INTERNATIONAL ACADEMY OF ASTRONAUTICS

Missions to the outer solar system
and beyond

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

Aosta, Italy
Hotel Europe
Piazza Narbonne

July 4-6, 2005

PROGRAM

July 3, 2000
18.00  Pre-registration (at Hotel Europe)
19.00  Welcome party

July 4, 2000
The morning sessions of July 4th will be held at the Salone Ducale of the Hotel de Ville of Aosta

8.00-10.00  Registration
9.00  Welcome to the participants
9.15  The challenge of very deep space exploration: how far will the frontier be?
G. Genta
Politecnico di Torino, Torino, Italy

Session I:
9.40  Limits of Artificial Intelligence in Space Robotics
F. Lerda
Università di Torino, Torino, Italy
10.05  Nanobiomimetic Active Shape Control: Fluidic and Swarm-Intelligence Embodiments for Planetary Exploration
S. Santoli
INT – International Nanobiological Testbed Ltd., Rome, Italy
10.30  Coffee break

Session II
11.00  Cassini/Huygens: the Italian Contribution to a Successful Mission
R. Somma
Alenia Spazio, Rome, Italy
11.25  MAX-Microwave Acceleration Experiment with Cosmos-1
J. Benford, G. Benford and T. Kuiper
Microwave Sciences, Inc.; University of California Irvine; Jet Propulsion Laboratory, USA
Innovative Explorer Mission to Interstellar Space
M. Gruntman, R. L. McNutt et al.
University of Southern California; Johns Hopkins University A.P.L.; University of Michigan; University of Iowa; NASA Glenn Research Center., USA

Lunch

Elastic, Electrostatic and Spin Deployment of Ultralight Sails
J. Benford and G. Benford
Microwave Sciences, Inc.; University of California Irvine, USA

Ion Propulsion: an Enabling Technology for Interstellar Precursor Missions
D. G. Fearn.
EP Solutions, UK

Relativistic Optimized Link by KLT
C. Maccone
International Academy of Astronautics

Coffee break

Discussion: The future of IAA symposiums on realistic near-term advanced scientific space missions

Banquet

Session III
15.00 Elastic, Electrostatic and Spin Deployment of Ultralight Sails
J. Benford and G. Benford
Microwave Sciences, Inc.; University of California Irvine, USA

15.25 Ion Propulsion: an Enabling Technology for Interstellar Precursor Missions
D. G. Fearn.
EP Solutions, UK

15.50 Relativistic Optimized Link by KLT
C. Maccone
International Academy of Astronautics

Coffee break

Discussion: The future of IAA symposiums on realistic near-term advanced scientific space missions

Session IV:
9.00 Solar System Frontier: Exploring the Heliospheric Interface from 1 AU
M. Gruntman
University of Southern California, Los Angeles, USA

9.25 The Sailcraft Splitting Concept
G. Vulpetti,
International Academy of Astronautics

9.50 NASA's In-Space Propulsion Technology Program:A Step Toward Interstellar Exploration
L. Johnson, B. James, R. Baggett, S. Montgomery
NASA Marshall Space Flight Center, Huntsville, USA

10.15 Coffee break

Session V:
10.45 Power-Beaming Concepts For Future Deep Space Exploration
G. Benford and J. Benford
Microwave Sciences, Inc.; University of California Irvine, USA

11.10 Near-Term Interstellar Sailing
G. L. Matloff; T. S. Taylor; T. C. Powell; T. Moton and D. Robinson
NYC College of Technology; BAE Systems; SAIC; Teledyne Brown Engineering, Inc, USA

11.35 Reducing Sail Escape Times From Earth Orbit Using Beamed Energy
G. Benford and P. Nissenson
University of California Irvine; Microwave Sciences, Inc., USA

ECSA, a New Form of International Cooperation
C. Mazza
ECSA, Italy

Lunch

Sightseeing tour

July 6, 2000

Session VI:
9.00 DADLE: A Cue to Human “Hibernation”?
M. Biggioggera, P. Fabene, C. Zancanaro
Univeristà di Pavia; Università di Verona, Italy

9.25 Human Hypometabolism for Long Duration Spaceflight: Possibilities and System-level Consequences
M. Ayre
ESTEC, Noordwijk, Netherlands

9.50 Good and Bad in the Hibernating Brain
A. M. Strijkstra
University of Groningen, Haren, The Netherlands

10.15 Coffee break

Melatonin as a Protective Agent against Ischemia/Reperfusion Damage to the Liver after Hypothermic Preservation
I. Freitas, A. Ferrigno et. Al.
Univeristà di Pavia, Italy; University of Texas, USA

11.10 The Cell Nucleus in Physiological and Experimentally Induced Hypometabolism
M. Malatesta
Università di Urbino, Urbino, Italy

11.35 Sleep, Torpor and Memory Impairment
S. Palchykova and I. Tobler
University of Zurich, Zurich, Switzerland

12.00 The Human Adult: a Former or a Future Hibernator?
D. Singer
University Hospital, Wuerzburg, Germany

12.25 Lunch

Panel discussion: Deep Space Robotic and Human Exploration

Closing ceremony