



INTERNATIONAL ACADEMY OF ASTRONAUTICS

Missions to the outer solar system and beyond

SIXTH IAA SYMPOSIUM ON REALISTIC NEAR-TERM
ADVANCED SCIENTIFIC SPACE MISSIONS



Aosta, Italy

July 5-9, 2009

PROVISIONAL PROGRAM

July 5, 2009

18.00 **Pre-registration (at Hotel Europe)**

19.00 **Welcome party**

July 6, 2009

The sessions of the morning of Monday 6th will be held at the Salone Ducale, Aosta Town Hall.

8.00-10.00 **Registration**

9.00 **Welcome to the participants**

9.30 **Keynote lecture: The First 50th Years of IAA and the Realistic Near Term Advanced Missions**

J.-M. Contant

IAA Secretary General

10.15 **Coffee break**

Session Ia: Motivations for long range space exploration

11.00 **Interstellar Flight and the Public Imagination**

P. Gilster

Centauri Dreams

11.30 **Space Exploration in the 21st Century: True Escapism or Deep Ethical Motives?**

M. C Bernasconi

MCB Consultants

12.00 **Lunch**

Session IIa: Propulsion and solar and electric sails

14.00 **NanoSail-D: A Solar Sail Demonstration Mission**

L. Johnson

Marshall Spaceflight Center, Huntsville, USA

14.30 **Deviations from Keplerian Orbits for Solar Sails**

R. Y. Kezerashvili and J. F. Vazquez-Poritz

New York City College of Technology, The City University of New York, Brooklyn

Session III: Psychological aspects of long range space exploration

15.00 **From Earth's Orbit to the Outer Planets and Beyond: Psychological Issues in Space**

N. Kanas

University of California, San Francisco

15.30 **Coffee break**

Session Ib: Motivations for long range space exploration

16.00 **Space Exploration: a Marginal Option or the Key to our Future?**

G. Genta

Politecnico di Torino, Torino

- 16.30 **Unconventional thinking in interstellar spaceflight research: practical approaches**
Tibor Pacher
peregrinus interstellar
- 20.00 **Banquet** at Hotel Europe

July 7, 2009

- Technical visit: The Mechatronics Laboratory of the Politecnico di Torino
Sightseeing Tour with luncheon
- 19.00 **Traditional Aosta Valley Dinner** at Hotel Notre Maison, Vetan

July 8, 2009

Session IIb: : Propulsion and solar and electric sails

- 9.00 **Propulsion Alternatives for Fast Missions**
C. Bruno
University of Rome "La Sapienza", Roma
- 9.30 **Status report of the electric sail: a revolutionary near term propulsion technique in the solar system**
P. Janhunen
Finnish Meteorological Institute, Helsinki
- 10.00 **Optimal Interplanetary Rendezvous Combining Electric Sail and High Thrust Propulsion System**
G. Mengali, A. A. Quarta and P. Janhunen
University of Pisa, Pisa, Finnish Meteorological Institute, Helsinki
- 10.30 **Coffee break**

Session IIc: : Propulsion and solar and electric sails

- 11.00 **Accurate Effects of the Total Solar Irradiance Fluctuations on Sailcraft Trajectories**
G. Vulpetti
IAA
- 11.30 **General Relativistic Effects on Solar Sail Escape Trajectories**
R. Y. Kezerashvili and J. F. Vazquez-Poritz
New York City College of Technology, the City University of New York, Brooklyn
- 12.00 **Latest Achievements in Carbon Nanotubes Based Nanotechnology Towards Space Applications**
R. Rizzoli, R. Angelucci, F. Suriano, G.P. Veronese
CNR - Istituto IMM, Bologna
- 12.30 **Lunch**

Session IVa: Missions

- 14.30 **Reaching Extra-Solar-System Targets via Large post-Perihelion Lightness Jumping Sailcraft**
G. Vulpetti
IAA
- 15.00 **Focal Mission**
C. Maccone
IAA
- 15.30 **Coffee break**

Session V: Robots and rovers for deep space exploration

- 16.00 **A Small Robotic Rover For Titan Exploration: Part 1: General Layout**
G. Genta, A. Genta
Politecnico di Torino, Torino
- 16.30 **Spacefaring Automata Design as Nanohardware Embodying an Unconventional Formal Logic**
S. Santoli

17.00 INT – International Nanobiological Testbed Ltd., Rome
A Small Robotic Rover For Titan Exploration: Part 2: Strategies for trajectory control
G. Genta
Politecnico di Torino, Torino

July 9, 2009

Session IVb: Missions

9.00 **Assembly-Level Anticipatory Programming in Space Missions**
A. G. Grappone
Editor-in-Chief of the International Journal “*Metalogicon*”, Roma

9.30 **NEOs as Stepping Stones to Mars and Main-Belt Asteroids**
G. L. Matloff and M. Wilga
New York City College of Technology, The City University of New York, , Brooklyn

10.00 **The X/Ka-Band Deep Space Transponder for BepiColombo Mission to Mercury**
L. Simone, D. Gelfusa, F. De Tiberis, P. Simone, R. Viola, O. Cocciolillo, M. Ziarelli, F. Barletta, N. Salerno, M. Maffei
Thales Alenia Space – Italy

10.30 **Coffee break**

Session VI: New concepts

11.00 **A preliminary assessment of an orbiter in the Haumean system: ‘How quickly can a planetary orbiter reach such a distant target?’**
J. Poncy, V. Martinot, F. Feresin
Thales Alenia Space, Cannes

11.30 **Concept of creation of the orbital stages for deep space missions**
N. Slyunyayev, A. Degtyrev, O. Ventskovsky
Yuzhnoye State Design Office, Dnepropetrovsk and Brussels,

Session VII: SETI

12.00 **The Drake Equation: a Probabilistic Interpretation**
C. Maccone
IAA

12.30 **Lunch**

14.30 **Panel discussion**

16.00 **Closing ceremony**

For registration, hotel reservation and general information, please contact
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