Shinichi Kimura, Tokyo University of Science, Japan*

### IAC-17.E1.3.11

The roles of a Student Rocket Club in the Space Education at Northwestern Polytechnical University, China  
*Yi Li, Northwestern Polytechnical University, China*

### IAC-17.E1.3.12

Überflieger - A Student Competition for ISS Experiments  
*Johannes Wepler, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany*

## E1.4. In Orbit - Postgraduate Space Education

**September 26 2017, 14:45 — Panorama Room 3**

**Co-Chair(s):** *Camille Alleyne , NASA, United States; David B. Spencer , The Pennsylvania State University, United States; Rapporteur(s): Remco Timmermans , , The Netherlands; Thierry Dana-Picard , Jerusalem College of Technology (JCT), Israel;*

### IAC-17.E1.4.1

Five-year results of the world's first graduate-school-level space engineering fellowship program conducted between the UN and a university – called the PNST program  
*George Maeda, Kyushu Institute of Technology, Japan*

### IAC-17.E1.4.2

Space Fundamental Training Program (SFTP), Young Professionals Heyam Alblooshi, United Arab Emirates Space Agency, United Arab Emirates

### IAC-17.E1.4.3

Masters Programs in Space Science and Engineering in Northern Sweden  
*Victoria Barabash, Luleå University of Technology, Sweden*

### IAC-17.E1.4.4

SpaceMaster: An International, Interdisciplinary Master in Space Science and Technology  
*Klaus Schilling, University Wuerzburg, Germany*

### IAC-17.E1.4.5

Innovations in Space Law Education at the University of Mississippi  
*Andrea Harrington, University of Mississippi, United States*

### IAC-17.E1.4.6

Mars Treaty-making Results from ISU SSP 2017  
*Miles Bengtson, International Space University (ISU), United States*

### IAC-17.E1.4.7

University based rocketry projects; examining the conditions that make them thrive  
*Graham Bell, Monash University, Australia*

### IAC-17.E1.4.8

Norwegian student satellite program – lessons learned  
*Jøran Grande, NAROM - Norwegian Centre for Space-Related Education, Norway*

### IAC-17.E1.4.10

An Update on the OpenOrbiter I Mission  
*Jeremy Straub, North Dakota State University, United States*

### IAC-17.E1.4.11

The first signs of "Space Fruits" from the International STEM collaboration between the Universities of Alabama in Huntsville in the United States, and the Cape Peninsula University of Technology in South Africa  
*Ben Groenewald, Cape Peninsula University of Technology, South Africa*

### IAC-17.E1.4.12

ARCSSTE-E'S Postgraduate Diploma Programme: the journey so far  
*Oladosu Olakunle, African Regional Center for Space Science and Technology Education in English (ARCSSTE-E), Nigeria*

## E1.5. Enabling the Future - Developing the Space Workforce

**September 27 2017, 14:45 — Panorama Room 3**

**Co-Chair(s):** *Hubert Diez , CNES, France; Rapporteur(s): Amalio Monzon , Airbus Defence and Space, Spain; Olga Zhdanovich , European Space Agency (ESA), The Netherlands;*

### IAC-17.E1.5.1

A long term ISU-UNISA partnership: the SHSSP.  
*Graziella Caprarelli, University of South Australia, Australia*

### IAC-17.E1.5.2

NASA's eXploration Systems and Habitation (X-Hab) Academic Innovation Challenge  
*Jason Crusan, NASA, United States*

### IAC-17.E1.5.3 (non-confirmed)

"Fly Your Satellite": the CubeSat programme of the ESA Academy  
*Jessica Korzeniowska, , The Netherlands*

### IAC-17.E1.5.4

20 years of Space School: a longitudinal study of the influence of an extracurricular space education program on Australian secondary school students' study and career choices  
*Kimberley Clayfield, South Australian Space School, Australia*

### IAC-17.E1.5.5

LEAP2 and LCATS Industry Clusters: A Framework for Lunar Site Technology Development Using Global Space-STEM Education and Global Space-Industry Development Networks  
*Samuel Ximenes, WEX Foundation, United States*

### IAC-17.E1.5.7

Establishing space activities in non-space faring nations: an example of university-based strategic planning  
*Pauline Faure, LaSEINE, Kyushu Institute of Technology, Japan*

### IAC-17.E1.5.8

Space Education and Entrepreneurship in Nepal: Current Challenges, Strategies and New Directions  
*Abinsh Kumar Dutta, ORION Space, Nepal*

### IAC-17.E1.5.9

Developing the Space Workforce at NASA University Research Center for Aerospace Device Research and Educational at North Carolina Central University  
*Gordana Vlahovic, North Carolina Central University, United States*

### IAC-17.E1.5.10

The Italy and Kenya space cooperation related to the Broglio Space Centre in Malindi (Kenya) and the development of a Kenyan space workforce  
*Nunzia Maria Paradiso, ASI - Italian Space Agency, Italy*

### IAC-17.E1.5.11

Spinning out from small space programs, start-up experience in Costa Rica  
*Roberto Aguilar, Central American Association for Aeronautics and Space (ACA), Costa Rica*

### IAC-17.E1.5.12

Challenges and opportunity in nanosatellite outreach program (NSOP) to develop workforce in space  
*Hessa Ali, Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates*

### IAC-17.E1.5.13 (non-confirmed)

Challenges and Prospects of Space Education and Outreach Activities in Ethiopia  
*Beza Tesfaye Zewdie, Space Generation Advisory Council (SGAC), Ethiopia*







**IAC-17.E4.2.4**

*The Sputnik Shock and South Korea's Rocket Fever 1958-1969*  
Hyoun Joon An, Science and Technology Policy Institute, Korea, Republic of

**IAC-17.E4.2.6**

*The Viking Sounding Rocket---Some New Observations*  
Frank H. Winter, National Air and Space Museum, United States

**IAC-17.E4.2.7**

*Sud X 410/AS<sup>2</sup>, an air-launched tactical missile project*  
Philippe Jung, Association Aéronautique & Astronautique de France (3AF), France

**E4.3A. History of Australia's Contribution to Astronautics**

**September 28 2017, 09:45 — Meeting Room L2**

**Co-Chair(s):** Kerrie Dougherty, Australia; Otfried Liepack, National Aeronautics and Space Administration (NASA)/Jet Propulsion Laboratory, United States;

**Rapporteur(s):** Charles Lundquist, University of Alabama in Huntsville, United States; John Harlow, Aerofjet Rocketdyne, United Kingdom;

**IAC-17.E4.3A.1**

*Ken Atack: Australia's Forgotten Rocketeer*  
Kerrie Dougherty, Australia

**IAC-17.E4.3A.2**

*The CSIRO Parkes Telescope and the Deep Space Network*  
John Sarkissian, CSIRO, Australia

**IAC-17.E4.3A.3**

*Australia and the Manned Space Flight Network: From Mercury to Skylab*  
Kerrie Dougherty, Australia

**IAC-17.E4.3A.4**

*Australis-OSCAR V and WRESAT: the possible origins of an Australian space program*  
Kerrie Dougherty, Australia

**E4.3B. "Can you believe they put a man on the Moon?"**

**September 29 2017, 11:00 — Meeting Room L2**

**Co-Chair(s):** John Charles, NASA Human Research Program, United States; Vera Pinto Gomes, European Commission, Belgium;

**Rapporteur(s):** Otfried Liepack, National Aeronautics and Space Administration (NASA)/Jet Propulsion Laboratory, United States;

**IAC-17.E4.3B.1**

*The Space Race Revisited: The Lunar Landing and its Larger Lessons*  
Andrew Erickson, Naval War College/Harvard University, United States

**IAC-17.E4.3B.2**

*FROM FRESNEDILLAS APOLLO STATION TO EUROPE'S ONLY LUNAR MUSEUM.*  
Juan F. Cabrero Gomez, ISDEFE/ESA, Spain

**IAC-17.E4.3B.3**

*The Cultural Impact of the Apollo Missions and the Protection of Cultural Heritage on the Moon*  
Andrea Harrington, University of Mississippi, United States

**IAC-17.E4.3B.4**

*Witnesses to the space race: Ireland watches the moon landing*  
Ruth McAvinia, Ireland

**E5. 28<sup>th</sup> IAA SYMPOSIUM ON SPACE AND SOCIETY**

**Coordinator(s):** Geoffrey Langedoc, Canadian Aeronautics & Space Institute (CASI), Canada; Olga Bannova, University of Houston, United States;

**E5.1. Architecture for humans in space: design, engineering, concepts and mission planning**

**September 26 2017, 14:45 — City Room 1**

**Co-Chair(s):** Brent Sherwood, Caltech/JPL, United States; Olga Bannova, University of Houston, United States;

**Rapporteur(s):** Anna Barbara Imhof, Liquefier Systems Group (LSG), Austria;

**IAC-17.E5.1.1**

*Transdisciplinarity in Space Architecture with Parametric Computation*

*Craig McCormack, University of Western Australia, Australia*

**IAC-17.E5.1.3**

*Moon Lava Tube Habitat Designs —From the Third Space Architecture Contest in Japan*

*Misuzu Onuki, Space Access Corporation, Japan*

**IAC-17.E5.1.4**

*Systems engineering for Mars Polar Research base*  
Anne-Marlene Rüede, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland

**IAC-17.E5.1.5**

*Designing for maximum adaptability before, during and after spaceflight*

*Craig McCormack, University of Western Australia, Australia*

**IAC-17.E5.1.6**

*Preliminary model to quantify impacts of spacecraft design choices on crew performance*

*Christine Fanchiang, University of Colorado, Colorado Center for Astrodynamics Research, United States*

**IAC-17.E5.1.7**

*The EDEN ISS antarctic greenhouse project — Final design and outcome of the assembly, integration and testing phase*  
Conrad Zeidler, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

**IAC-17.E5.1.8**

*Libations in Space*

*Christopher Carberry, Explore Mars, Inc, United States*

**IAC-17.E5.1.9**

*Strata Space - a layered approach to space habitat interior designs*  
Katrine Hesseldahl, Royal College of Art, United Kingdom

**IAC-17.E5.1.10**

*NASA Centennial Challenge: Three Dimensional (3D) Printed Habitat, Phase 2*  
Robert Mueller, National Aeronautics and Space Administration (NASA), United States

**IAC-17.E5.1.11**

*Essentiality of hHMI (harmonizing Human Material Interaction) in space habitats*

*Shalini Sahoo, Royal College of Art, United Kingdom*

**IAC-17.E5.1.12**

*Architecture for Impact Protection of a Moon Village*  
James Burke, The Planetary Society, United States

**E5.2. Models for Successfully Applying Space Technology Beyond Its Original Intent**

**September 27 2017, 09:45 — City Room 1**

**Co-Chair(s):** Nona Minnifield Cheeks, National Aeronautics and Space Administration (NASA)/Goddard Space Flight Center, United States; Olga Bannova, University of Houston, United States;

**Rapporteur(s):** Anna Barbara Imhof, Liquefier Systems Group (LSG), Austria;

**IAC-17.E5.2.1**

*Collaboration to stimulate innovation in the space sector and encourage cross-fertilization of Earth-Space R&D: a study using bibliometrics and surveys of the Canadian space sector*  
Annie Martin, Polytechnique Montreal, Canada

**IAC-17.E5.2.2**

*The catalogue of ESA activities supporting the UN Sustainable Development Goals*

*Isabelle Duvaux-Bechon, European Space Agency (ESA), France*

**IAC-17.E5.2.3**

*A survey on the capacities of the Italian space sector to produce technology transfers into space related and space enabled business*  
Giacomo Primo Sciortino, Italian Space Agency (ASI), Italy

**IAC-17.E5.2.4**

*Accelerating NASA Technology Transfer Through Strategic Intellectual Property Management*  
Mark Dvorscak, National Aeronautics and Space Administration (NASA), United States

**IAC-17.E5.2.5 (non-confirmed)**

*The importance of the Latin American approach in the development of space technological capabilities: A viewpoint from Mexico*

*Sofia Andrea Huerta Ramírez, Universidad Nacional Autónoma de México, Mexico*

**IAC-17.E5.2.6**

*The Case for Entrepreneurship as the Business Model in the Outer Space Settlements of the Future While Motivating Corporate Responsibility on Earth*

*Nancy C. Wolfson, Interstellar Travel Meetup, Webster University Worldwide, Washington University and Northern Arizona University, Outer Space Education Alliance L.L.P., United States*

**E5.3. Contemporary Arts Practice and Outer Space: A Multi-Disciplinary Approach**

**September 27 2017, 14:45 — City Room 1**

**Co-Chair(s):** Richard Clar, Art Technologies, United States; Tibor Balint, Royal College of Art, United Kingdom;

**Rapporteur(s):** Ioannis Michaloudis, Charles Darwin University, Australia;

**IAC-17.E5.3.1**

*The emerging roles of the observer on human space missions*  
Tibor Balint, Royal College of Art, United Kingdom

**IAC-17.E5.3.2**

*Mothering Grottesque & the White Cube: Dialectics of Art Space and Space Art*  
Ioannis Michaloudis, Charles Darwin University, Australia

**IAC-17.E5.3.4**

*ArtScience students projects towards a Moon Village*  
Bernard Foing, ESA/ESTEC, ILEWG & VU Amsterdam, The Netherlands

**IAC-17.E5.3.5**

*Cosmopolitical Bodies: An Architecture of Space*  
Mikaela Patrick, Royal College of Art, United Kingdom

**IAC-17.E5.3.6**

*Extra/terrestrial Culture: Performance and Outer Space*  
Felipe Cervera, National University of Singapore, Singapore, Republic of

**IAC-17.E5.3.9**

*Shifting space perspectives: a space prospect on the Antarctic as part of the Antarctic Biennale 2017*  
Anna Barbara Imhof, Liquefier Systems Group (LSG), Austria

**IAC-17.E5.3.10**

*Flowers behind the back of the universe: a cosmic art project exploring the invisible*  
Yuri Tanaka, Tokyo University of the Arts, Japan

**IAC-17.E5.3.11**

*Pleading the case for the artist in future human space mission: the Crew 173 experience at Mars Desert Research Station.*  
Niamh Shaw, Ireland

**E5.4. Space Assets and Disaster Management**

**September 28 2017, 09:45 — City Room 1**

**Co-Chair(s):** Geoffrey Langedoc, Canadian Aeronautics & Space Institute (CASI), Canada; Jillianne Pierce, Space Florida, United States;

**IAC-17.E5.4.2**

*Urban Waste Mapping in Akure Nigeria*  
Oniosun Temidayo Isaiah, Federal University of Technology Akure, Ondo state, Nigeria, Nigeria

**IAC-17.E5.4.3**

*Systems view of the spatio-temporal resolution of information during hurricanes*  
Carolynne Hultquist, The Pennsylvania State University, United States

**IAC-17.E5.4.4**

*COSMO-SKYMED ACTIVATION FOR CENTRAL ITALY'S 2016 EARTHQUAKE*  
Patrizia Sacco, Italian Space Agency (ASI), Italy

**IAC-17.E5.4.5**

*Use of Satellite Images for Droughts Studying: The Bolivian Case*  
Natalia Indira Vargas-Cuentas, Beihang University (BUAA), China

**IAC-17.E5.4.8**

*Space Innovation Policy for Disaster Management Capabilities: a Case Study on the Nascent Filipino Space Program*  
Quentin Verspiere, University of Tokyo, Japan

**IAC-17.E5.4.9**

*Current and Future Commercial Space Collaboration for Effective Disaster Management*  
Sirisha Bandla, Virgin Galactic L.L.C, United States

**IAC-17.E5.4.10**

*Resurrecting Space Guard: Concepts for a Coast Guard of Space*  
Robert Rovetto, United States

**E5.5. Space Societies, Professional Associations and Museums**

**September 28 2017, 14:45 — City Room 1**

**Co-Chair(s):** Jean-Baptiste Desbois, SEMECCEL Cité de l'Espace, France; Scott Hatton, The British Interplanetary Society, United Kingdom;

**Rapporteur(s):** Mino Rathnasabapathy, Space Generation Advisory Council (SGAC), Austria;

## IAC-17.E5.5.1

Asia-Pacific space generation workshop's ten-year outline on promoting future space collaboration among the next generation  
*Zihua Zhu, Space Generation Advisory Council (SGAC), Australia*

## IAC-17.E5.5.2

Developing the space sector on insular territory: Reunion Island case study  
*Angélique Verrecchia, Reunion Island Space Initiative (RISI), La Reunion*

## IAC-17.E5.5.3

IAA and SGAC Activities and the IAC'16 framework to foster youth involvement and space awareness in Mexico  
*Mario Arreola, Agencia Espacial Mexicana (AEM), Mexico*

## IAC-17.E5.5.5

World Space Week in Croatia: catalyzer for starting national space program  
*Goran Nikolasevic, World Space Week Association, Croatia*

## IAC-17.E5.5.7

The First Year of SPACE INSPIRIUM, Lesson Learned from the First Space Museum in Emerging Space Country  
*Wasanchai Vongsantivanich, Geo-Informatics and Space Technology Development Agency (GISTDA), Thailand*

## IAC-17.E5.5.8 (non-confirmed)

The Colombian space foundation: an attempt to develop the space sector  
*Camilo Guzman Gomez, UNIVERSIDAD SERGIO ARBOLEDA, Colombia*

## IAC-17.E5.5.9

women's participation in space activities and the importance of government's support: literature review and critical analysis  
*Luis Alfaro, EL Salvador Aerospace Institute (ESAI), United States*

## IAC-17.E5.5.10

Don't Panic: The Curator's Guide to the Galaxy  
*Lindsay Small, University of Toronto, Canada*

## IAC-17.E5.5.12

Making Space for Women: a more inclusive space policy in this UNISPACE+50.  
*LOURDES GARCIA HERNANDEZ, Mexican Space Agency, Mexico*

## E6. BUSINESS INNOVATION SYMPOSIUM

**Coordinator(s): Ken Davidian , Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST), United States;**

### E6.1. New space individuals, projects, programs, or business units: innovation, entrepreneurship & investment at the microscopic level of analysis

**September 26 2017, 09:45 — Riverbank 3**

**Co-Chair(s): Ken Davidian , Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST), United States;**

#### IAC-17.E6.1.1

Entrepreneurial and Innovation Ecosystem for Space: A Handbook on How to Start Your Own Space Company  
*Norah Patten, International Space University (ISU), Ireland*

## IAC-17.E6.1.2

Redefining Space Commercialization, Innovation, and Engagement through Public-Private Partnerships  
*Jason Crusan, NASA, United States*

## IAC-17.E6.1.3 (non-confirmed)

On Public/Private Relationships in the Space Activities: How Do the Hybrid Actors Influence the Whole Picture?  
*Dmitry Payson, United Rocket and Space Corporation, Russian Federation*

## IAC-17.E6.1.4

A Theoretical Construct to Assess the Role of Government in Supporting the Small Satellite Sector  
*Bhavya Lal, IDA Science and Technology Policy Institute, United States*

## IAC-17.E6.1.5

ESA Partnership Proposals: an initiative to foster the development of a commercial Low-Earth Orbit Economy  
*Luigi Scatteia, PricewaterhouseCoopers Advisory, France*

## IAC-17.E6.1.7 (non-confirmed)

D-Orbit: New Space Solutions From Italy.  
*Andrea Gini, D-Orbit, The Netherlands*

## IAC-17.E6.1.8

Lunar Mission One: a new funding model for exploration  
*David Iron, Lunar Missions Trust, United Kingdom*

## IAC-17.E6.1.9

monitoring of natural disaster based on synthetic aperture radar satellite in southeast asia  
*Yuri Yoshihara, The University of TOKYO, Graduate school, Japan*

## IAC-17.E6.1.10

The Exponential Organization: New Business Model for Hyper-Growth  
*Farnaz Ghadaki, ExO Works; Fastrack Institute, Canada*

## IAC-17.E6.1.11

Developing innovative business models for small space programs spin-outs, "DIT Space" start-up experience in Costa Rica  
*Luis Monge, Central American Association for Aeronautics and Space (ACAE), Costa Rica*

## IAC-17.E6.1.12

FluroSat: from University Pilot Course to a Start-up  
*Anastasiia Volkova, University of Sydney, Australia*

### E6.2. New space industry segments, firms, actor groups, and multiple programs: innovation, entrepreneurship & investment at the mesoscopic level of analysis

**September 26 2017, 14:45 — Riverbank 5**

**Co-Chair(s): Ken Davidian , Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST), United States;**

#### IAC-17.E6.2.1

Broadening Benefit as a Pathway to the Widely-Accepted Development of Extra-terrestrial Resources  
*Michael Simpson, Secure World Foundation, United States*

#### IAC-17.E6.2.2

First-Mover Advantages Impacting Site Occupation Timing and Methodology by Commercial Lunar Resource Firms.  
*John Culton, , United States*

#### IAC-17.E6.2.4

Winner of the "Space is Business" Paper Writing Competition  
*Ken Davidian, Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST), United States*

## IAC-17.E6.2.5

Innovation and Investment Strategies of Commercial Sector Reusable Launch Vehicles  
*Bethany Downer, International Space University (ISU), Canada*

## IAC-17.E6.2.6

Challenges and Opportunities of International Collaboration in Launch Vehicle Development Programs  
*Charles Lauer, Rocketplane Global, Inc., United States*

## IAC-17.E6.2.7 (non-confirmed)

On Changing Role of Space Risks Insurance and Space Assisted Insurance as Implied by Growing Commercialization of Satellite Applications  
*Daria Makarova, Peoples's Friendship University of Russia, Russian Federation*

## IAC-17.E6.2.8

The New Frontier for Space Insurance  
*Kirby Ikin, Asia Pacific Aerospace Consultants Pty Ltd, Australia*

## IAC-17.E6.2.9

Space innovation strengthens the socioeconomic fabric of society  
*Aria Colton, , Australia*

## IAC-17.E6.2.10 (non-confirmed)

Taikongmedia: A Soft Power of China's Space Power Construction  
*Hao LIU, China Academy of Space Technology (CAST), China*

## IAC-17.E6.2.11

2nd European Space Generation Workshop: Market Introduction Strategy for a new European Heavy-Lift Launch Vehicle  
*Josef Wiedemann, DLR (German Aerospace Center), Germany*

### E6.3. New space at the national, international, and overall industry levels: innovation, entrepreneurship & investment at the macroscopic level of analysis

**September 27 2017, 14:45 — Riverbank 5**

**Co-Chair(s): Ken Davidian , Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST), United States;**

#### IAC-17.E6.3.1

Determinant Factors of Innovation in the Space Sector  
*Christopher Vasko, European Space Agency (ESA), France*

#### IAC-17.E6.3.2

Research on the Technical Competitiveness of International Aerospace Enterprises from the Perspective of Patent  
*Xuemei Ma, , China*

#### IAC-17.E6.3.4

Roadmaps and Strategies for Space Sector National Capacity Building  
*Tom Morten Berge, International Space University (ISU), Norway*

#### IAC-17.E6.3.5

The Transformation of Space in the 21st Century and Analysis of Australian Space Capabilities  
*William Barrett, Asia Pacific Aerospace Consultants Pty Ltd, Australia*

#### IAC-17.E6.3.6

New Kids on the Block: The Impact of New Start-up Space Companies on the U.S. Space Industry Supply Chain  
*Phil Smith, Bryce Space and Technology, United States*

#### IAC-17.E6.3.7

Asia Pacific Space Commercialization: Policies and Approach  
*Stephanie Wan, Space Generation Advisory Council (SGAC), United States*

## IAC-17.E6.3.8

The Next Wave of NewSpace for Space Commercialization - After Two New Space Laws in Japan  
*Misuzu Onuki, Space Access Corporation, Japan*

## IAC-17.E6.3.9

Understanding India's New Space Potential: Implications and Prospects for Europe  
*Marco Aliberti, European Space Policy Institute (ESPI), Austria*

## IAC-17.E6.3.10

New Space. A glance at Italy  
*Simona di Ciaccio, Italian Space Agency (ASI), Italy*

## IAC-17.E6.3.12

The private sector as creator of space policies: the Colombian case  
*Camilo Guzman Gomez, UNIVERSIDAD SERGIO ARBOLEDA, Colombia*

## E7. 60<sup>th</sup> IISL COLLOQUIUM ON THE LAW OF OUTER SPACE

**Coordinator(s): Catherine Doldirina , International Institute of Space Law (IISL), Italy; Diane Howard , International Institute of Space Law (IISL), United States; Lesley Jane Smith , , Germany;**

**Publication officer(s): PJ Blount , University of Mississippi School of Law, United States; Rafael Moro-Aguilar , Orbispace, Austria;**

### E7.1. 9<sup>th</sup> Nandasiri Jasentulyana Keynote Lecture on Space Law and Young Scholars Session

**September 26 2017, 09:45 — Meeting Room L2**

**Co-Chair(s): Kai-Uwe Schrogl , European Space Agency (ESA), France; Michael Davis , Space Industry Association of Australia, Australia;**

**Rapporteur(s): Michael Dodge , Institute of Air and Space Law, McGill University, Canada;**

#### IAC-17.E7.1.1

KEYNOTE: The Outer Space Treaty – its First Fifty Years  
*Peter Jankowitsch, Austrian Aeronautics & Space Agency, Austria*

#### IAC-17.E7.1.2

Rebus sic stantibus and international space law: The evolution of the Space Treaties in the next fifty years  
*Dimitra Stefoudi, Leiden University, The Netherlands*

#### IAC-17.E7.1.3

Legal Loophole or Just a Matter of Interpretation? On the Outer Space Treaty's Methodology Test With the Diversification of Space Activities  
*Merve ERDEM, , Turkey*

#### IAC-17.E7.1.4

Launching from the Moon, Mars and Other Celestial Bodies: a Legal Analysis  
*Eloi PETROS, IDEST, University Paris Sud, France*

#### IAC-17.E7.1.5

International Trade in Launch Services under the WTO Regime  
*Joyeeta Chatterjee, Dentons US LLP, United States*

#### IAC-17.E7.1.6

Disarmament in Outer Space: Banning ASAT weapons with soft law?  
*Takuya Sugimura, , Japan*

#### IAC-17.E7.1.7

Outer Space Treaty 1967 vs. 2017 A Lex specialis or derogation from human rights?  
*Milan Mijovic, Law School Union University, Serbia*









































Pérez Hernández, Cristina	CA	IAC-17.A6.7.4
Pérez-Palau, Daniel	A	IAC-17.C1.6.2
Püttmann, Norbert	A	IAC-17.C4.4.8
Püttmann, Norbert	A	IAC-17.D2.6.10

## Q

Name	Role	Paper
Qi, Chuntang	CA	IAC-17.B1.4.2
Qi, Feng	A	IAC-17.D2.IP.7
Qi, Feng	A	IAC-17.D2.IP.8
Qi, Feng	A	IAC-17.E3.IP.16
Qi, Rui	CA	IAC-17.C1.1.1
Qi, Rui	CA	IAC-17.C1.IP.6
Qiang, Li	A	IAC-17.C2.4.3
Qiang, Sheng	CA	IAC-17.C2.IP.41
Qiao, Kuangyi	CA	IAC-17.B5.1.12
Qiao, Xiaotao	CA	IAC-17.E1.3.11
Qin, Haibo	CA	IAC-17.A1.1.4
Qin, Hong Lei	CA	IAC-17.B2.7.13
Qin, Jiang	CA	IAC-17.C3.3.1
Qin, Jiang	CA	IAC-17.C4.IP.39
Qin, Tong	A	IAC-17.D2.1.10
Qiu, Ruofan	CA	IAC-17.C4.9.1
Qu, Guangji	CA	IAC-17.B6.IP.8
Qu, Lina	A	IAC-17.A1.2.3
Quansah, Joseph	CA	IAC-17.E1.IP.21
Quantius, Dominik	CA	IAC-17.D1.4A.4
Quaranta, Vincenzo	CA	IAC-17.C2.9.10
Quincy, Charles	CA	IAC-17.A1.IP.4
Quine, Brendan	CA	IAC-17.B1.IP.8
Quinn, Andy	CA	IAC-17.B4.5.6
Quinn, Gary	CA	IAC-17.B1.1.3

## R

Name	Role	Paper
R, HUTTON	CA	IAC-17.D2.1.8
R, Vasudevan	CA	IAC-17.C4.5.8
Rabbow, Elke	CA	IAC-17.A1.6.2
Rabbow, Elke	CA	IAC-17.A1.6.6
Rabinovitch, Jason	CA	IAC-17.C4.8-B4.5A.8
Racheru, Mihai	CA	IAC-17.A3.4B.4
Rachmann, Abdul	A	IAC-17.A6.1.9
Rade, Domingos	CA	IAC-17.C2.5.9
Radice, Gianmarco	CA	IAC-17.C1.2.12
Radtke, Jonas	CA	IAC-17.A6.2.2
Radtke, Jonas	CA	IAC-17.A6.4.10
Radtke, Jonas	A	IAC-17.A6.10-B4.10.2
Radu, Silvana	CA	IAC-17.A3.4B.4
Radu, Silvana	A	IAC-17.B2.7.5
Ragab, Mohamed	CA	IAC-17.D2.8-A5.4.9
Raghavan, Jeenu	CA	IAC-17.C2.IP.34
Rahman, Md Mahbubur	A	IAC-17.C2.6.12
Rahmani, Shima	A	IAC-17.D1.IP.12
Rahmani, Shima	CA	IAC-17.D1.IP.14
Rahmat, Meysam	CA	IAC-17.C2.8.12
Rahurkar, Swara	CA	IAC-17.D3.2.8
Rahurkar, Swara	A	IAC-17.D3.3.10
Raimalwala, Kaizad	CA	IAC-17.E1.IP.22
Raimalwala, Kaizad	CA	IAC-17.E1.IP.23
Raina, Rahul	CA	IAC-17.B2.2.3
Rainy, Richard	CA	IAC-17.A3.IP.39
Raj, Baldev	CA	IAC-17.E3.6.9
Raj, Sathesh	A	IAC-17.E1.9.2
Rajagopalan, Rajeswari Pillai	CA	IAC-17.E3.4.11
Rajamani, Sudha	CA	IAC-17.E1.7.8
Raje, Saurabh	A	IAC-17.E2.4.7
Rajoria, Nitish	CA	IAC-17.C2.1.3

Rakotoniaina, Sitraka	A	IAC-17.E1.9.1
Ramazanov, Bahar	A	IAC-17.E7.IP.15
Ramchand Lalwani, Nitin	CA	IAC-17.E2.3-GTS.4.5
Ramchand Lalwani, Nitin	CA	IAC-17.A5.2.6
Ramchand Lalwani, Nitin	CA	IAC-17.A5.1.12
Ramchand Lalwani, Nitin	CA	IAC-17.D4.3.11
Ramchand Lalwani, Nitin	CA	IAC-17.A3.2C.11
Ramesh, Gajendran	CA	IAC-17.C4.IP.49
Ramesh, Rakshith	A	IAC-17.B2.6.4
Ramirez, Julio	CA	IAC-17.B4.1.11
Ramos Prada, María Antonia	CA	IAC-17.A6.7.4
Rana, Zaid	CA	IAC-17.E2.3-GTS.4.9
Rana, Zaid	A	IAC-17.E2.3-GTS.4.10
Ranera, Franck	CA	IAC-17.B1.IP.16
Rangel, Patty	A	IAC-17.E1.IP.16
Rao, Mukund Kadursrinivas	A	IAC-17.B3.1.9
Rao, Mukund Kadursrinivas	CA	IAC-17.E3.1.8
Rao, Mukund Kadursrinivas	CA	IAC-17.E3.3.4
Rao, Mukund Kadursrinivas	A	IAC-17.E3.6.9
Rao, Rakesh	CA	IAC-17.E1.7.8
RAO, SANDYA	A	IAC-17.A2.IP.2
Rarata, Grzegorz	CA	IAC-17.C4.3.4
Rarata, Grzegorz	CA	IAC-17.C4.IP.21
Rarata, Grzegorz	CA	IAC-17.E1.2.5.2
Rarata, Grzegorz	CA	IAC-17.C4.10.9
Rasel, Ernst Maria	CA	IAC-17.A2.1.2
Rasel, Ernst Maria	CA	IAC-17.A2.3.2
Rasera, Joshua	CA	IAC-17.D4.2.3
Rasky, Dan	A	IAC-17.D1.2.2
Rasky, Daniel	CA	IAC-17.D3.1.4
Rastelli, Davide	CA	IAC-17.A6.5.3
Rathinam, Arunkumar	A	IAC-17.C1.3.3
Ravan, Shirish	CA	IAC-17.D4.2.1
Ravi, Vinod	CA	IAC-17.A6.4.4
Ravichandran, Srinath	CA	IAC-17.D4.1.10
Ravier, Nicolas	CA	IAC-17.C4.1.2
Rawal, Suraj	A	IAC-17.C2.4.1
Rayman, Marc D.	A	IAC-17.A3.4A.2
Raymond, Carol A.	CA	IAC-17.A3.1.7
Raymond, Luke	CA	IAC-17.C4.8-B4.5A.2
Rayner, Peter	CA	IAC-17.B1.2.9
Raza, Mudassir	A	IAC-17.C3.2.2
Razoumny, Vladimir	CA	IAC-17.D3.4.8
Razoumny, Vladimir	CA	IAC-17.C1.IP.24
Razoumny, Yury	A	IAC-17.D3.4.8
Razoumny, Yury	A	IAC-17.C1.IP.24
Razzaghi, Kaveh	CA	IAC-17.E2.3-GTS.4.5
Razzaghi, Kaveh	CA	IAC-17.A5.2.6
Razzaghi, Kaveh	CA	IAC-17.A5.1.12
Razzaghi, Kaveh	A	IAC-17.D4.3.11
Razzaghi, Kaveh	CA	IAC-17.A3.2C.11
Re, Cristina	CA	IAC-17.A3.5.3
Rea, Anthony	A	IAC-17.B1.4.1
Rebele, Bernhard	CA	IAC-17.A3.IP.31
Reck, Christoph	CA	IAC-17.B1.6.3
Reddy, Gadhadar	A	IAC-17.C3.2.5
Reddy, Shanti	A	IAC-17.B1.IP.23
Reddy, Shashidhar	CA	IAC-17.E6.1.1
Redfern, Jillian	A	IAC-17.B4.3.1
Redlich, Daniel	CA	IAC-17.A3.3B.1
Reed, Cheryl	A	IAC-17.A3.4B.2
Reed, Heather	CA	IAC-17.A3.3A.2
Reed, Heather	CA	IAC-17.A3.3B.4
Reed, Heather	CA	IAC-17.A3.IP.11
Reershemius, Siebo	CA	IAC-17.A6.IP.14
Reganaz, Mattia	CA	IAC-17.A3.2B.10

Regenbrecht, Denis	A	IAC-17.D2.IP.3
Reggestad, Vemund	CA	IAC-17.D3.1.7
Reibaldi, Giuseppe	CA	IAC-17.E3.2.1
Reibaldi, Giuseppe	CA	IAC-17.E7.2.12
Reichenbach, Nico	CA	IAC-17.B4.6A.5
Reid, Ewan	A	IAC-17.E1.IP.33
Reid, William	A	IAC-17.D1.IP.1
Reid, William	A	IAC-17.E1.IP.39
Reih, Benedikt	CA	IAC-17.A6.2.9
Reill, Josef	CA	IAC-17.A3.4A.8
Reill, Josef	CA	IAC-17.A3.IP.31
Reill, Josef	CA	IAC-17.A3.4B.3
Reimann, Bodo	A	IAC-17.D1.3.5
Reimuller, Jason	CA	IAC-17.B3.2.6
Reinhart, Richard	A	IAC-17.B2.1.1
Reisenfeld, Sam	CA	IAC-17.B6.1.1
Reisenfeld, Sam	CA	IAC-17.A7.2.2
Reiss, Philipp	CA	IAC-17.A3.2B.9
Reiss, Philipp	CA	IAC-17.A3.2B.10
Reissner, Alexander	A	IAC-17.C4.4.9
Reitz, Günther	CA	IAC-17.A1.4.2
Rej, Abhijnan	CA	IAC-17.E3.4.11
Rembala, Richard	A	IAC-17.B3.6-A5.3.2
Rembala, Richard	CA	IAC-17.D1.6.5
Remedia, Marcello	A	IAC-17.C2.1.2
Rempt, Susanne	CA	IAC-17.E1.3.12
Renato, Viola	A	IAC-17.C2.4.6
Renaud, Pierre Yves	CA	IAC-17.A3.3A.8
Renk, Florian	CA	IAC-17.E4.1.3
Renk, Florian	CA	IAC-17.C1.9.12
Repin, Igor	CA	IAC-17.B3.3.2
Resch, Andreas	CA	IAC-17.A2.1.2
Resta, Pier Domenico	CA	IAC-17.D2.1.1
Retat, Ingo	CA	IAC-17.A6.6.4
Rettberg, Petra	A	IAC-17.A1.6.2
Rettberg, Petra	CA	IAC-17.A1.6.5
Rettberg, Petra	CA	IAC-17.A1.6.6
Rettberg, Petra	CA	IAC-17.A1.6.9
Ribet, Matteo	CA	IAC-17.C1.1.5
Ricard, William	CA	IAC-17.E3.3.3
Riccardi, Annalisa	CA	IAC-17.A6.7.1
Ricciardi, Agnese	CA	IAC-17.D1.1.9
Rice, Mark	CA	IAC-17.B2.5.1
Richard-Noca, Muriel	CA	IAC-17.A6.6.5
Richards, Josh	A	IAC-17.E1.6.2
Richardson, Guy	CA	IAC-17.C2.5.3
Richardson, Matthew	A	IAC-17.E2.2.2
Richardson, Matthew	A	IAC-17.A6.8.5
Richert, Philip	CA	IAC-17.C2.1.5
Richey, Danielle	CA	IAC-17.A5.1.5
Richter, Lutz	A	IAC-17.A3.2B.9
Richter, Lutz	CA	IAC-17.A3.2B.10
Richter, Lutz	A	IAC-17.A3.3B.1
Rickmers, Peter	CA	IAC-17.D2.6.1
Riede, Wolfgang	CA	IAC-17.E2.2.9
Riede, Wolfgang	CA	IAC-17.A6.IP.5
Riede, Wolfgang	CA	IAC-17.A6.IP.7
Rieker, Vilde	A	IAC-17.E2.3-GTS.4.7
Riemer, Arne	CA	IAC-17.A6.IP.14
Rienow, Andreas	CA	IAC-17.E1.2.11
Riesselmann, Jens	A	IAC-17.C2.8.9
Rievers, Benny	CA	IAC-17.A2.1.5
Rievers, Benny	CA	IAC-17.A2.1.6
Rievers, Benny	CA	IAC-17.B1.IP.21
Rievers, Benny	A	IAC-17.C4.IP.31
Rifert, Vladimir	A	IAC-17.A1.IP.25

Riffle, Zachary	CA	IAC-17.E1.1.8
Rigaut, Francois	CA	IAC-17.A6.6.3
Riley, David	A	IAC-17.A6.4.6
Riley, David	CA	IAC-17.A6.4.7
Riley, David	A	IAC-17.B2.5.3
Riley, David	CA	IAC-17.B4.5.6
Rimani, Jasmine	CA	IAC-17.D2.IP.6
Rimolo-Donadio, Renato	CA	IAC-17.A2.3.10
Rischka, Klaus	CA	IAC-17.A1.6.9
Rist, D. Wes	A	IAC-17.E7.7-B3.8.9
Rittatore, Matias	CA	IAC-17.E2.3-GTS.4.9
Rittatore, Matias	CA	IAC-17.E2.3-GTS.4.10
Rittweger, Jörn	CA	IAC-17.A2.IP.1
Rivas-Davila, Juan	CA	IAC-17.C4.8-B4.5A.2
Rivero, Moises	CA	IAC-17.A6.3.6
RIVIERE, Jérôme	CA	IAC-17.C3.2.7
Rivolta, Aureliano	A	IAC-17.C1.2.8
Roach, Mike	CA	IAC-17.E1.5.4
Roberson, Luke	CA	IAC-17.A1.IP.4
Robert, Alain	CA	IAC-17.A2.1.1
Robert, Alain	CA	IAC-17.A2.1.7
Robert, Hahn	CA	IAC-17.A6.IP.14
Roberts, Caroline	CA	IAC-17.B1.IP.8
Roberts, Peter C.E	A	IAC-17.D1.1.2
Roberts, Peter C.E	CA	IAC-17.C4.6.5
Roberts, Sheryllynn	CA	IAC-17.E1.5.5
Robinson, Julie A.	CA	IAC-17.B3.3.1
Robinson, Kimberly	A	IAC-17.B4.5.3
Robison, Kathryn	A	IAC-17.E1.IP.8
Robison, William	CA	IAC-17.B4.2.1
Rochat, Sylvain	CA	IAC-17.A3.4B.3
Rochblatt, David	CA	IAC-17.B2.6.7
Rock, Jim	CA	IAC-17.E1.8.2
Rodmann, Jens	CA	IAC-17.E2.2.9
Rodmann, Jens	CA	IAC-17.A6.IP.7
Rodrigues, Manuel	CA	IAC-17.A2.1.7
Rodrigues, Pedro	CA	IAC-17.B1.3.8
Rodrigues, Pedro	CA	IAC-17.B1.IP.1
Rodrigues, Pedro	A	IAC-17.D5.3.3
Rodriguez, Omar Eduardo	CA	IAC-17.E1.IP.30
Rodriguez Dominguez, Rene	CA	IAC-17.E6.IP.2
Rodriguez-Cortes, Hugo	A	IAC-17.C1.2.9
Rodriguez-Donaire, Silvia	CA	IAC-17.D1.1.2
Rodriguez-Donaire, Silvia	CA	IAC-17.C4.6.5
Rodriguez-Fernández, Victor	CA	IAC-17.A6.7.1
Roelof, Edmond	CA	IAC-17.D4.4.2
Rogez, Yves	CA	IAC-17.A3.4B.3
Roh, Dong-Goo	CA	IAC-17.A6.IP.16
Rohit, Minal	CA	IAC-17.E1.5.5
Rohrbeck, Mathias	CA	IAC-17.A7.2.5
Rohrwild, Karlheinz	A	IAC-17.E4.1.2
Rojas, Juan J.	CA	IAC-17.B4.1.11
Rojas Quesada, Mariela	A	IAC-17.A6.IP.2
Roman-Gonzalez, Avid	CA	IAC-17.B4.9-GTS.5.7
Roman-Gonzalez, Avid	CA	IAC-17.D4.2.5
Roman-Gonzalez, Avid	CA	IAC-17.E5.4.5
Roman-Gonzalez, Avid	A	IAC-17.B1.IP.27
Roman-Gonzalez, Avid	A	IAC-17.E5.IP.1
Roman-Gonzalez, Avid	CA	IAC-17.B1.5.5
Romano, Diego Giuseppe	CA	IAC-17.D2.7.3
Romano, Francesco	CA	IAC-17.D1.1.2
Romano, Francesco	A	IAC-17.C4.6.5
Romano, Marcello	CA	IAC-17.C1.5.3
Romano, Matteo	A	IAC-17.C1.9.5
Romberg, Oliver	CA	IAC-17.D1.4A.4
Romberg, Oliver	CA	IAC-17.B3.IP.6
Romero, Victor	A	IAC-17.B4.9-GTS.5.7
Romestant, Cyril	CA	IAC-17.A2.3.4
Romita, Jonathan	CA	IAC-17.E2.3-GTS.4.9
Romoli, Marco	CA	IAC-17.A7.2.11







Smith, Katharine	CA	IAC-17.C4.6.5
Smith, Michael	CA	IAC-17.A3.IP.11
Smith, Phil	CA	IAC-17.E3.3.1
Smith, Phil	A	IAC-17.E6.3.6
Smith, Phil	CA	IAC-17.E3.IP.7
Smith, Walter F.	CA	IAC-17.A3.4B.5
Snell, Holly	A	IAC-17.C2.6.4
Snodgrass, Colin	CA	IAC-17.A3.IP.53
Snyder, John Steven	CA	IAC-17.C4.4.3
Soares, Carlos	A	IAC-17.A3.3B.7
Soares, Tiago	CA	IAC-17.A6.4.6
Soares, Tiago	CA	IAC-17.A6.4.7
Soares, Tiago	CA	IAC-17.A6.4.9
Sobczak, Kamil	CA	IAC-17.C4.3.4
Sobczak, Kamil	CA	IAC-17.C4.IP.21
Sobczak, Kamil	CA	IAC-17.A2.5.2
Sogame, Akito	CA	IAC-17.E5.1.3
Sohl, Frank	CA	IAC-17.A3.IP.31
Sohl, Frank	CA	IAC-17.A3.2C.3
Soken, Halil Ersin	A	IAC-17.C1.1.3
Sokhin, Igor G.	A	IAC-17.B3.5.5
Sola, Dan	CA	IAC-17.B5.1.4
Solberg, Margot	A	IAC-17.E1.1.2
Sole-Agostinelli, Thibaud	CA	IAC-17.A2.3.4
Sollazzo, Claudio	CA	IAC-17.B3.9-GTS.2
Solomakha, Andrii	CA	IAC-17.A1.IP.25
Solomina, Olga	CA	IAC-17.B3.3.4
Solorzano, Elias	A	IAC-17.C1.IP.27
Solorzano, Elias	A	IAC-17.E1.IP.22
Solov'yev, Sergey V.	CA	IAC-17.B3.4-B6.5.10
Soma, Eriko	CA	IAC-17.A6.3.9
Soma, Tomoya	CA	IAC-17.C4.1.12
Somma, Gian Luigi	A	IAC-17.A6.IP.36
Sommer, Bernd	A	IAC-17.D4.1.2
Song, Jiangzhou	CA	IAC-17.A2.4.7
Song, Junling	A	IAC-17.C4.9.7
Song, Junling	CA	IAC-17.B2.8-GTS.3.6
Song, Xin	CA	IAC-17.B4.7.3
Song, Yiqiao	CA	IAC-17.B2.7.9
Soontranon, Narut	CA	IAC-17.E5.5.7
Sorace, Roberta	CA	IAC-17.E3.3.5
Sorge, Marlon	A	IAC-17.A6.2.5
Sorge, Marlon	CA	IAC-17.A6.3.6
Sorgenfrei, Matthew	A	IAC-17.A3.2B.3
Soria-Salinas, Álvaro Tomás	A	IAC-17.A2.3.6
Sorli, Massimo	CA	IAC-17.D2.3.4
Sorli, Massimo	CA	IAC-17.A6.IP.21
Sorokin, Igor V.	CA	IAC-17.B3.3.1
Sorokin, Igor V.	A	IAC-17.B3.3.6
Sors Raurell, Daniel	CA	IAC-17.E6.1.1
Sosyrka, Yury	CA	IAC-17.B3.5.5
Sotin, Christophe	CA	IAC-17.A7.1.6
Soucek, Alexander	CA	IAC-17.E3.4.8
Soulas, George	CA	IAC-17.C4.4.4
Soulier, Guilhem	CA	IAC-17.C3.2.7
Soulier, Guilhem	CA	IAC-17.E5.5.2
Sousa, Mário	CA	IAC-17.D5.3.3
Southern, Theodore C.	CA	IAC-17.B3.2.6
Southwell, Benjamin	A	IAC-17.B1.IP.12
Southwell, Benjamin	CA	IAC-17.C1.IP.1
Spannagel, Ruven	A	IAC-17.C2.IP.14
Spassova, Simona	A	IAC-17.E7.3.5
Spataro, Francesca	CA	IAC-17.A6.4.5
Spena, Angelo	CA	IAC-17.E1.IP.27
Spena, Paola	CA	IAC-17.C2.6.9
Spencer, David	CA	IAC-17.C1.5.11
Spencer, David	CA	IAC-17.A6.5.2
Spencer, David B.	CA	IAC-17.D3.4.8
Speretta, Stefano	A	IAC-17.B1.6.6
Sperl, Matthias	CA	IAC-17.A3.2C.2
Sperl, Matthias	CA	IAC-17.C2.9.13
Speyer, Jason	CA	IAC-17.B2.1.7
Spieler, Michael	CA	IAC-17.E2.3-GTS.4.4
Spieler, Patrick	A	IAC-17.E2.3-GTS.4.4
Spiero, François	CA	IAC-17.A3.1.1

Spiero, François	CA	IAC-17.A5.1.1
Spitler, Lee	CA	IAC-17.A7.2.2
Spitzbart, Manfred	CA	IAC-17.C4.5.9
Sporie, Sean	A	IAC-17.C2.9.7
Sprinkle, Tara RuthAnn	A	IAC-17.D1.4B.4
Sprowitz, Tom	CA	IAC-17.A6.IP.14
Spydevold, Ivar	CA	IAC-17.B2.7.4
Spörl, Andreas	CA	IAC-17.B4.3.9
Srama, Ralf	CA	IAC-17.A6.IP.4
Srinivasan, Dipak	A	IAC-17.B2.6.5
Srivastava, Pulak	CA	IAC-17.D4.1.4
Srivastava, Pulak	A	IAC-17.D4.1.11
Srivastava, Pulak	CA	IAC-17.A3.IP.28
Srivastava, Pulak	CA	IAC-17.D2.IP.20
St-Amour, Amélie	A	IAC-17.B1.IP.7
Staats, Kai	CA	IAC-17.B5.1.4
Stabile, Alessandro	A	IAC-17.C2.5.3
Stacy, Nicholas	CA	IAC-17.A3.4B.8
Stacy, Nick	A	IAC-17.D3.4.10
Staubano, Clelia	CA	IAC-17.A1.6.6
Stakkestad, Kjell	CA	IAC-17.E4.1.3
Stakkestad, Kjell	CA	IAC-17.A5.2.4
Stamatini, Ioan	CA	IAC-17.C2.IP.27
Stamminger, Andreas	CA	IAC-17.A2.3.2
Stamminger, Andreas	CA	IAC-17.E1.IP.25
Stamminger, Andreas	A	IAC-17.A2.5.3
Stamov, Lyuben	CA	IAC-17.A2.4.5
Stanton, Richard	A	IAC-17.A4.1.10
Stanzione, Vincenzo	A	IAC-17.B4.6A.1
Stappert, Sven	CA	IAC-17.D2.4.3
Stappert, Sven	CA	IAC-17.D2.4.4
Stappert, Sven	CA	IAC-17.D2.6.1
Starinova, Olga	A	IAC-17.C1.IP.28
Starr, Stanley	CA	IAC-17.D3.3.1
Statt, Sebastian	CA	IAC-17.A7.2.7
Stausland, Christoffer	CA	IAC-17.E1.4.8
Steen, Andrew J.	CA	IAC-17.D2.4.11
Steen, Andrew J.	A	IAC-17.B1.IP.28
Steenkamp, Leon	CA	IAC-17.B4.4.11
Steer, Cassandra	CA	IAC-17.E7.5.7
Steeves, Geoff	CA	IAC-17.E1.IP.33
Stefanescu, Alexander	CA	IAC-17.A7.IP.3
Stefanov, Liviu	CA	IAC-17.B6.3.7
Stefoudi, Dimitra	A	IAC-17.E7.1.2
Stefoudi, Dimitra	CA	IAC-17.E7.2.12
Stefoudi, Dimitra	A	IAC-17.B1.6.7
Steidle, Florian	CA	IAC-17.A3.IP.31
Steimle, Christian	A	IAC-17.B3.4-B6.5.6
Steimle, Christian	CA	IAC-17.B4.5.1
Steimle, Christian	A	IAC-17.D1.6.4
Steinberg, Alan	CA	IAC-17.E1.IP.7
Steiner, Jochen	CA	IAC-17.A3.IP.30
Steinpilz, Tobias	CA	IAC-17.E1.3.12
Stephens, Dale	A	IAC-17.E7.5.5
Sterckx, Sindy	CA	IAC-17.B1.2.6
Stesina, Fabrizio	CA	IAC-17.B4.3.3
Stettner, Armin	A	IAC-17.A2.6.8
Stevens, Chris	A	IAC-17.E3.6.4
Stevenson, Emma	CA	IAC-17.A6.2.9
Stewart, Brian	CA	IAC-17.B4.1.8
Stewart, Brian	CA	IAC-17.B4.6B.3
Stewart, Brian	CA	IAC-17.B6.3.12
Stewart, Paul	A	IAC-17.D2.IP.19
Stewart, Paul	A	IAC-17.B1.5.8
Steyn, Willem (Herman)	CA	IAC-17.A6.6.4
Stiles, Amanda	CA	IAC-17.A3.2A.5
Stimpel, Olivia	CA	IAC-17.A1.8.6
Stodiek, Louis	CA	IAC-17.A1.6.8
Stojanovski, Lisa	A	IAC-17.E1.6.9
Stojanovski, Lisa	A	IAC-17.E1.8.7
Stolfi, Angelo	A	IAC-17.C2.2.4
Stoll, Enrico	CA	IAC-17.A6.4.10
Stoll, Enrico	CA	IAC-17.B1.IP.3
Stoll, Enrico	CA	IAC-17.D1.IP.6
Stoll, Enrico	CA	IAC-17.E2.4.6

Stoll, Enrico	CA	IAC-17.A6.10-B4.10.2
Stone, Dennis	CA	IAC-17.E1.7.5
Stone, Edward C.	CA	IAC-17.D4.4.2
Stove, Andrew	CA	IAC-17.B1.3.3
Strain, Andrew	CA	IAC-17.B4.4.11
Straub, Jeremy	A	IAC-17.E1.4.10
Straub, Jeremy	CA	IAC-17.D1.3.2
Straub, Jeremy	CA	IAC-17.A3.IP.27
Straub, Jeremy	CA	IAC-17.A6.6.9
Straub, Jeremy	CA	IAC-17.B3.6-A5.3.6
Straub, Jeremy	CA	IAC-17.C2.9.6
Straub, Jeremy	CA	IAC-17.D4.4.9
Straub, Jeremy	CA	IAC-17.E1.2.4
Strimfors, Victor	CA	IAC-17.E5.1.9
Strollo, Felice	A	IAC-17.A1.2.13
Stroup, Tom	CA	IAC-17.E3.3.1
Stuart, Jeffrey	A	IAC-17.B4.3.12
Stuart, Jeffrey	A	IAC-17.C1.4.2
Stubbe, Peter	A	IAC-17.E3.4.6
Stuchbery, Alex	CA	IAC-17.C4.8-B4.5A.2
Stuffer, Timo	CA	IAC-17.D2.4.5
Stürzl, Wolfgang	CA	IAC-17.A3.IP.31
Stützer, Robert	A	IAC-17.C4.3.5
Su, Fei	A	IAC-17.A6.IP.22
Su, Hua	A	IAC-17.D1.IP.19
Su, Ling	CA	IAC-17.B4.5.12
Su, Miao	A	IAC-17.D5.2.4
Suatoni, Matteo	A	IAC-17.C1.3.9
Suatoni, Matteo	CA	IAC-17.A3.4B.10
Suchantke, Isabell	CA	IAC-17.C1.2.10
Suedfeld, Peter	A	IAC-17.A1.1.1
Suedfeld, Peter	CA	IAC-17.A1.1.2
Suedfeld, Peter	CA	IAC-17.A1.1.3
Suess, Ruediger	A	IAC-17.E3.IP.2
Sugimoto, Kazuki	CA	IAC-17.B4.2.1
Sugimura, Takuya	A	IAC-17.E7.1.6
Sugita, Naoko, Inaba	CA	IAC-17.E7.4.4
Suguo, Zhuang	A	IAC-17.C4.5.10
Sukkarieh, Salah	CA	IAC-17.E1.IP.39
Sumita, Anzu	CA	IAC-17.C2.2.5
SUN, Binglei	A	IAC-17.B1.2.10
Sun, Bo	CA	IAC-17.D5.1.6
Sun, Dechuan	A	IAC-17.C4.IP.30
Sun, Feiyi	CA	IAC-17.A1.5.8
Sun, Geng	CA	IAC-17.B2.6.10
Sun, Hao	A	IAC-17.A1.IP.1
Sun, Jinfeng	A	IAC-17.C1.5.5
Sun, Jinfeng	A	IAC-17.C1.IP.19
Sun, Jun	CA	IAC-17.B3.7.9
Sun, Kaipeng	A	IAC-17.C2.IP.23
Sun, Lingli	CA	IAC-17.E3.IP.11
Sun, Mingming	A	IAC-17.C4.4.13
Sun, Qiao	A	IAC-17.A1.IP.3
Sun, Rong	A	IAC-17.B2.7.6
Sun, Ting	A	IAC-17.C1.1.12
Sun, Xuan	A	IAC-17.C2.IP.33
Sun, Xun	CA	IAC-17.B4.6B.8
Sun, Yeqing	CA	IAC-17.A1.5.1
Sun, Yueqiang	CA	IAC-17.A1.5.1
Sundaram, Ramakrishnan	A	IAC-17.D2.1.8
Surdo, Leonardo	CA	IAC-17.A3.2B.10
Surmacz, Pawel	A	IAC-17.C4.3.4
Surmacz, Pawel	CA	IAC-17.A6.5.4
Surmacz, Pawel	A	IAC-17.C4.IP.21
Surmacz, Pawel	CA	IAC-17.A2.5.2
Suslov, Dmitry	CA	IAC-17.C4.5.3
Suslov, Dmitry	CA	IAC-17.C4.10.12
Sutoh, Masataku	CA	IAC-17.A3.2B.4
Suzuki, Hideyuki	CA	IAC-17.E1.3.10
Suzuki, Kazuto	A	IAC-17.E3.4.3
Suzuki, Nantel	CA	IAC-17.D3.3.1
Suzuki, Yuto	A	IAC-17.D4.3.3
Svistkov, Alexander	CA	IAC-17.C2.IP.10
Svoboda, Eugen	A	IAC-17.A3.IP.14
Svotina, Victoria	CA	IAC-17.C4.4.14

Swan, Peter	A	IAC-17.D4.3.1
Swan, Peter	A	IAC-17.D4.3.8
Swan, Peter	A	IAC-17.D4.5.1
Sweeting, Martin	CA	IAC-17.B4.1.4
Sweeting, Martin	CA	IAC-17.B4.4.5
Sweeting, Martin	CA	IAC-17.B4.4.6
Sweeting, Martin	CA	IAC-17.B4.5.5
Sweeting, Martin	CA	IAC-17.B4.7.6
Swinney, Rob	CA	IAC-17.E6.2.5
Syafrudin, A. Hadi	CA	IAC-17.B1.IP.10
Syafrudin, A. Hadi	A	IAC-17.B6.IP.4
Sychev, Vladimir	CA	IAC-17.A1.8.4
Sychkov, Vladislav	A	IAC-17.B3.IP.11
Szabo, Peter	CA	IAC-17.D1.6.5
Sznajder, Maciej	CA	IAC-17.A6.IP.14
SÁNCHEZ, JESÚS BRIAN	CA	IAC-17.A1.IP.20
Sánchez Pérez, Jose Manuel	CA	IAC-17.C1.9.5
Sárhegyi, István	CA	IAC-17.E3.1.2
Sárhegyi, István	CA	IAC-17.E1.4.6
Sárhegyi, István	CA	IAC-17.E6.3.4
Söllner, Gerd	CA	IAC-17.B3.4-B6.5.3
Sütterlin, Saskia	CA	IAC-17.E1.3.12

### T

Name	Role	Paper
T, Jayachandran	CA	IAC-17.C2.1.12
T, Jayachandran	CA	IAC-17.C2.4.8
T, Jayachandran	CA	IAC-17.A3.IP.20
Tabarah, Edward	CA	IAC-17.B3.1.5
Tabor, Mark	CA	IAC-17.B5.2.6
Tachibana, Kazushi	CA	IAC-17.B4.2.1
Tachikawa, Sumitaka	CA	IAC-17.C2.7.5
Tachikawa, Sumitaka	CA	IAC-17.C2.8.11
Tachikawa, Sumitaka	CA	IAC-17.C2.9.12
Taguchi, Hideyuki	CA	IAC-17.E7.4.4
Tahtadjev, Milen	A	IAC-17.D1.IP.13
Tahtadjev, Milen	A	IAC-17.E8.1.4
TAHIR, ANDI MUKHTAR	CA	IAC-17.B1.IP.24
TAHIR, ANDI MUKHTAR	CA	IAC-17.C2.7.2
Tahtadjev, Milen	A	IAC-17.B2.IP.3
Taiatu, Claudiu Mihai	A	IAC-17.E7.1.11
Taillebot, Virginie	CA	IAC-17.B3.4.4
Tajmar, Martin	CA	IAC-17.C4.IP.1
Tajmar, Martin	A	IAC-17.C4.IP.11
Tajmar, Martin	CA	IAC-17.C4.IP.38
Tajmar, Martin	A	IAC-17.C4.7-C3.5.10
Tajmar, Martin	CA	IAC-17.A7.3.6
Tagaki, Kentaro	CA	IAC-17.C2.2.5
Takahashi, Kazunori	CA	IAC-17.C4.4.15
Takahashi, Kazunori	A	IAC-17.A6.5.5
Takahashi, Kazunori	CA	IAC-17.A7.3.5
Takahashi, Ryo	CA	IAC-17.E5.3.10
Takahashi, Sakurako	CA	IAC-17.D4.3.3
Takahashi, Tadateru	CA	IAC-17.A3.4A.7
Takahashi, Tadateru	CA	IAC-17.B6.3.1
Takahashi, Yoan Takahashi	CA	IAC-17.E5.1.3
Takao, Yuki	CA	IAC-17.E6.1.9
Takeda, Koji	CA	IAC-17.C3.2.2
Takei, Yuto	CA	IAC-17.A3.4A.7
Takei, Yuto	A	IAC-17.B6.3.1
Takekoshi, Hiroshi	CA	IAC-17.A1.3.12
Takeuchi, Hiroshi	CA	IAC-17.B6.3.1
Takeuchi, Yu	CA	IAC-17.E7.4.4
Takeuchi, Yu	A	IAC-17.E7.5.3
Tal, Ro-ee	CA	IAC-17.B4.6B.14
Talati, Anuraj	CA	IAC-17.D3.3.11
Talla, Roman	CA	IAC-17.A1.2.6
Tam, Jessica	CA	IAC-17.D3.3.11
Tamakoshi, Daisuke	A	IAC-17.C1.8.4
Tamrazian, Sebastian	CA	IAC-17.B4.2.8
Tamura, Keisuke	CA	IAC-17.B4.2.1
Tamura, Takashi	CA	IAC-17.C4.1.3
Tan, Cheng Hai	CA	IAC-17.E3.1.8



Tan, Dominic	CA	IAC-17.C4.1.13
Tan, Dominic	CA	IAC-17.E1.4.7
Tan, Dominic	CA	IAC-17.C4.IP.19
Tan, Ernest	CA	IAC-17.B3.4-B6.5.11
Tan, Jingwen	CA	IAC-17.B2.IP.13
Tan, Juan	CA	IAC-17.D4.2.3
Tan, Yonghua	CA	IAC-17.C4.IP.5
Tan, Yonghua	CA	IAC-17.C4.IP.15
Tanaka, Atomu	A	IAC-17.D5.3.2
Tanaka, Erika	CA	IAC-17.E6.1.9
Tanaka, Hiroaki	A	IAC-17.C2.2.5
Tanaka, Hiroaki	CA	IAC-17.A6.IP.25
Tanaka, Kazuhisa	CA	IAC-17.C1.IP.25
Tanaka, Koji	A	IAC-17.C3.1.2
Tanaka, Koji	A	IAC-17.C3.1.4
Tanaka, Koji	A	IAC-17.C3.1.9
Tanaka, Koji	CA	IAC-17.C3.2.9
Tanaka, Koji	CA	IAC-17.A6.3.9
Tanaka, Naohiro	CA	IAC-17.C3.2.9
Tanaka, Satoshi	CA	IAC-17.A3.4A.7
Tanaka, Satoshi	CA	IAC-17.A3.4A.9
Tanaka, Yuri	A	IAC-17.E5.3.10
Tang, Biwei	CA	IAC-17.A2.4.7
Tang, Bo	CA	IAC-17.B1.4.2
Tang, Jingshi	A	IAC-17.A6.IP.13
Tang, Jingshi	CA	IAC-17.C1.8.11
Tang, Jingshi	CA	IAC-17.C1.8.12
Tang, Jingshi	CA	IAC-17.C1.8.13
Tang, Shuo	CA	IAC-17.E1.3.11
Tang, Shuo	CA	IAC-17.D2.4.7
Tang, Shuo	CA	IAC-17.D2.IP.9
Tang, Wei	CA	IAC-17.A2.2.2
Tang, Yaqiong	A	IAC-17.C2.IP.24
Tang, Yaqiong	CA	IAC-17.C2.IP.38
Tang, Yongkang	CA	IAC-17.A1.IP.30
Tang, ZongSheng	CA	IAC-17.B2.IP.14
Tanhaei, Ghazal	CA	IAC-17.B1.IP.13
Tani, Yasuhiro	CA	IAC-17.C4.2.10
Tani, Yasuhiro	CA	IAC-17.D2.IP.12
Taniguchi, Daisuke	A	IAC-17.E1.2.12
Tank, Jens	CA	IAC-17.A1.2.10
Tank, Jens	CA	IAC-17.A1.2.11
Tanner, Forrest	CA	IAC-17.B4.6B.4
Tanno, Haruhito	CA	IAC-17.C4.2.2
Tantardini, Marco	A	IAC-17.B3.IP.4
Tao, Zhang	CA	IAC-17.A1.IP.1
Tappe, Jonas	CA	IAC-17.E1.3.12
Tardivel, Simon	CA	IAC-17.A3.4B.3
Tariq, Fawad	A	IAC-17.C2.8.3
Tasker, Elizabeth	CA	IAC-17.E1.IP.17
Tata Nardini, Flavia	CA	IAC-17.B6.1.1
Tate-Brown, Judy	CA	IAC-17.B3.3.1
Tatsukawa, Tomoaki	CA	IAC-17.E1.3.10
Tauber, Svantje	CA	IAC-17.A1.8.9
Taverner, Morgan	A	IAC-17.A1.7.9
Tawara, Yuzuru	CA	IAC-17.B4.2.1
Taylor, Ben	A	IAC-17.B4.1.8
Taylor, Ben	CA	IAC-17.B4.6B.3
Taylor, Ben	CA	IAC-17.B6.3.12
Taylor, Gabby	CA	IAC-17.E3.6.6
Taylor, Giorgio	CA	IAC-17.E4.3B.4
Taylor, Ian	CA	IAC-17.C4.9.17
Tchou-Kien, David	CA	IAC-17.C4.1.2
te Hennepe, Frank	CA	IAC-17.A7.2.9
te Hennepe, Frank	A	IAC-17.B1.2.3
Team, QUANTUS	CA	IAC-17.A2.3.2
Tebbe, Matthias	A	IAC-17.B2.4.5
Teil, Thibaud	A	IAC-17.C1.1.2
Teiser, Jens	CA	IAC-17.E1.3.12
Tejumola, Taiwo Raphael	A	IAC-17.B4.1.5
Temidayo Isaiah, Oniosun	A	IAC-17.E1.3.2
Temidayo Isaiah, Oniosun	A	IAC-17.E5.4.2
Temidayo Isaiah, Oniosun	CA	IAC-17.B2.8-GTS.3.8
Teng, Da-Peng	CA	IAC-17.B2.8-GTS.3.3
Teofilatto, Paolo	A	IAC-17.C1.4.6

Tepper, Eytan	A	IAC-17.D4.5.12
Tepper, Eytan	A	IAC-17.E7.5.9
Teriaca, Luca	CA	IAC-17.A7.2.11
Termtanasombat, Nawarat	CA	IAC-17.A3.4A.8
Termtanasombat, Nawarat	CA	IAC-17.A3.4A.9
Terpugov, Viktor	CA	IAC-17.C2.IP.10
Terui, Fuyuto	CA	IAC-17.A3.4A.9
Terzibaschian, Thomas	CA	IAC-17.B4.4.1
Teschl, Franz	CA	IAC-17.B2.3.2
Teselkin, Sergei Fedorovich	CA	IAC-17.A3.1.11
Teselkin, Sergei Fedorovich	CA	IAC-17.E6.IP.3
Tesmer, Volker	CA	IAC-17.A7.2.5
Tesser, Giorgio	CA	IAC-17.C2.IP.39
Teti, Daniele	CA	IAC-17.E1.3.6
Tetlow, Matthew R.	CA	IAC-17.A6.1.4
Tetlow, Matthew R.	CA	IAC-17.B6.1.1
Tetlow, Matthew R.	CA	IAC-17.C1.4.11
Thakurta, Varun	CA	IAC-17.C3.3.9
Thaller, Michelle	CA	IAC-17.E1.IP.36
Thaller, Michelle	CA	IAC-17.E1.1.4
Thangavelautham, Jekanthan	CA	IAC-17.D3.3.2
Thankappan, Medhavy	CA	IAC-17.B1.6.1
Thapa, Jiten	CA	IAC-17.E1.3.6
Theil, Stephan	CA	IAC-17.C1.3.11
Theodorou, Ilias	A	IAC-17.A6.IP.31
Thess, Andre	CA	IAC-17.D3.1.5
Thiel, Cora S.	A	IAC-17.A1.8.9
Thiele, Thomas	CA	IAC-17.D2.6.1
Thiennviboon, Phunsak	A	IAC-17.B2.8-GTS.3.3
Thies, Manuel	CA	IAC-17.A3.5.9
Thirion, Guillaume	CA	IAC-17.A5.2.9
Thirion, Guillaume	CA	IAC-17.B3.IP.12
Thirkettle, Anthony Charles	CA	IAC-17.C2.1.1
Thoemel, Jan	CA	IAC-17.B4.2.5
Thomas, Anna	A	IAC-17.C4.10.7
Thomas, Daniel	A	IAC-17.D6.1.3
Thomas, Hubertus	CA	IAC-17.A2.6.8
Thomas Jayachandran, Aurthur Vimalachandran	A	IAC-17.D4.1.8
Thomas Jayachandran, Aurthur Vimalachandran	CA	IAC-17.A2.4.8
Thomas Jayachandran, Aurthur Vimalachandran	A	IAC-17.B2.IP.8
Thomas Jayachandran, Aurthur Vimalachandran	A	IAC-17.E7.IP.13
Thompson, Robin	CA	IAC-17.B1.IP.13
Thomsen, Felix	CA	IAC-17.E1.IP.28
Thro, Caroline	CA	IAC-17.E1.IP.12
Thro, Caroline	A	IAC-17.E7.7-B3.8.3
Thronson, Harley	CA	IAC-17.E3.1.4
Thumm, Tracy	CA	IAC-17.B3.3.1
Tian, Hui	A	IAC-17.C4.2.11
Tian, Hui	CA	IAC-17.C4.IP.25
Tian, Jia	A	IAC-17.B2.8-GTS.3.5
Tian, Yao	CA	IAC-17.D1.4A.11
Tian, Yu	CA	IAC-17.A1.IP.12
Tian, Zheng	CA	IAC-17.C2.6.3
Tianyang, Yang	A	IAC-17.D2.4.9
Ticker, Ronald	CA	IAC-17.B3.1.7
Tiedemann, Lars	CA	IAC-17.A6.IP.14
Tietgens, Alena	CA	IAC-17.E6.3.1
Tikare, Kiran	CA	IAC-17.A5.2.9
Tikare, Kiran	CA	IAC-17.D4.2.8
Tikare, Kiran	CA	IAC-17.B3.5.2
Tikhomirov, Alexander A.	CA	IAC-17.A1.IP.28
Tikhomirov, Alexander A.	CA	IAC-17.A1.7.3
Tikhomirova, Natalia	CA	IAC-17.A1.IP.28
Timm, Marc	CA	IAC-17.D6.1.3
Timmermans, Remco	A	IAC-17.E1.6.7
Timmermans, Remco	A	IAC-17.E1.7.1
Timoshenko, Valeriy	CA	IAC-17.D1.1.6
Tinetti, Giovanna	CA	IAC-17.A7.2.4
ting SONG, Wen	CA	IAC-17.C1.IP.13
Tinjod, Nathalie	A	IAC-17.E4.1.7
Tiseo, Barbara	CA	IAC-17.C2.9.10
Tisserand, Isabelle	A	IAC-17.E3.6.3

Tiwana, Jenna	CA	IAC-17.D4.2.3
Tkachev, Stepan	CA	IAC-17.C1.2.3
Todd, Jessica	CA	IAC-17.B4.1.6
Tofil, Todd	CA	IAC-17.C4.4.3
Tokarz, Marta	CA	IAC-17.A3.4B.3
Tokudome, Shinichiro	CA	IAC-17.D2.1.6
Tokudome, Shinichiro	CA	IAC-17.C4.2.2
Tokuta, Alade	CA	IAC-17.E1.5.9
Tomasek, Jakub	CA	IAC-17.A3.IP.30
Tomilin, Dmitry	CA	IAC-17.C4.4.5
Tomioka, Kota	A	IAC-17.C2.9.12
Tommasi, Leonardo	CA	IAC-17.A3.5.3
Tommei, Giacomo	CA	IAC-17.A3.5.4
Tomooka, Masashi	CA	IAC-17.D1.2.11
Tonck, Laurence	CA	IAC-17.A7.3.7
Tong, Feizhou	CA	IAC-17.A1.2.12
Tong, Tiefeng	CA	IAC-17.C2.IP.41
Tonicello, Ferdinando	CA	IAC-17.D3.1.7
Tonkin, Richard	CA	IAC-17.E4.3A.4
Tonti, Federica	CA	IAC-17.C4.10.12
Torn, Benjamin	CA	IAC-17.E2.3-GTS.4.5
Torn, Benjamin	CA	IAC-17.A5.2.6
Torn, Benjamin	CA	IAC-17.A5.1.12
Torn, Benjamin	CA	IAC-17.D4.3.11
Torn, Benjamin	CA	IAC-17.A3.2C.11
Tornabene, Livio	CA	IAC-17.B6.3.4
Torres, Armengol	CA	IAC-17.E1.7.5
Torres, Ramon	A	IAC-17.A6.4.5
Torresan, Stefano	CA	IAC-17.E2.3-GTS.4.5
Torresan, Stefano	A	IAC-17.A5.2.6
Torresan, Stefano	CA	IAC-17.A5.1.12
Torresan, Stefano	CA	IAC-17.D4.3.11
Torresan, Stefano	CA	IAC-17.A3.2C.11
Tortora, Jean-Jacques	CA	IAC-17.B2.8-GTS.3.2
Toson, Elena	CA	IAC-17.C4.8-B4.5A.3
Toth, Norbert	CA	IAC-17.A3.4A.8
Toth, Norbert	CA	IAC-17.A3.IP.31
Toth, Norbert	CA	IAC-17.A3.2C.3
Touboul, Pierre	CA	IAC-17.A2.1.7
Tourneur, Cyrille	CA	IAC-17.D1.6.4
Touzard, Jerome	CA	IAC-17.C2.1.1
Townes, Stephen	CA	IAC-17.B2.1.1
Townsend, Lawrence	A	IAC-17.A1.5.13
Toyoda, Kazuhiro	CA	IAC-17.D5.3.2
Toyota, Hiroyuki	CA	IAC-17.A3.4B.7
Traudt, Tobias	A	IAC-17.C4.1.5
Traudt, Tobias	CA	IAC-17.C4.10.12
Treuet, Jean-Charles	CA	IAC-17.A1.6.2
Trevor, Lawrence	CA	IAC-17.B4.1.6
Trezzolani, Fabio	CA	IAC-17.C4.8-B4.5A.3
Trifoni, Eduardo	CA	IAC-17.C2.4.9
Trifonov, Sergey	A	IAC-17.A1.IP.28
Trifonov, Sergey	CA	IAC-17.A1.7.3
Trigo, Isabel	CA	IAC-17.B1.IP.1
Triharjanto, Robertus	A	IAC-17.B4.1.13
Trisolini, Mirko	A	IAC-17.A6.IP.35
Trivailo, Pavel	CA	IAC-17.A3.5.8
Trivailo, Pavel M.	A	IAC-17.E1.7.10
TRIVEDY, SURANJANA	CA	IAC-17.C4.7-C3.5.4
Trofimov, Sergey	CA	IAC-17.C1.7.4
Trois, Alessio	CA	IAC-17.A4.1.8
Tronchetti, Fabio	A	IAC-17.E7.2.2
Tronchetti, Fabio	A	IAC-17.E7.4.5
Trotti, Matteo	CA	IAC-17.A6.10-B4.10.9
Trovatello, Marco	A	IAC-17.E1.9.5
Trucco, Roberto	CA	IAC-17.B3.IP.4
Trudel, Carole-Anne	CA	IAC-17.E2.3-GTS.4.9
Trusculescu, Marius Florin	CA	IAC-17.A3.4B.4
Trusculescu, Marius Florin	CA	IAC-17.B2.7.5
Tsakyridis, Georgios	CA	IAC-17.A3.2C.3
Tsang, Constantine	A	IAC-17.A7.2.8
Tsetserukou, Dzmitry	CA	IAC-17.A3.IP.7
Tsouvaltsidis, Catherine	CA	IAC-17.B1.IP.8
Tsuchida, Akira	CA	IAC-17.D2.5.13
Tsuchiyama, Akira	CA	IAC-17.A6.1.10

Tsuda, Yuichi	CA	IAC-17.A3.4A.7
Tsuda, Yuichi	CA	IAC-17.A3.4A.9
Tsuda, Yuichi	CA	IAC-17.B6.3.1
Tsuda, Yuichi	CA	IAC-17.C1.8.9
Tsujioka, Mitsutoshi	CA	IAC-17.D2.4.6
Tsujioka, Mitsutoshi	A	IAC-17.D2.4.1
Tuambilangana, Christelle	CA	IAC-17.B1.3.7
Tuchin, Andrey	CA	IAC-17.C1.7.7
Tuchin, Denis	CA	IAC-17.C1.7.7
Tucker, Brad	A	IAC-17.A7.3.1
Tugnoli, Matteo	CA	IAC-17.E5.IP.11
Tumino, Giorgio	CA	IAC-17.D2.6.3
Tunku, Tunku Intan Mainura	CA	IAC-17.E3.1.8
Tuozzi, Alberto	CA	IAC-17.E5.IP.13
Turnbull, Oliver	CA	IAC-17.B4.5.6
Turner, John	CA	IAC-17.A2.5.3
Turner, Kevin	CA	IAC-17.B1.2.6
Turrini, Diego	CA	IAC-17.A7.2.4
Turton, James	CA	IAC-17.E2.3-GTS.4.5
Turton, James	CA	IAC-17.A5.2.6
Turton, James	CA	IAC-17.A5.1.12
Turton, James	CA	IAC-17.D4.3.11
Turton, James	CA	IAC-17.A3.2C.11
Turyshv, Slava G.	CA	IAC-17.A7.2.6
Tuttle, Sean	A	IAC-17.B4.6A.10
Tuttle, Sean	CA	IAC-17.B2.IP.14
Tuttle, Sean	CA	IAC-17.D5.3.6
Tuttle, Sean	CA	IAC-17.B4.8.8
Tye, Daniel	CA	IAC-17.A6.6.4
Tyldum, Vidar	CA	IAC-17.B6.1.8
Tyrou, Veronique	A	IAC-17.B6.3.7
Tyurenkova, Veronika	CA	IAC-17.A2.2.3
Tyurenkova, Veronika	CA	IAC-17.A2.2.6
Tyurenkova, Veronika	CA	IAC-17.A2.4.5
Tzevelecos, Wassilis	A	IAC-17.A2.3.8

## U

Name	Role	Paper
Uchitomi, Motoko	CA	IAC-17.E3.1.8
Udnæs, Frank	CA	IAC-17.B2.7.4
Ueda, Satoshi	A	IAC-17.C1.5.6
Ueda, Satoshi	CA	IAC-17.C1.IP.26
Uematsu, Hirohiko	CA	IAC-17.B3.1.3
Uemura, Yoshihiko	CA	IAC-17.A1.3.12
Ueno, Ichiro	CA	IAC-17.E1.3.10
Ueno, Seiya	CA	IAC-17.C1.IP.26
Uesugi, Kuninori	CA	IAC-17.E4.1.3
Ulamec, Stephan	CA	IAC-17.A3.4A.8
Ulamec, Stephan	CA	IAC-17.A3.4A.9
Ulamec, Stephan	A	IAC-17.D1.5.2
Ulamec, Stephan	CA	IAC-17.A3.4B.3
Ulamec, Stephan	CA	IAC-17.A3.4B.5
Ullah, Ismat	A	IAC-17.B2.3.8
Ullrich, Oliver	CA	IAC-17.A1.8.9
Umeda, Keisuke	A	IAC-17.D1.3.6
Umezawa, Kazuo	CA	IAC-17.B3.3.1
Umunna, Reuben Jikeme	CA	IAC-17.E1.7.5
Underwood, Craig	CA	IAC-17.B4.1.8
Underwood, Craig	A	IAC-17.A3.3A.10
Underwood, Craig	A	IAC-17.E7.3.2
Underwood, Craig	A	IAC-17.B4.6B.3
Underwood, Craig	CA	I A C - 1 7 . A 6 . 1 0 - B4.10.11
Unfried, Luciano	A	IAC-17.C2.2.1
Urbaniak, Camilla	A	IAC-17.A1.IP.16
Urbina, Diego	CA	IAC-17.B3.6-A5.3.1
Urbina, Diego	CA	IAC-17.C2.9.13
Urbina, Diego A.	A	IAC-17.A3.2B.10
Urbina, Diego A.	A	IAC-17.B3.5.4
Urbina, Diego A.	A	IAC-17.A3.2C.2
Urdanoz, Miguel	CA	IAC-17.A6.8.6
Ureña Carazo, Juan	CA	IAC-17.A6.7.4
Usenko, V	CA	IAC-17.A1.IP.25



Ushakova, Sofya	CA	IAC-17.A1.7.3
Usovik, Igor	A	IAC-17.A6.4.2
Utama, Satriya	CA	IAC-17.B1.IP.10
Utembe, Steven	CA	IAC-17.B1.2.9
Utzmann, Jens	CA	IAC-17.A6.1.5
Uzhinsky, Ighor	CA	IAC-17.D1.1.5

### V

Name	Role	Paper
V, Eswaran	CA	IAC-17.A3.IP.20
V, Mahesh	CA	IAC-17.A3.IP.20
V S, Arun	CA	IAC-17.C4.5.8
V. Sardeshmukh, Swanand	CA	IAC-17.C4.IP.27
Vacca, Valentina	CA	IAC-17.A4.1.8
Vaghmare, Rajeev	A	IAC-17.C2.6.1
Vahl, Andreas	CA	IAC-17.D1.IP.6
Vaidya, Niramay	CA	IAC-17.B2.6.8
Vaidya, Niramay	CA	IAC-17.B2.6.9
Vaishampayan, Parag	CA	IAC-17.E1.7.8
Vaissiere, Magali	CA	IAC-17.B2.8-GTS.3.2
Valdatta, Marcello	CA	IAC-17.B2.3.3
Valencia Arroyo, Marco	CA	IAC-17.B5.1.4
Valencia Bel, Ferran	CA	IAC-17.C4.3.4
Valencia Bel, Ferran	CA	IAC-17.C4.IP.21
Valente, Giuseppe	CA	IAC-17.A4.1.8
Valente, Giuseppe	CA	IAC-17.B2.8-GTS.3.4
Valentini, Giovanni	CA	IAC-17.B3.3.1
Valentini, Giovanni	CA	IAC-17.B3.9-GTS.2
Vales, Marc	A	IAC-17.E3.6.10
Valle, Max	CA	IAC-17.C2.6.9
Vallini, Lorenzo	CA	IAC-17.A6.IP.42
Valsecchi, Giovanni	CA	IAC-17.A6.2.7
Valsecchi, Giovanni	CA	IAC-17.C1.7.12
Valsecchi, Giovanni	CA	IAC-17.C1.9.2
Valsecchi, Giovanni B.	CA	IAC-17.A6.IP.6
Valverde, Alfredo	CA	IAC-17.B4.1.11
van Burg, Elco	CA	IAC-17.D5.2.6
van Burg, Elco	CA	IAC-17.E6.IP.5
van de Borne, Philippe	CA	IAC-17.A1.2.11
Van de Poel, Mathijs	CA	IAC-17.E2.4.3
van der Linden, Stefan	CA	IAC-17.D2.IP.19
van Dijk, Chris	A	IAC-17.B4.4.8
Van Dyk, Victoria	A	IAC-17.B3.IP.8
Van Eeckhout, Arthur	CA	IAC-17.D4.2.3
van Haver, Sven	CA	IAC-17.B1.5.8
Van Hoof, Denis	CA	IAC-17.B3.3.3
van Kampen, Erik-Jan	CA	IAC-17.C1.2.5
van Kampen, Erik-Jan	CA	IAC-17.C1.4.12
Van Kranendonk, Martin	CA	IAC-17.E1.6.4
Van Kranendonk, Martin	CA	IAC-17.E1.IP.29
Van Lierde, Boris	CA	IAC-17.B3.5.4
van Linden Tol, Aoife	A	IAC-17.E1.9.6
van Oorschot, Joost	CA	IAC-17.D4.2.3
van Oorschot, Joost	CA	IAC-17.A3.IP.32
Van Vaerenbergh, Stefan	CA	IAC-17.A2.3.8
Van Vaerenbergh, Stéfan	CA	IAC-17.A2.4.4
van Wees, Tiemen	CA	IAC-17.D1.4B.9
van Zeijl, Henk	CA	IAC-17.C4.8-B4.5A.4
Van Zyl, Robert	CA	IAC-17.E1.4.11
Van Zyl, Robert	CA	IAC-17.B4.4.11
Vananti, Alessandro	CA	IAC-17.A6.1.5
Vananti, Alessandro	CA	IAC-17.A6.1.9
Vanden Bussche, Simon	A	IAC-17.D3.4.7
Vanden Bussche, Simon	CA	IAC-17.D1.IP.18
Vandenbussche, Bart	CA	IAC-17.A7.2.4
Vane, Gregg	CA	IAC-17.A3.1.7
Vanreusel, Joost	CA	IAC-17.E1.5.3
Vanreusel, Joost	A	IAC-17.E3.4.8
Vargas, André	CA	IAC-17.D3.IP.3
Vargas-Cuentas, Natalia Indira	A	IAC-17.D4.2.5
Vargas-Cuentas, Natalia Indira	A	IAC-17.E5.4.5
Vargas-Cuentas, Natalia Indira	CA	IAC-17.B1.IP.27
Vargas-Cuentas, Natalia Indira	A	IAC-17.B1.5.5
Varinois, Arnaud	A	IAC-17.B1.IP.33
Vasile, Eugeniu	CA	IAC-17.C2.IP.27
Vasile, Massimiliano	CA	IAC-17.D1.4A.9
Vasile, Massimiliano	CA	IAC-17.C1.6.1

Vasile, Massimiliano	CA	IAC-17.A6.IP.31
Vasile, Massimiliano	A	IAC-17.A6.7.1
Vasko, Christopher	A	IAC-17.E6.3.1
Vasko, Christopher	A	IAC-17.D5.2.6
Vasu, Subith	CA	IAC-17.C4.9.3
Vatankhahghadim, Behrad	A	IAC-17.E2.2.6
Vaughan, David	A	IAC-17.C4.3.8
Vaughan, David	CA	IAC-17.A3.3B.8
Vaughan, David	CA	IAC-17.C4.8-B4.5A.8
Vaughn, Israel	CA	IAC-17.B2.IP.14
Vaughn, Mandy	CA	IAC-17.D2.7.1
Vayugundla, Mallikarjuna	CA	IAC-17.A3.IP.31
Vedder, Peter	CA	IAC-17.A5.2.4
Veeraragavan, Ananthanarayanan	CA	IAC-17.C4.9.16
Velho, Rochelle	A	IAC-17.A1.2.14
Vellutini, Elena	A	IAC-17.A6.IP.20
Vellutini, Elena	CA	IAC-17.C1.7.12
Vendittozzi, Cristian	CA	IAC-17.B1.5.7
Venkataraman, Arun Subramanian	CA	IAC-17.A1.3.11
Venkataraman, Arun Subramanian	CA	IAC-17.D1.3.8
Venkataraman, Arun Subramanian	A	IAC-17.B3.6-A5.3.9
Venkataraman, Arun Subramanian	A	IAC-17.B5.1.5
Venkateswara Rao, D.M.K.K	CA	IAC-17.C1.2.7
Venkatweswaran, Kasthuri	CA	IAC-17.A1.IP.7
Venticinque, Guilherme	A	IAC-17.D1.4B.8
VERANT, Jean-Luc	CA	IAC-17.A6.2.10
VERANT, Jean-Luc	CA	IAC-17.D1.4A.6
Vercruyssen, Nathan	CA	IAC-17.B4.4.8
Verdier, Nicolas	CA	IAC-17.A3.3B.3
Vergaaij, Merel	A	IAC-17.C1.6.6
Vergoossen, Tom	A	IAC-17.B4.6B.5
Verkhovsky, Igor	CA	IAC-17.B3.2.2
Vermeulen, Annelie	A	IAC-17.B2.5.7
Vernay, Antoine	CA	IAC-17.E1.1.7
Vernay, Mathilde	CA	IAC-17.E1.1.7
Vernicari, Pietro Maria	CA	IAC-17.A3.2B.13
Vernicari, Pietro Maria	CA	IAC-17.C4.6.7
Vernile, Alessandra	CA	IAC-17.E6.3.9
Vernile, Alessandra	A	IAC-17.E3.IP.5
Vernile, Alessandra	CA	IAC-17.E5.IP.11
Vernillo, Paolo	CA	IAC-17.D2.6.2
Vernon, Steven	CA	IAC-17.D4.4.2
Verrecchia, Angélique	CA	IAC-17.C3.2.7
Verrecchia, Angélique	A	IAC-17.E5.5.2
Verseux, Cyprien	CA	IAC-17.A1.6.6
Verseux, Cyprien	CA	IAC-17.B3.5.6
Verspieren, Quentin	A	IAC-17.E5.4.8
Veruari, Erind	CA	IAC-17.A3.4B.9
Verzola, Ivano	CA	IAC-17.B3.4-B6.5.3
Vespe, Francesco	A	IAC-17.B2.IP.9
Vial, Vanessa	A	IAC-17.C4.4.7
Vicario de Miguel, Gonzalo	CA	IAC-17.B2.5.3
Vicente, Nadjeida	CA	IAC-17.E3.2.3
Vickers, Connor	CA	IAC-17.B4.2.8
Vidmar, Matjaz	A	IAC-17.D3.1.1
Vietze, Marco	A	IAC-17.C2.7.7
Vijayakumar, Ishwarya	CA	IAC-17.A7.IP.7
VILA, Jerome	A	IAC-17.D2.4.2
Vila, Jérôme	CA	IAC-17.D2.8-A5.4.2
Vilhena da Cunha, Francisco	A	IAC-17.B1.IP.1
Villa Rodriguez, Fernando	CA	IAC-17.E4.3B.2
Villain, Rachel	CA	IAC-17.D1.1.2
Villain, Rachel	CA	IAC-17.C4.6.5
Villanueva, Jara Kaye	A	IAC-17.B5.1.7
Viola, Nicole	CA	IAC-17.A3.2B.13
Viola, Nicole	CA	IAC-17.D3.4.1
Viola, Nicole	CA	IAC-17.D3.4.3
Viola, Nicole	CA	IAC-17.D6.3.5
Viola, Nicole	CA	IAC-17.A5.IP.4
Viola, Nicole	CA	IAC-17.D2.IP.6
Viola, Nicole	CA	IAC-17.C4.6.7
Viola, Nicole	CA	IAC-17.A3.2C.10
Virelli, Maria	CA	IAC-17.B1.1.6
Virelli, Maria	CA	IAC-17.B1.IP.17
Visscher, Peter	CA	IAC-17.E1.IP.33
Visser, Ludo	CA	IAC-17.D2.IP.19
VISWANATHAN, RANJITH	A	IAC-17.B2.1.8
VISWANATHAN, RANJITH	CA	IAC-17.D1.1.10
VISWANATHAN, RANJITH	CA	IAC-17.B5.1.5

Viterbo, Pedro	CA	IAC-17.B1.IP.1
Viviani, Antonio	CA	IAC-17.A2.4.5
Viviano, Salvatore	CA	IAC-17.B2.8-GTS.3.4
Vladimirova, Tanya	CA	IAC-17.B1.IP.13
Vlahovic, Branislav	CA	IAC-17.E1.5.9
Vlahovic, Branislav	A	IAC-17.A7.3.9
Vlahovic, Gordana	A	IAC-17.E1.5.9
Vlaskin, Anton	CA	IAC-17.E1.IP.26
Vodermayer, Bernhard	CA	IAC-17.A3.IP.31
Voigt, Philipp	CA	IAC-17.A6.5.10
Voigt, Philipp	CA	IAC-17.A6.5.10
Voli, Khadar	A	IAC-17.C2.IP.34
Volkova, Anastasiia	A	IAC-17.E6.1.12
Volkova, Tatiana	CA	IAC-17.E5.1.4
Volpe, Renato	A	IAC-17.C1.3.5
Volynskaya, Olga	A	IAC-17.E7.7-B3.8.2
von Alberti, Mathias	CA	IAC-17.A6.4.5
von der Dunk, Frans	A	IAC-17.E7.4.2
von Kampen, Peter	CA	IAC-17.A2.5.1
Vongsantivanich, Wasanchai	A	IAC-17.B1.1.10
Vongsantivanich, Wasanchai	A	IAC-17.E5.5.7
Vora, Anup	CA	IAC-17.D1.5.5
Vorob'ev, Yevgeniy	CA	IAC-17.C4.4.14
Vorontsov, Victor	CA	IAC-17.A3.1.11
Vorontsov, Victor Aleksandrovich	CA	IAC-17.E6.IP.3
Voropaev, Viktor	CA	IAC-17.A6.1.3
Vos, Heleen	CA	IAC-17.E1.7.4
Vos, Heleen	CA	IAC-17.A3.IP.5
Vos, Heleen	CA	IAC-17.B3.IP.13
Vos, Heleen	CA	IAC-17.B3.IP.14
Vos, Heleen	CA	IAC-17.A3.2C.7
Vricella, Antonio	CA	IAC-17.C2.6.2
Vricella, Antonio	A	IAC-17.A6.IP.39
Vricella, Antonio	CA	IAC-17.C2.7.6
Vricella, Antonio	CA	IAC-17.C2.8.4
Vu, Bruce	CA	IAC-17.D2.2.2
Vukich, Marco	CA	IAC-17.B3.9-GTS.2
Vázquez, Irene	CA	IAC-17.D1.1.2
Vázquez, Irene	CA	IAC-17.C4.6.5
Vögele, Thomas	CA	IAC-17.B3.5.4
Vögele, Thomas	CA	IAC-17.B3.6-A5.3.1
Völk, Stefan	CA	IAC-17.A3.IP.31
Völk, Stefan	CA	IAC-17.A3.2C.3
Völk, Stefan	A	IAC-17.A3.4B.5

### W

Name	Role	Paper
Waclawicki, Rene	CA	IAC-17.C2.9.13
Wada, Yutaka	CA	IAC-17.C4.8-B4.5A.10
Wagner, Bernd	CA	IAC-17.C4.1.5
Wagner, Erika	CA	IAC-17.E1.IP.14
Wagner, Erika	A	IAC-17.A2.5.7
Wagner, Markus	CA	IAC-17.D1.IP.12
Wagner, Markus	CA	IAC-17.D1.IP.14
Wahyudiono, Agung	CA	IAC-17.B1.IP.10
Wakabayashi, Sachiko	CA	IAC-17.A3.2B.4
Wakabayashi, Shunya	CA	IAC-17.D4.3.3
Wakata, Koichi	CA	IAC-17.B3.1.3
Walbert, Kris	CA	IAC-17.A6.2.1
Wali, Mohammad	CA	IAC-17.A3.IP.39
Wali, Mohammad Abdularahim Mtaher Mohd	CA	IAC-17.A3.3A.2
Walker, John	A	IAC-17.A3.2A.6
Walker, Roger	CA	IAC-17.B4.3.14
Wallis, Scott	CA	IAC-17.D2.9-D6.2.5
Walsh, Justin	CA	IAC-17.A1.IP.13
Waltemathe, Michael	CA	IAC-17.A1.6.1
Walter, Helen	CA	IAC-17.A1.7.2
Walter, Ingo	CA	IAC-17.B1.1.3
Walter, Nicolas	CA	IAC-17.A1.6.2
Walter, Ulrich	CA	IAC-17.A3.2B.9
Walter, Ulrich	CA	IAC-17.B2.4.5
Walter, Ulrich	CA	IAC-17.C1.IP.16
Walts, Alexander	A	IAC-17.C3.2.1
Walts, Alexander	CA	IAC-17.C3.IP.1

Walts, Alexander	CA	IAC-17.C3.IP.2
Walz, Carl	CA	IAC-17.B3.4-B6.5.6
Wan, Stephanie	A	IAC-17.E1.5.14
Wan, Stephanie	A	IAC-17.E6.3.7
Wan, Stephanie	CA	IAC-17.B2.8-GTS.3.8
Wander, Alexandra	CA	IAC-17.A6.IP.45
Wander, Alexandra	A	IAC-17.B6.2.11
Wander, Alexandra	A	IAC-17.A6.10.12
Wang, Changqing	A	IAC-17.D2.IP.2
Wang, Chuanzeng	CA	IAC-17.A1.7.5
Wang, Chunhui	A	IAC-17.A1.IP.12
Wang, Clay	CA	IAC-17.A1.IP.7
Wang, Daqing	CA	IAC-17.B2.8-GTS.3.5
Wang, Dongxia	A	IAC-17.B2.IP.12
Wang, Dongxia	CA	IAC-17.B2.IP.22
Wang, Dongxia	CA	IAC-17.B2.IP.23
Wang, Fei	CA	IAC-17.A2.7.4
Wang, Feng	CA	IAC-17.C1.IP.14
Wang, Gang	CA	IAC-17.A2.1.4
Wang, Geng	CA	IAC-17.C1.1.12
Wang, Guangyu	CA	IAC-17.C4.9.7
WANG, Guo-hui	CA	IAC-17.D2.IP.7
WANG, Guo-hui	CA	IAC-17.D2.IP.8
WANG, Guo-hui	CA	IAC-17.E3.IP.16
Wang, Guoyu	A	IAC-17.E7.6-E3.5.4
Wang, Hao	A	IAC-17.A1.5.8
Wang, Hao	CA	IAC-17.C2.6.3
Wang, Hao	A	IAC-17.B1.IP.30
Wang, Hongfei	CA	IAC-17.E6.1.1
Wang, Hongfei	CA	IAC-17.B3.3.5
Wang, Hui	A	IAC-17.C2.2.9
Wang, Hui	CA	IAC-17.B4.3.10
Wang, Hui	A	IAC-17.C1.IP.12
Wang, Hui	CA	IAC-17.B2.8-GTS.3.5
Wang, Ji	A	IAC-17.B2.3.9
WANG, Jia	CA	IAC-17.A2.3.12
Wang, Jian-ru	A	IAC-17.C4.IP.18
Wang, Jianfeng	CA	IAC-17.D1.IP.7
Wang, Jilian	A	IAC-17.E7.4.3
Wang, Jingyu	CA	IAC-17.A1.2.12
Wang, Jue	CA	IAC-17.C4.IP.33
Wang, Jufang	CA	IAC-17.A1.5.9
Wang, Jufang	CA	IAC-17.A2.7.3
Wang, Jun	CA	IAC-17.A1.1.4
Wang, Jun	CA	IAC-17.C2.IP.25
Wang, Ke	CA	IAC-17.C2.8.1
WANG, LEI	CA	IAC-17.D1.IP.11
Wang, Lei	CA	IAC-17.A7.3.12
Wang, Lin-Jie	A	IAC-17.A1.2.4
WANG, LIWEI	A	IAC-17.D5.1.4
Wang, Lyu	CA	IAC-17.D1.4A.11
Wang, Meng	CA	IAC-17.C4.4.2
Wang, Mingming	CA	IAC-17.B6.IP.11
Wang, Mingming	A	IAC-17.C1.IP.16
Wang, Ruihao	CA	IAC-17.A1.IP.24
Wang, Ruihao	CA	IAC-17.A1.IP.27
WANG, Shu	CA	IAC-17.E3.IP.6
Wang, Shuang-Feng	A	IAC-17.A2.3.11
Wang, Tingmei	CA	IAC-17.A1.2.3
Wang, Wan bin	CA	IAC-17.B2.1.11
Wang, Wei	A	IAC-17.C4.9.10
Wang, Wei	CA	IAC-17.A1.5.1
Wang, Wei	CA	IAC-17.C2.5.2
Wang, Wei	CA	IAC-17.B2.8-GTS.3.5
Wang, Weigang	CA	IAC-17.B1.3
Wang, Wenbin	A	IAC-17.B2.5.4
Wang, Xiaoding	CA	IAC-17.D2.IP.23
Wang, Xiaohui	A	IAC-17.D2.3.11
Wang, Xiaohui	A	IAC-17.D1.IP.24
Wang, Xiaohui	A	IAC-17.D2.IP.11
Wang, Xiaohui	A	IAC-17.D4.3.13
Wang, Xiaohui	A	IAC-17.D2.8-A5.4.8
Wang, Xiaole	CA	IAC-17.E6.1.1
Wang, Xiaoye	A	IAC-17.C4.6.2
Wang, Xin	CA	IAC-17.C2.7.13



Wang, Xingdan	CA	IAC-17.B3.7.7
Wang, Xinglong	A	IAC-17.B6.IP.8
Wang, Xuodong	CA	IAC-17.E4.3B.4
Wang, Yan	A	IAC-17.B2.IP.16
Wang, Ying	CA	IAC-17.C3.2.4
Wang, Yong	CA	IAC-17.A7.3.12
Wang, Yongsheng	CA	IAC-17.D2.IP.14
Wang, Youliang	CA	IAC-17.C1.IP.21
Wang, Youliang	A	IAC-17.D1.6.1
Wang, Yuan	CA	IAC-17.A1.7.5
Wang, Yue	CA	IAC-17.A1.1.4
Wang, Yue	A	IAC-17.A6.9.3
Wang, Zhaokui	CA	IAC-17.D2.8-A5.4.3
Wang, Zhifu	CA	IAC-17.D1.IP.3
Wang, Zhong	CA	IAC-17.C4.4.2
Wanjara, Priti	CA	IAC-17.D4.5.4
Ward, Peter	CA	IAC-17.A1.2.14
Washabaugh, Peter	CA	IAC-17.A6.9.5
Washabaugh, Peter	CA	IAC-17.A6.10-B4.10.8
Wasik, Bartosz	CA	IAC-17.B3.9-GTS.2.9
Watanabe, Daiki	CA	IAC-17.C4.3.10
Watanabe, Sei-ichiro	CA	IAC-17.A3.4A.9
Watanabe, Takeo	CA	IAC-17.E6.IP.1
Waterman, Gideon	CA	IAC-17.A1.5.7
Watson, Er kai	A	IAC-17.A6.3.7
Watson, Er kai	CA	IAC-17.A3.4B.6
Watts, Trevor	CA	IAC-17.D2.IP.19
Waxenegger-Wilfing, Günther	CA	IAC-17.C4.1.5
Weaver, Harold A.	CA	IAC-17.A3.4B.5
Webb, Alan	A	IAC-17.D2.2.9
Webb, Alan	A	IAC-17.E3.3.7
Webb, Alan	CA	IAC-17.B4.5.5
Webber, Derek	CA	IAC-17.D3.1.1
Wedler, Armin	A	IAC-17.A3.IP.31
Wedler, Armin	CA	IAC-17.A3.2C.3
Weeden, Brian	CA	IAC-17.E3.4.11
Weeden, Brian	A	IAC-17.A6.10-B4.10.1
Weeden, Charity	CA	IAC-17.E3.3.1
Wegel, Donald	CA	IAC-17.A3.4B.5
Wei, Chuanfeng	A	IAC-17.B3.1.2
Wei, Chuanfeng	CA	IAC-17.B3.3.7
Wei, Chuanfeng	CA	IAC-17.C2.6.3
Wei, Dong	CA	IAC-17.A2.2.2
Wei, Haiping	CA	IAC-17.B1.4.2
Wei, Mingchuan	CA	IAC-17.E2.4.5
Wei, Shaojuan	A	IAC-17.C4.IP.35
Wei, Wei	A	IAC-17.B5.1.12
Wei, Wenjun	A	IAC-17.A1.5.9
Wei, Wenjun	CA	IAC-17.A2.7.3
WEI, Xin rong	A	IAC-17.B2.1.11
WEI, XUEZHONG	CA	IAC-17.D5.1.4
Weibo, Zheng	CA	IAC-17.A1.IP.1
Weidang, Ai	CA	IAC-17.A1.IP.24
Weightman, Joel	A	IAC-17.C4.1.13
Weightman, Joel	CA	IAC-17.E1.4.7
Weightman, Joel	CA	IAC-17.C4.IP.19
Weikert, Marcel	CA	IAC-17.C4.7-C3.5.10
Weikert, Sven	CA	IAC-17.A6.IP.14
Weiland, Stefan	A	IAC-17.C2.1.13
Weiland, Stefan	CA	IAC-17.C2.7.7
Weinstein-Weiss, Stacy	CA	IAC-17.A7.2.6
Weinstein-Weiss, Stacy	CA	IAC-17.D4.4.1
Weis, Stefan	CA	IAC-17.C4.4.8
Weise, Jana	CA	IAC-17.D1.2.3
Weise, Jana	CA	IAC-17.C3.3.8
Weise, Jana	CA	IAC-17.C2.8.9
Weiss, Peter	CA	IAC-17.B3.5.4
Weiss, Peter	CA	IAC-17.B3.6-A5.3.1
Weiss, Peter	CA	IAC-17.A3.2C.2
Weiss, Peter	CA	IAC-17.C2.9.13
Weiss, Sascha	A	IAC-17.B4.4.2
Welch, Chris	CA	IAC-17.D1.2.5
Welch, Chris	CA	IAC-17.E3.2.1
Welch, Chris	CA	IAC-17.E6.2.5
Welch, Chris	CA	IAC-17.B4.8.7
Wen, Hao	CA	IAC-17.D2.IP.23

Wen, Xuezhong	CA	IAC-17.A6.3.4
Wen, Xuezhong	A	IAC-17.A6.IP.40
Wendrich, Thijs	CA	IAC-17.A2.1.2
Wendrich, Thijs	CA	IAC-17.A2.3.2
Weng, HuiYan	CA	IAC-17.C4.5.11
Weng, Jingnong	CA	IAC-17.E1.IP.3
Weng, Jingnong	A	IAC-17.E1.IP.34
Wenxiong, Xi	CA	IAC-17.C4.IP.16
Wenzel, Wiebke	CA	IAC-17.C2.2.7
Wenzlowski, André	CA	IAC-17.D2.3.2
Weppeler, Johannes	A	IAC-17.E1.3.12
Weppeler, Johannes	A	IAC-17.B3.3.4
Weppeler, Johannes	CA	IAC-17.E1.2.11
Weps, Benjamin	CA	IAC-17.A2.3.2
Werner, Philipp	CA	IAC-17.B4.2.9
Werthimer, Dan	CA	IAC-17.A4.1.3
Wessen, Randii	CA	IAC-17.D1.4B.5
West, Michael	CA	IAC-17.D2.7.12
Westerberg, Lars-Göran	CA	IAC-17.E1.4.3
Westerman, Solomon	CA	IAC-17.A7.2.2
Wexler, Helen	CA	IAC-17.E6.1.1
Wheatley, Vincent	CA	IAC-17.C4.9.16
Wheeler, Raymond	CA	IAC-17.A1.IP.4
Wheless, Jonathan	CA	IAC-17.B4.6B.4
Whitchurch, Ian	CA	IAC-17.B4.5.1
Whitchurch, Ian	CA	IAC-17.D2.5.2
White, Keith	CA	IAC-17.B4.2.1
Whitehead, Christopher	CA	IAC-17.D4.5.12
Whitesides, Loretta	CA	IAC-17.E1.IP.7
Whitlow, Jonathan	CA	IAC-17.A3.IP.6
Whittle, Richard S.	CA	IAC-17.B5.1.4
Wickert, Matthias	CA	IAC-17.C2.1.10
Wickler, Martin	CA	IAC-17.B4.3.9
Wicks, Robert	CA	IAC-17.B4.2.5
Widoutomo, Ario Birmiawan	A	IAC-17.C1.4.4
Wiedemann, Carsten	A	IAC-17.A6.4.10
Wiedemann, Josef	A	IAC-17.E6.2.11
Wiedemann, Josef	CA	IAC-17.D2.IP.3
Wiegand, Andreas	CA	IAC-17.A6.IP.14
Wigbels, Lyn	CA	IAC-17.E1.8.4
Wijesekera, Jude	A	IAC-17.C2.IP.3
Wikelski, Martin	CA	IAC-17.B3.3.4
Wiktowy, Michael	CA	IAC-17.D6.1.4
Wilde, Martina	CA	IAC-17.A3.IP.31
Wilde, Martina	CA	IAC-17.A3.2C.3
Wiley, Jaclyn	A	IAC-17.E2.3-GTS.4.8
Wilhelm, Marius	CA	IAC-17.C4.1.8
Wilken, Jascha	CA	IAC-17.D2.4.3
Wilkins, Matthew	CA	IAC-17.A6.9.10
Willberg, Bertram	CA	IAC-17.A3.IP.31
Wille, Eric	A	IAC-17.A7.1.4
Wille, Eric	CA	IAC-17.A7.IP.3
Willems, Sebastian	CA	IAC-17.C2.IP.28
Williams, Bobby	CA	IAC-17.E4.1.3
Williams, Langston	A	IAC-17.E2.2.12
Williams, Nehemiah	CA	IAC-17.A5.2.1
Willshire, Chris	CA	IAC-17.B6.1.1
Wilson, Andrew	A	IAC-17.D1.4A.9
Wilson, Colin	CA	IAC-17.A3.5.5
Wilson, Krystal	CA	IAC-17.E6.2.1
Wilson, Mark	CA	IAC-17.A1.6.10
Wimmer-Schweingruber, Robert	CA	IAC-17.D4.4.2
Windelberg, Jens	CA	IAC-17.D2.6.1
Wing, Michael	CA	IAC-17.E1.7.8
Wingborg, Niklas	CA	IAC-17.C4.1.8
Wingender, Jost	CA	IAC-17.A1.6.5

Winglee, Robert	CA	IAC-17.E1.IP.36
Winglee, Robert	CA	IAC-17.E1.1.4
Winkler, Björn	CA	IAC-17.E1.3.12
Winnard, Andrew	CA	IAC-17.A1.2.14
Winter, Frank H.	A	IAC-17.E4.2.6
Winter, Othon	A	IAC-17.C1.8.3
Wisniewska, Kasia	CA	IAC-17.B4.1.4
Withnell, Pete	CA	IAC-17.A3.3A.2
Withnell, Pete	CA	IAC-17.A3.IP.11
Witt, Johannes	CA	IAC-17.B3.7.2
Witte, Lars	CA	IAC-17.D3.2.7
Witte, Lars	CA	IAC-17.A3.IP.31
Witte, Lars	CA	IAC-17.A3.2C.3
Wittig, Manfred	A	IAC-17.B2.6.11
Wittig, Sarah	A	IAC-17.B2.7.1
Wittkamp, Markus	CA	IAC-17.A2.5.3
Witzmann, Marco	CA	IAC-17.D3.4.7
Witzmann, Marco	CA	IAC-17.D1.IP.18
Woerner, David	A	IAC-17.A7.1.7
Woerner, David	A	IAC-17.A7.IP.8
Wojdecka, Anna	CA	IAC-17.D1.1.3
Wojdecka, Anna	CA	IAC-17.B3.IP.3
Wojtkowiak, Harald	CA	IAC-17.B4.3.13
Wojtkowiak, Harald	CA	IAC-17.B6.IP.5
Wojtkowiak, Harald	A	IAC-17.B6.2.2
Wojtsekhowski, Bogdan	CA	IAC-17.A7.3.9
Wolahan, Andrew	A	IAC-17.A6.4.9
Wolahan, Andrew	A	IAC-17.D4.2.9
Wolahan, Andrew	A	IAC-17.D1.4B.11
Wolahan, Andrew	CA	IAC-17.A6.6.8
Wolanski, Piotr	CA	IAC-17.C4.3.4
Wolanski, Piotr	CA	IAC-17.A6.5.4
Wolanski, Piotr	CA	IAC-17.C4.IP.21
Wolanski, Piotr	CA	IAC-17.A2.5.2
Wolanski, Piotr	CA	IAC-17.C4.10.9
Wolf, Nadja	A	IAC-17.D3.4.4
Wolf, Ronny	CA	IAC-17.B4.6B.7
Wolff, Friederike	CA	IAC-17.A3.4A.8
Wolff, Michael	CA	IAC-17.A3.3B.4
Wolff, Michael	CA	IAC-17.A3.IP.11
Wolff, Mikael	A	IAC-17.A5.1.7
Wolfson, Nancy C.	A	IAC-17.E5.2.6
Wolkenberg, Paulina	CA	IAC-17.A7.2.4
Woltran, Markus	CA	IAC-17.D4.2.1
Wong, Marcus	CA	IAC-17.C4.1.13
Wong, Marcus	CA	IAC-17.E1.4.7
Wong, Marcus	CA	IAC-17.C4.IP.19
Wong, Nathan	A	IAC-17.A3.2A.5
Woo, Jongmyung	CA	IAC-17.B2.IP.1
Woo, Pamela	CA	IAC-17.B1.IP.7
Wood, Danielle	A	IAC-17.B1.5.1
Wood, Lincoln	CA	IAC-17.B4.3.12
Woodgate, Peter	A	IAC-17.E3.6.7
Woojoo, Choi	CA	IAC-17.C4.IP.20
Woolley, Ryan	A	IAC-17.A5.2.3
Wormnes, Kjetil	CA	IAC-17.D3.4.3
Worms, Jean-Claude	CA	IAC-17.A3.1.1
Wszolek, Bogdan	CA	IAC-17.A3.2C.7
Wu, An-Ming	A	IAC-17.A2.1.4
Wu, Changqing	CA	IAC-17.C1.IP.12
WU, Di	CA	IAC-17.A2.3.12
Wu, Fan	A	IAC-17.C1.IP.14
Wu, Jie	CA	IAC-17.B4.5.12
Wu, Jong-Shinn	CA	IAC-17.E5.IP.15
Wu, Liyin	A	IAC-17.C4.IP.28

Wu, Marvin	CA	IAC-17.E1.5.9
Wu, Meng	CA	IAC-17.C4.9.1
Wu, Qiang	CA	IAC-17.A6.3.8
Wu, Ruilin	CA	IAC-17.A1.1.5
Wu, Shengbao	A	IAC-17.D2.5.8
Wu, Shiyun	CA	IAC-17.A1.IP.24
Wu, Shiyun	CA	IAC-17.A1.IP.27
Wu, Shuai	CA	IAC-17.B4.7.3
Wu, Shunan	A	IAC-17.C1.2.12
Wu, Suqin	CA	IAC-17.E2.1.7
Wu, Xiangyu	CA	IAC-17.B2.IP.15
Wu, Xiaodan	A	IAC-17.E7.4.11
Wu, Xiaofeng	CA	IAC-17.C1.1.8
Wu, Xiaofeng	CA	IAC-17.B1.2.8
Wu, Xiaofeng	CA	IAC-17.A1.5.4
Wu, Xiaofeng	A	IAC-17.C2.5.7
Wu, Xiaofeng	CA	IAC-17.E1.IP.28
Wu, Xiaofeng	CA	IAC-17.B4.6B.8
Wu, Xiaofeng	CA	IAC-17.C3.4.3
Wu, Xiaofeng	CA	IAC-17.B6.3.3
Wu, Xiaomeng	CA	IAC-17.B4.6B.12
Wu, Yunhua	A	IAC-17.C1.IP.3
Wu, Zhigang	CA	IAC-17.C1.2.12
Wuerl, Melissa	CA	IAC-17.D2.2.11
Wurm, Gerhard	CA	IAC-17.E1.3.12
Wuxiong, Cao	A	IAC-17.A6.3.3
Wörner, Lisa	A	IAC-17.A2.1.2
Wöske, Florian	CA	IAC-17.B1.IP.21
Wöske, Florian	CA	IAC-17.C4.IP.31
Wüstenberg, Philipp	CA	IAC-17.D1.3.11
Wüstenberg, Philipp	CA	IAC-17.C2.8.9

## X

Name	Role	Paper
Xavier, Tang Zhongkan	CA	IAC-17.D5.4.4
Xavier, Tang Zhongkan	CA	IAC-17.B2.7.2
Xia, Weiqiang	CA	IAC-17.B2.IP.18
Xiang, Zhang	CA	IAC-17.E2.4.5
Xiao, HOU	CA	IAC-17.C4.IP.23
Xiao, Weichen	A	IAC-17.C1.6.5
Xiao Su, Yi	A	IAC-17.E1.IP.3
Xiaoli, Chen	A	IAC-17.B1.3.5
Xiaosha, Zhang	CA	IAC-17.D2.5.10
Xiaowei, Wang	CA	IAC-17.D2.IP.23
Xiaowei, Wang	A	IAC-17.D2.8-A5.4.4
Xiaozhou, Yu	CA	IAC-17.B4.6A.4
Xiaozhou, Yu	CA	IAC-17.E2.4.5
Xie, Jinshi	CA	IAC-17.B2.IP.23
Xie, Teng	A	IAC-17.A2.6.5
Xie, Yong	CA	IAC-17.B2.3.7
Xie, Yong Chun	A	IAC-17.C1.IP.5
Xie, Zongqi	CA	IAC-17.C3.3.2
Ximenes, Samuel	A	IAC-17.E1.5.5
Xin, Jie	CA	IAC-17.B2.IP.12
Xin, Jie	A	IAC-17.B2.IP.22
Xin, Jie	A	IAC-17.B2.IP.23
Xin, Mingyuan	CA	IAC-17.C4.9.7
Xin, Song	CA	IAC-17.E2.4.5
Xin, Xiaosheng	CA	IAC-17.C1.8.11
Xin, Xiaosheng	A	IAC-17.C1.8.13
Xing, Fei	CA	IAC-17.C1.1.12
XING, Fei	A	IAC-17.C4.9.13
Xing, Lei	CA	IAC-17.B2.IP.11
Xiong, Jianghui	CA	IAC-17.A1.1.5
Xiong, Kai	CA	IAC-17.A7.3.12
Xiong, Qiang	A	IAC-17.C2.IP.16
Xiong, Rui	A	IAC-17.B2.1.12
Xiong, Weiming	CA	IAC-17.B2.6.10



Xiyun, Hou	CA	IAC-17.A6.IP.13
Xiyun, Hou	A	IAC-17.C1.8.11
Xiyun, Hou	CA	IAC-17.C1.8.12
Xiyun, Hou	CA	IAC-17.C1.8.13
Xu, Boru	CA	IAC-17.C4.9.7
Xu, Chao	A	IAC-17.C2.2.12
Xu, Chao	CA	IAC-17.A7.3.12
Xu, Fanjiang	CA	IAC-17.B2.IP.19
Xu, Guangde	A	IAC-17.C1.IP.8
Xu, Haohai	A	IAC-17.C4.5.13
XU, Hongping	CA	IAC-17.B2.IP.18
Xu, Jiabao	CA	IAC-17.C4.IP.33
Xu, Jian	A	IAC-17.B5.1.10
Xu, Jianzhong	CA	IAC-17.C4.9.4
Xu, Jing	CA	IAC-17.C1.5.9
Xu, Kan	CA	IAC-17.C2.7.11
Xu, Kunbo	CA	IAC-17.A6.3.8
Xu, Ming	CA	IAC-17.C1.8.10
Xu, Qian	A	IAC-17.B4.5.12
Xu, Rui	A	IAC-17.B4.3.10
Xu, Rui	CA	IAC-17.A3.3B.11
Xu, Rui	CA	IAC-17.C1.IP.12
Xu, Shijie	CA	IAC-17.A6.9.3
XU, WEI	A	IAC-17.D1.IP.11
Xu, Wenming	CA	IAC-17.B4.3.10
Xu, Wenming	CA	IAC-17.A3.3B.11
Xu, Yingshan	CA	IAC-17.D2.IP.14
Xu, Zhi	CA	IAC-17.D2.IP.9
Xue, Huifeng	CA	IAC-17.E6.3.2
Xue, Xiaoxiao	CA	IAC-17.B2.7.9

Yang, Chao	CA	IAC-17.E1.IP.3
Yang, Huxiao	A	IAC-17.E7.1.10
Yang, Juntai	A	IAC-17.C4.4.2
Yang, Juntang	CA	IAC-17.A6.4.10
Yang, Kuan	A	IAC-17.E7.4.6
Yang, Lei	A	IAC-17.B4.7.3
Yang, Leping	CA	IAC-17.A6.IP.43
Yang, Liang	CA	IAC-17.D1.3.9
Yang, Liang	CA	IAC-17.C2.IP.26
Yang, Liang	CA	IAC-17.D5.3.7
Yang, Mengfei	CA	IAC-17.D1.IP.3
Yang, Mingqi	CA	IAC-17.B2.8-GTS.3.6
YANG, Mu	A	IAC-17.D4.2.13
Yang, Nanlan	CA	IAC-17.E1.2.8
Yang, Shangfeng	CA	IAC-17.B2.IP.22
Yang, Shangfeng	CA	IAC-17.B2.IP.23
YANG, Shangrong	CA	IAC-17.C4.9.2
YANG, Shangrong	CA	IAC-17.C4.9.5
YANG, Shangrong	CA	IAC-17.C4.5.13
YANG, Shangrong	CA	IAC-17.C4.IP.15
YANG, Shangrong	CA	IAC-17.C4.IP.15
Yang, Sheng	CA	IAC-17.B3.3.7
Yang, Tong	A	IAC-17.B2.IP.20
Yang, Wenjing	CA	IAC-17.C4.IP.35
Yang, Xiaofeng	A	IAC-17.A2.2.2
Yang, Xu	CA	IAC-17.A6.IP.22
Yang, Yang	CA	IAC-17.E2.1.7
Yang, Yang	A	IAC-17.A6.9.9
Yang, yong bin	CA	IAC-17.C2.6.3
Yang, Yulei	CA	IAC-17.E1.3.11
Yang, Zhen	CA	IAC-17.A3.2A.11
Yang, Zhen	CA	IAC-17.A7.IP.5
Yang, Zhichun	CA	IAC-17.C2.5.2
Yano, Hajime	CA	IAC-17.A6.1.10
Yanova, Olga	CA	IAC-17.C4.IP.51
Yao, Na	A	IAC-17.C2.IP.7
Yao, Tianliang	CA	IAC-17.C4.IP.26
Yasaka, Tetsuo	CA	IAC-17.D3.4.8
Yau, Sean	CA	IAC-17.D5.4.4
Yau, Sean	CA	IAC-17.B2.7.2
Yazdani, Shabnam	CA	IAC-17.A2.2.11
Yazdani, Shabnam	A	IAC-17.B2.7.8
Ye, Zhuang	CA	IAC-17.C2.7.3
Yee, Nicholas	CA	IAC-17.D4.2.3
Yeo, Inseok	CA	IAC-17.D6.1.8
Yi, Hang	CA	IAC-17.B2.IP.18
Yi, Xiaosu	CA	IAC-17.B2.1.12
Yim, Hong-Suh	CA	IAC-17.A6.IP.16
Yin, Chuanwei	CA	IAC-17.D2.5.10
Yin, Yuefan	CA	IAC-17.C4.IP.3
Yin, Zhao	CA	IAC-17.C2.6.3
Yiwei, Liu	A	IAC-17.B4.6A.2
Yiyong, Huang	CA	IAC-17.B4.6A.7
Yoder, Christopher	A	IAC-17.A3.5.2
Yoder, Christopher	CA	IAC-17.C4.6.12
Yoder, Christopher	CA	IAC-17.C4.7-C3.5.11
Yokota, Kazuki	A	IAC-17.C1.IP.25
Yokota, Shun	A	IAC-17.D4.3.14
Yoneyama, Misato	CA	IAC-17.C3.2.2
Yong, Jin	CA	IAC-17.B3.3.7
Yoo, Youngjoon	CA	IAC-17.C4.IP.20
Yoon, Youngbin	CA	IAC-17.E5.IP.15
Yoshida, Kazuya	CA	IAC-17.B4.6A.11
Yoshihara, Yuri	A	IAC-17.E6.1.9
Yoshikawa, Kento	CA	IAC-17.A3.3A.5
Yoshimitsu, Tetsuo	CA	IAC-17.A3.4A.9
Yoshimitsu, Tetsuo	A	IAC-17.E8.1.1
Yoshimura, Yasuhiro	A	IAC-17.C1.1.6
Yoshitomi, Susumu	A	IAC-17.E3.4.9
Yoshizawa, Ryoshuke	CA	IAC-17.E1.IP.31
You, Yancheng	CA	IAC-17.C4.9.1
Young, Jason	CA	IAC-17.A3.IP.39
Young, John	CA	IAC-17.D5.3.6
Young, Matthew	CA	IAC-17.B4.2.6
Yousaf, Ali	CA	IAC-17.B5.1.6

## Y

Name	Role	Paper
Yakovlev, Mikhail	CA	IAC-17.A6.4.2
Yam, Chit Hong	CA	IAC-17.C1.6.5
Yam, Chit Hong	CA	IAC-17.C1.IP.32
Yam, Chit Hong	CA	IAC-17.C1.IP.33
Yam, Chit Hong	A	IAC-17.D2.8-A5.4.9
Yamada, Kazuhiko	CA	IAC-17.A3.3A.5
Yamada, Satoshi	A	IAC-17.C2.5.4
Yamada, Tetsuya	CA	IAC-17.A3.2A.10
Yamagami, Tatsuya	CA	IAC-17.A6.3.9
Yamagishi, Akihiko	CA	IAC-17.A6.1.10
Yamagiwa, Yoshiki	A	IAC-17.D2.5.13
Yamagiwa, Yoshiki	CA	IAC-17.D3.IP.4
Yamagiwa, Yoshiki	A	IAC-17.D4.3.4
Yamagiwa, Yoshiki	CA	IAC-17.D4.3.6
Yamagiwa, Yoshiki	CA	IAC-17.D4.3.9
Yamagiwa, Yoshiki	CA	IAC-17.D4.3.14
Yamaguchi, Nobuki	A	IAC-17.C1.8.6
Yamaguchi, Tomohiro	A	IAC-17.A3.4A.7
Yamaguchi, Tomohiro	CA	IAC-17.A3.4A.9
Yamaguchi, Tomohiro	CA	IAC-17.B6.3.1
Yamakawa, Hiroshi	CA	IAC-17.A6.IP.1
Yamakawa, Hiroshi	CA	IAC-17.A6.IP.8
Yamamoto, Makoto	CA	IAC-17.E1.3.10
Yamamoto, Takayuki	A	IAC-17.D2.7.6
Yamane, Motoki	A	IAC-17.C1.5.4
Yamasaki, Tomohiro	CA	IAC-17.C4.2.10
Yamashiro, Ryoma	A	IAC-17.D2.1.6
Yamashita, Masato	CA	IAC-17.C4.2.10
Yamin, Mohd. Izmir	CA	IAC-17.E2.2.5
Yan, Jun	A	IAC-17.A6.3.1
Yan, Shen	CA	IAC-17.B4.6A.2
YAN, Xiaotao	CA	IAC-17.B2.IP.18
Yan, Xiu-Tian	CA	IAC-17.C2.2.7
Yan, Xiu-Tian	CA	IAC-17.C2.IP.40
Yan, Xiu-Tian	CA	IAC-17.C2.9.5
YAN, YONGLIANG	A	IAC-17.E3.IP.9
Yan, Yushen	CA	IAC-17.C1.IP.36
Yanao, Tomohiro	CA	IAC-17.C1.8.8
Yang, Anlong	CA	IAC-17.C4.IP.5
Yang, Anlong	CA	IAC-17.C4.IP.15

Yousefpour, Ali	CA	IAC-17.C2.8.12
Ytterskog, Anne	A	IAC-17.D2.2.10
Yu, Chunxu	CA	IAC-17.C2.7.3
Yu, Fei	CA	IAC-17.C2.IP.26
Yu, Fei	CA	IAC-17.D5.3.7
Yu, Hongqiang	A	IAC-17.A1.2.2
Yu, Jenny	CA	IAC-17.C3.4.2
Yu, Peng	CA	IAC-17.C3.3.2
Yu, Qidong	CA	IAC-17.D3.3.6
Yu, Qingni	CA	IAC-17.A1.IP.24
Yu, Qingni	CA	IAC-17.A1.IP.27
Yu, Qingni	CA	IAC-17.A1.IP.30
Yu, Qingni	CA	IAC-17.A1.7.5
Yu, Ruipeng	CA	IAC-17.C4.2.11
Yu, Xia	A	IAC-17.E3.IP.11
Yu, Xiaoyan	A	IAC-17.C2.5.5
Yu, Xingang	A	IAC-17.C2.7.11
Yu, Xiqiao	A	IAC-17.C4.IP.26
Yu, Yang	CA	IAC-17.B4.7.4
Yu, Zhengshi	A	IAC-17.C1.3.8
Yu, Zhengshi	CA	IAC-17.A3.IP.48
Yuan, Bin	CA	IAC-17.A1.5.1
Yuan, Jianping	CA	IAC-17.C1.6.11
Yuan, Jianping	CA	IAC-17.A6.7.7
Yuan, Jianping	CA	IAC-17.D1.6.11
YUAN, JIE	CA	IAC-17.E7.6-E3.5.4
Yuan, Jing	A	IAC-17.B6.IP.11
Yuan, Junya	A	IAC-17.C4.5.11
Yuan, Ming	A	IAC-17.A1.2.12
Yudintsev, Vadim	CA	IAC-17.C1.4.5
Yue, Xiaokui	CA	IAC-17.D1.6.11
Yue, Yang	CA	IAC-17.B2.IP.11
Yueming Ji, Ji	CA	IAC-17.B4.4.10
Yueyang, Hou	A	IAC-17.D1.IP.23
Yumiya, Akira	CA	IAC-17.E1.IP.31
Yun, Yongtae	A	IAC-17.C4.IP.32
Yun, Yuan	A	IAC-17.D1.4A.11
Yuqing, Liu	CA	IAC-17.A1.IP.12

## Z

Name	Role	Paper
Zabala-Aliberto, Veronica Ann	CA	IAC-17.E1.IP.7
Zabeau, Josué	CA	IAC-17.C4.IP.9
Zadnik, Marjan	CA	IAC-17.E1.2.7
ZAI, BEHZAD AHMED	A	IAC-17.C2.3.1
Zaidi, Waqar	A	IAC-17.A6.9.10
Zajczyk, Anna	CA	IAC-17.B4.2.1
Zakirov, Vadim	CA	IAC-17.D2.2.9
Zaman, Fahad	CA	IAC-17.A1.5.13
Zaman, Yasmin	CA	IAC-17.D3.3.11
Zamora, Pilar	CA	IAC-17.E6.3.12
Zandbergen, Barry	CA	IAC-17.D1.4B.9
Zandbergen, Barry	CA	IAC-17.C4.8-B4.5A.4
Zander, Martin	A	IAC-17.C2.2.3
Zander, Martin	CA	IAC-17.A6.IP.14
Zanetti, Ilario	CA	IAC-17.D1.1.9
Zanetti, Michael	CA	IAC-17.A5.1.11
Zank, Gary	CA	IAC-17.D4.4.2
Zarubin, Dmitry	CA	IAC-17.A5.1.2
Zaw, Ingyin	CA	IAC-17.A7.3.10
Zea, Luis	CA	IAC-17.E3.1.11
Zea, Luis	A	IAC-17.A1.6.8
Zee, Robert	CA	IAC-17.C2.IP.31
Zee, Robert E.	CA	IAC-17.B2.7.4
Zeidler, Conrad	A	IAC-17.E5.1.7
Zeif, Reinhard	CA	IAC-17.B2.3.2
Zeis, Christopher	CA	IAC-17.C2.3.5
Zelenov, Denis	CA	IAC-17.A6.1.8
Zeng, Huasong	CA	IAC-17.B2.1.12
Zeng, YongHong	CA	IAC-17.C2.8.1
Zetterling, Carl-Mikael	CA	IAC-17.A3.5.5
Zetterling, Carl-Mikael	CA	IAC-17.D3.3.3
Zewdie, Beza Tesfaye	A	IAC-17.E1.5.13

Zhang, Bin	CA	IAC-17.D1.4A.11
Zhang, Binqun	A	IAC-17.A1.5.1
Zhang, Bo	CA	IAC-17.D1.1.8
Zhang, Chenguang	A	IAC-17.B3.4-B6.5.9
Zhang, Chi	CA	IAC-17.B6.IP.11
Zhang, Chu	CA	IAC-17.A2.3.12
Zhang, Cong	CA	IAC-17.B1.IP.6
ZHANG, Di	CA	IAC-17.A2.2.4
Zhang, Dong	CA	IAC-17.D2.IP.9
Zhang, Duo	A	IAC-17.C4.9.11
Zhang, Duo	CA	IAC-17.C3.3.1
Zhang, Fan	CA	IAC-17.C1.5.9
Zhang, Feng	A	IAC-17.D2.IP.23
Zhang, Feng	CA	IAC-17.B2.7.12
Zhang, Guanghui	CA	IAC-17.A2.4.7
Zhang, Hao	CA	IAC-17.D2.3.11
Zhang, Hao	CA	IAC-17.D1.IP.24
Zhang, Hao	CA	IAC-17.D2.IP.11
Zhang, Hao	CA	IAC-17.D4.3.13
Zhang, Hao	CA	IAC-17.D2.8-A5.4.8
ZHANG, Haocheng	CA	IAC-17.D2.4.8
Zhang, Haolong	CA	IAC-17.D3.3.6
Zhang, Heng	A	IAC-17.B3.1.6
Zhang, Hongwen	CA	IAC-17.B3.7.7
Zhang, Hongxing	CA	IAC-17.A1.IP.23
Zhang, Hua	A	IAC-17.C4.4.11
Zhang, Jian	CA	IAC-17.B3.6-A5.3.8
Zhang, Jianquan	CA	IAC-17.A2.6.5
Zhang, Jiaolong	A	IAC-17.B4.5.8
Zhang, Jingrui	CA	IAC-17.C1.1.1
Zhang, Jingrui	CA	IAC-17.B6.IP.9
Zhang, Jingrui	CA	IAC-17.C1.IP.6
Zhang, Junhua	A	IAC-17.C1.6.11
Zhang, Junhua	CA	IAC-17.C1.IP.16
Zhang, Kai	CA	IAC-17.C2.IP.24
Zhang, Kefei	CA	IAC-17.E2.1.7
Zhang, Kefei	CA	IAC-17.A6.9.1
Zhang, Liangchang	A	IAC-17.A1.IP.24
Zhang, Liangchang	CA	IAC-17.A1.IP.27
Zhang, Liangchang	CA	IAC-17.A1.7.5
Zhang, Lisong	CA	IAC-17.C4.5.11
Zhang, Long	A	IAC-17.A7.IP.9
Zhang, Meng	CA	IAC-17.A1.5.1
Zhang, Mengyang	CA	IAC-17.E6.1.1
Zhang, Nan	CA	IAC-17.A1.IP.30
Zhang, Peng	CA	IAC-17.A2.7.4
Zhang, Pinliang	CA	IAC-17.A6.3.8
Zhang, Qian-cheng	CA	IAC-17.C2.7.13
Zhang, Renyong	A	IAC-17.A3.IP.26
Zhang, Rui	CA	IAC-17.B2.IP.13
Zhang, Shengjun	A	IAC-17.A6.8.9
Zhang, Shenyi	CA	IAC-17.A1.5.1
Zhang, Shenzhan	A	IAC-17.C3.3.2
Zhang, Shu	CA	IAC-17.E3.IP.11
Zhang, Shuguang	CA	IAC-17.C1.5.5
Zhang, Shuguang	CA	IAC-17.C1.IP.19
Zhang, Shuo	CA	IAC-17.C1.1.12
Zhang, Silong	CA	IAC-17.C3.3.1
Zhang, Silong	A	IAC-17.C4.IP.39
Zhang, Tao	CA	IAC-17.D1.4A.11
Zhang, Tao	CA	IAC-17.C2.IP.38
Zhang, Teng	A	IAC-17.D1.6.11
Zhang, Tiehua	CA	IAC-17.A1.IP.23
ZHANG, Tong	A	IAC-17.C1.IP.13
ZHANG, Wanlu	A	IAC-17.E3.IP.12
Zhang, Wei	CA	IAC-17.A2.2.7
Zhang, Wei	CA	IAC-17.D3.4.9
Zhang, Wei	A	IAC-17.C2.9.4
Zhang, Xiang	A	IAC-17.B4.6A.7
Zhang, Xiaochen	CA	IAC-17.A3.IP.32
Zhang, Xiaochen	CA	IAC-17.B5.2.7
ZHANG, Xiaomin	CA	IAC-17.B4.4.10
ZHANG, Xige	CA	IAC-17.B2.IP.18
Zhang, Xin	A	IAC-17.D5.3.1
Zhang, Xinbin	CA	IAC-17.C2.IP.30



## Notes

Zhang, Xue Yin	CA	IAC-17.B6.3.3
Zhang, Yao	CA	IAC-17.C1.5.10
Zhang, Yao	CA	IAC-17.A6.IP.22
Zhang, Yao	CA	IAC-17.C1.IP.6
Zhang, Yichao	CA	IAC-17.B2.7.6
Zhang, Yingyi	CA	IAC-17.C2.9.4
Zhang, Yizhai	A	IAC-17.C1.5.9
Zhang, Yong	CA	IAC-17.C1.IP.8
Zhang, Yonghe	CA	IAC-17.D1.1.8
Zhang, YongLiang	CA	IAC-17.A1.2.3
Zhang, Yulin	CA	IAC-17.D2.8-A5.4.3
Zhang, Yunchao	CA	IAC-17.A7.3.5
Zhang, Yuzhu	A	IAC-17.D1.IP.22
Zhang, Ze-Zhong	CA	IAC-17.C1.IP.3
Zhang, Zeyu	A	IAC-17.C3.IP.2
Zhang, Zhifei	A	IAC-17.B2.IP.11
Zhang, Zhifei	CA	IAC-17.B4.7.4
Zhang, Zhongliang	A	IAC-17.C2.IP.30
Zhanzhuang, He	CA	IAC-17.B3.6-A5.3.4
Zhao, ChengRen	CA	IAC-17.C4.4.2
Zhao, Dayong	CA	IAC-17.B2.3.7
Zhao, Hui	CA	IAC-17.A1.IP.3
Zhao, Hui	CA	IAC-17.A1.8.12
Zhao, Jianbo	CA	IAC-17.C4.IP.25
Zhao, Jianwen	CA	IAC-17.D2.3.11
Zhao, Jianwen	CA	IAC-17.D1.IP.24
Zhao, Jianwen	CA	IAC-17.D2.IP.11
Zhao, Jianwen	CA	IAC-17.D4.3.13
Zhao, Jianwen	CA	IAC-17.D2.8-A5.4.8
Zhao, Jinxian	CA	IAC-17.B2.IP.12
Zhao, Ling	CA	IAC-17.C4.5.11
ZHAO, Lingbo	CA	IAC-17.D2.4.8
Zhao, Liye	CA	IAC-17.B2.3.11
Zhao, Liye	CA	IAC-17.B2.4.8
Zhao, Michelle	CA	IAC-17.C1.5.2
Zhao, Qingjun	CA	IAC-17.C4.9.4
Zhao, Sheng	CA	IAC-17.C4.2.11
Zhao, Sheng	A	IAC-17.C4.IP.25
Zhao, Shoujun	CA	IAC-17.D2.5.10
Zhao, Shuge	CA	IAC-17.B6.IP.9
Zhao, Wei	A	IAC-17.C4.9.4
Zhao, Xing	A	IAC-17.D5.2.5
Zhao, Yanbin	CA	IAC-17.C2.IP.23
Zhao, Yong	CA	IAC-17.B4.7.3
Zhao, Yun	A	IAC-17.E7.5.4
Zhao, Zhen-Wei	CA	IAC-17.B2.8-GTS.3.3
Zhao, Zhenping	A	IAC-17.C2.IP.29
Zhao, Zhenyu	A	IAC-17.C2.7.13
Zhao, Zhihua	A	IAC-17.C2.2.13
Zhao, Zhihua	CA	IAC-17.C2.IP.36
Zhao, Zhihua	A	IAC-17.C2.IP.37
Zhao, Zhiming	A	IAC-17.B4.4.10
Zhao, Zhiming	CA	IAC-17.B4.6A.2
Zharenov, Igor	CA	IAC-17.E1.IP.26
Zharkih, Roman	CA	IAC-17.E1.IP.26
Zhefeng, Yu	A	IAC-17.D2.5.3
Zhelem, Ross	CA	IAC-17.A7.2.2
Zheng, D.	CA	IAC-17.C2.8.1
Zheng, Dayong	A	IAC-17.C4.1.1
Zheng, Jiandong	CA	IAC-17.A6.3.8
Zheng, Jianhua	CA	IAC-17.D1.6.1
Zheng, JinHuang	A	IAC-17.C2.4.4
Zheng, Qi	A	IAC-17.B5.1.9
Zheng, Riheng	CA	IAC-17.D2.4.8
Zheng, Xiaoping	CA	IAC-17.B2.7.9
ZHENG, ZHIHUI	A	IAC-17.B1.4.2
Zhenhua, Zhang	CA	IAC-17.B3.3.7
Zhong, Hongen	CA	IAC-17.B2.8-GTS.3.7
Zhong, Hongen	CA	IAC-17.B5.1.12
Zhong, Ma	CA	IAC-17.B3.6-A5.3.4
Zhong, Ruidong	CA	IAC-17.E7.IP.2
Zhongming, Wang	CA	IAC-17.E6.1.1
Zhou, Bingkun	CA	IAC-17.B2.7.9
Zhou, Cong	A	IAC-17.D2.IP.4
Zhou, Dazhuang	CA	IAC-17.A1.5.1

Zhou, Jianxing	A	IAC-17.D2.4.8
Zhou, Jun	CA	IAC-17.B4.5.8
Zhou, Jun	CA	IAC-17.B4.6A.4
Zhou, Jun	CA	IAC-17.B4.6A.9
Zhou, Jun	CA	IAC-17.B4.7.7
Zhou, Lei	A	IAC-17.B2.IP.13
ZHOU, Lini	A	IAC-17.E3.IP.6
Zhou, Ning	A	IAC-17.D2.IP.14
Zhou, Shuai	CA	IAC-17.E1.3.11
Zhou, Ye	A	IAC-17.C1.2.5
Zhou, Ye	A	IAC-17.C1.4.12
Zhou, Yi	CA	IAC-17.A6.3.4
Zhou, Yuanyuan	CA	IAC-17.A2.6.5
Zhou, Zhicheng	CA	IAC-17.B6.IP.8
Zhu, Chengxiang	A	IAC-17.C4.9.1
Zhu, Feng	CA	IAC-17.A2.3.11
Zhu, Ge	CA	IAC-17.C3.2.4
Zhu, Guangwu	CA	IAC-17.A1.5.1
ZHU, Guoqiang	CA	IAC-17.C4.IP.23
Zhu, Guoxiang	A	IAC-17.D2.IP.15
Zhu, Haizhen	CA	IAC-17.B4.6B.12
ZHU, Qichao	CA	IAC-17.E3.IP.6
Zhu, Shengying	CA	IAC-17.A3.IP.52
Zhu, Yan	A	IAC-17.C4.9.5
Zhu, Zhanxia	A	IAC-17.A2.4.7
Zhu, Zhanxia	CA	IAC-17.A6.7.7
Zhu, Zihua	CA	IAC-17.B4.1.6
Zhu, Zihua	A	IAC-17.E5.5.1
Zhuang, Jian	CA	IAC-17.B3.7.7
Zhumaev, Zaynulla	A	IAC-17.E1.IP.26
Zi, Xu	CA	IAC-17.A1.2.12
Ziach, Christian	A	IAC-17.A3.4A.8
Ziach, Christian	CA	IAC-17.A3.4A.9
Ziach, Christian	CA	IAC-17.A3.4B.3
Ziegler, Tobias	CA	IAC-17.C1.3.9
Zimmermann, Jannik	CA	IAC-17.C2.1.5
Zinkewitz, Maximilian	CA	IAC-17.D1.2.3
Zochowski, Yan	CA	IAC-17.B6.1.1
Zochowski, Yan	CA	IAC-17.E1.6.13
Zochowski, Yan	CA	IAC-17.B6.3.3
Zolich, Artur	CA	IAC-17.B4.7.8
Zongyue, Shen	A	IAC-17.E5.IP.12
Zorzano Mier, María-Paz	CA	IAC-17.A2.3.6
Zovaro, Anna	CA	IAC-17.A6.6.3
Zucker, Richard	CA	IAC-17.E3.1.4
Zuo, Fuchang	CA	IAC-17.A7.3.12
Zuo, Jingying	CA	IAC-17.C4.IP.39
Zuo, Yi	A	IAC-17.C3.3.4
Zusi, Michele	CA	IAC-17.A3.5.3

### Ö

Name	Role	Paper
Östling, Mikael	CA	IAC-17.D3.3.3
Özkan, Fatih	CA	IAC-17.B5.2.7

### Ż

Name	Role	Paper
Żurman, Maksymilian	CA	IAC-17.A2.3.9

Notes



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Organisers



21 - 23 May 2018 | Montevideo, Uruguay

## GLOBAL SPACE APPLICATIONS CONFERENCE (GLAC 2018)



### Conference Objectives

The conference will gather representatives of space agencies, industry, academia and other stakeholders from all over the world to network and find collaboration opportunities.

Space companies, ranging from startups to big corporations, are providing services for various sectors, including agriculture, farming, mining, fishing, transport, energy and others.

The GLAC 2018 will strategically take place in Uruguay and will provide a platform for the countries of the region and worldwide to raise awareness about the benefits of space applications for their socio-economic development.

The comprehensive programme will include high-level keynotes, round tables as well as dedicated sessions for young professionals and students that will address the most recent achievements in satellite-based applications and explore how industry, politics, and law will help shape the future of this exciting domain of astronautics.



### Venue

Radisson Montevideo Victoria Plaza Hotel

**Address:** Plaza Independencia 759, 11100 Montevideo, Uruguay

### GLAC 2018 at a Glance

	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00
<b>Monday 21 May</b>		"Space Up"				Welcome Lunch		Opening Ceremony	Exhibition Opening	Keynote Topic 1	Plenary 1	Welcome Reception		
<b>Tuesday 22 May</b>	Registration	Keynote Topic 2	Plenary 2	Coffee Break	Keynote Topic 3	Plenary 3	Lunch Break	Keynote Topic 4	Plenary 4	Coffee Break	Keynote Topic 5	Plenary 5	Gala Dinner	
<b>Wednesday 23 May</b>	Registration	Keynote Topic 6	Plenary 6	Coffee Break	Results & Recommendations of Plenaries		Closing							

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### For more information

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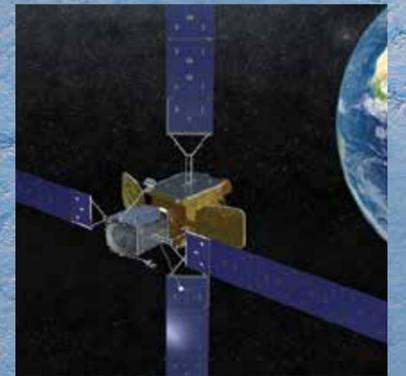


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A large, reddish-orange planet, likely Mars, dominates the left side of the frame. A bright sun is visible in the upper right, creating a lens flare effect. A small satellite or probe is visible in the foreground, orbiting the planet.

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