

INTERNATIONAL ACADEMY OF ASTRONAUTICS

POLITECNICO DI TORINO



ACCADEMIA DELLE SCIENZE DI TORINO

ACCADEMIA NAZIONALE DEI LINCEI

8th IAA SYMPOSIUM ON THE FUTURE OF SPACE EXPLORATION: TOWARDS THE STARS

A Summit Follow-on Symposium



July 03-05, 2013

Turin, Italy

CALL FOR PAPERS

Papers are solicited in priority on:

In order to prepare input for the IAA Heads of Space Agencies Summit to be held in January 2014 in Washington DC, USA, a particular focus will be made on the Summit follow-on priorities of the Academy in:

Planetary Robotic Exploration:

- Priority 1 **Extend Human Spaceflight Exploration via Robotic Exploration**

Seek ways to apply robotic explorers to further pave the way for expanded human exploration through attainment of critical knowledge of relevant destinations and/or validation of technologies required for human exploration

- Priority 2 **Develop Opportunities for International Collaboration**

Expand efforts to work together to achieve the next leap in understanding of our Solar System and to pave the way for human exploration

- Priority 3 **Develop Opportunities for International Collaboration**

Strive to make available opportunities for international collaboration such as through shared science teams and science instruments, in ways that do not compromise the host agency's primary goals for their individual space missions

Human Space Exploration:

- Priority 1 **Support Human Space Exploration in Low Earth Orbit**

Acknowledge the need of maintaining human space exploration in Low Earth Orbit (LEO) and of extending it in a stepwise approach to those destinations where humans may one day live and work, e.g. Moon, Near Earth Objects... through building on a carefully planned series of robotic precursor missions.

- Priority 2 **Develop Enabling Technologies to Support Grand Challenges**

Welcome the development of enabling technologies required to achieve exploration goals, while recognizing the fact that these technologies can also be used in supporting pathways to assist in resolving some of the grand challenges the world is facing, such as energy and environmental issues.

- Priority 3 **Strengthen Cooperation between New and Emerging Space Faring Nations**

Invite new and emerging space faring nations to cooperate in Human Spaceflight activities in view of the benefits involved and in order to ensure that this becomes a global endeavor

Papers are also solicited in the following areas

- **Technology**

Propulsion systems

Trajectory design

Navigation, guidance and control

Sensors, detectors and lens systems

Nanotechnology and robotics

Mission design

Power generation

Attitude dynamics

Very deep space telecommunications

Precursor interstellar missions

Innovative concepts

- **Science**

Scientific objectives and payload requirements

Biosignatures from space

Hybernation

Present outgoing scientific missions

Medical problems of very long range spaceflight

- **Programatics**

Cooperation schemes

Funding aspects

Reporting of the ongoing IAA Study Groups

Roadmaps

Economic sustainability

Role of the ISS in space exploration

- **Motivations**

Motivations and human aspects

Ideas from science fiction to technology

Space resources exploitation

Policy and international cooperation

Space mineral resources

- **Ethics**

Ethical aspects of long range exploration

Ethical aspects of terraforming

Adaptation of humans to new environments

From exploration to colonization

Robot ethics

Experience after 10 years of ISS permanent activity

- **Cultural**

Multicultural aspects of human space exploration

Space emerging countries access to space exploration

Outreach aspects of Space Exploration

Study Groups of the IAA related to the conference themes are encouraged to present and discuss the status of their activities in view of the upcoming Heads of space agencies to be held in January 2014.

SYMPOSIUM DATES AND LOCATION

An International Symposium on the future of Space Exploration will be organized by the International Academy of Astronautics and Politecnico di Torino on 3 – 5 July 2013 in Torino.

SYMPOSIUM GOALS

The goals of this new symposium on the human and robotic exploration beyond the Moon are more ambitious than ever. Thanks to a renewed commitment of the International Academy of Astronautics, the areas of interest have been widened and a larger attendance is expected. To allow all authors to present their papers at ease, the possibility of presenting some papers in parallel sessions is considered.

The aim is to promote an exchange of ideas and experiences among those interested in the various scientific, technological, human and ethical aspects of outer solar system and interstellar exploration and to propose new missions.

Papers regarding the motivations and human aspects of deep space exploration are welcome, and papers dealing with advanced concepts and new ideas are encouraged. The lessons learned and role of the International Space Station as a stepping stone to space exploration is also warmly solicited.

Results from this symposium will be presented to the next Heads of Space Agencies Summit organized by the IAA in January 2014 in Washington DC.

INDUSTRIAL PARTICIPATIONS

Industrial participants are solicited in view of the short term benefits of the technologies developed for deep space exploration

SUPPORT TO PARTICIPANTS

The International Academy of Astronautics will provide a number of scholarships, covering mainly registration fees and luncheons for participants and speakers who have financial difficulties in attending such as for instance attendees from African countries.

SPONSORS

Department of Mechanical and Aerospace Engineering of the Politecnico di Torino

CONFERENCE CHAIRS

Max Grimard
Giovanni Vulpetti

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Antonio Viviani	Wu Meirong

LOCAL ORGANIZATION

Giancarlo Genta

PAPERS FOR PRESENTATION

Abstracts of Papers intended for Presentation at the Symposium must be written in English on a single A4 page with the title, author's name affiliation and complete address. Authors are encouraged to send abstracts by e-mail.

Abstracts must be mailed to:

Prof. Giancarlo Genta
Dept. of Mechanical and Aerospace Engineering, Politecnico di Torino
Corso Duca degli Abruzzi 24, I-10129 Torino (TO), ITALY
Phone: 39 011 090 6922 Fax: 39 011 090 6999
E-mail : iaaspacemissions@iaamail.org
www.iaaconfereces.org/spacemissions2013

All intended papers will be examined by an International Scientific Committee.

DEADLINES

Submission of abstract	March 15, 2013
Notification of acceptance	April 15, 2013
Submission of camera-ready texts	May 31, 2013

SYMPOSIUM FEE

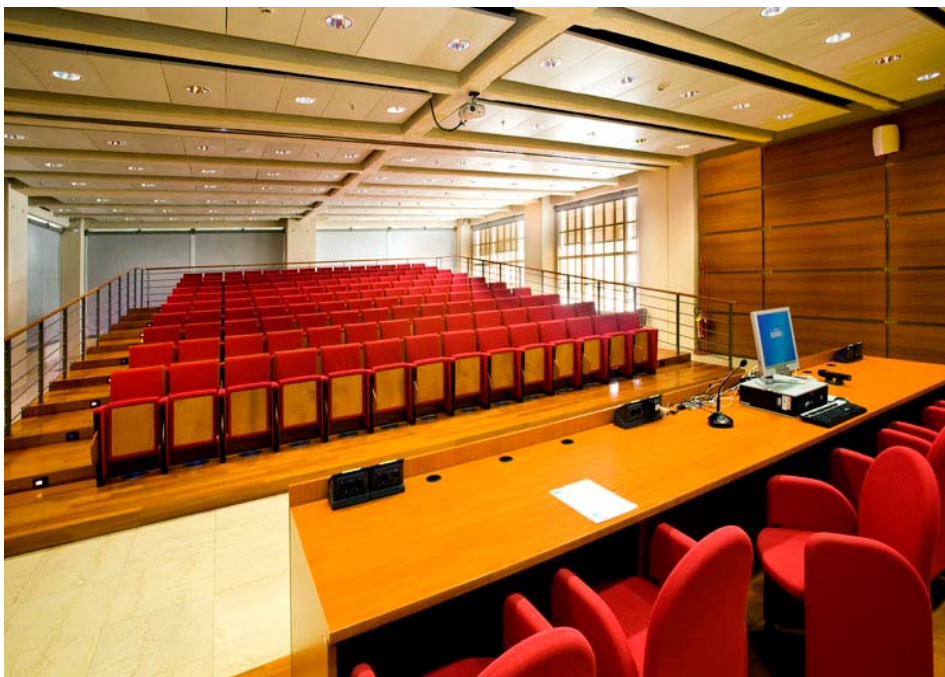
The Symposium Fee is 500 € entitling to receive a copy of the Symposium Proceedings (expected to be available at the symposium). For payments received after May 30, 2013 a surcharge of €80 will apply.

Official language of the Symposium will be English.

A Program for Accompanying Parties will be arranged, if the number of participants is sufficient .

VENUE

Politecnico di Torino
Lingotto Campus
Via Nizza 230
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