



NASA INSTITUTE FOR ADVANCED CONCEPTS

7th Annual Meeting

Hotel Reservation Deadline:
September 19, 2005

Meeting Registration Deadline:
October 3, 2005

October 10-11, 2005
Omni Interlocken Resort
500 Interlocken Blvd.
Broomfield, Colorado 80021
(303) 438-6600



NIAC 75 5th Street NW, Suite 318, Atlanta, GA 30308, 404-347-9633
<http://www.niac.usra.edu>



8:00 - 8:30AM

Registration and Light Breakfast

8:30 - 9:00 AM

Welcome: **David Black, President of the Universities Space Research Association**

Robert Cassanova, NIAC Director

NIAC Overview, Introduction of New NIAC Phase I Fellows

Diana Jennings, NIAC Associate Director

Introduction of NIAC Student Fellows

9:00 - 10:00 AM

Keynote Speaker: **Courtney Stadd, Capitol Alliance**
"Beyond LEO: Political Issues and Challenges Facing NASA"

10:00 - 10:30 AM

BREAK

10:30 - 12:00 PM

NIAC STATUS REPORTS:

Steven Dubowsky, Massachusetts Institute of Technology

"Microbots for Large-Scale Planetary Surface and Subsurface Exploration"

Alexey Pankine, Global Aerospace Corporation

"Sailing the Planets: Science from Directed Aerial Robot Explorers"

12:00 - 1:00 PM

LUNCH

1:00 - 2:00 PM

Keynote Speaker: **Dr. Fred Adams, University of Michigan**

"Cosmic Genesis and Eschatology: The Origin and Fate of the Universe"

2:00 - 3:30 PM

NIAC STATUS REPORTS:

Narayanan Komerath, Georgia Institute of Technology

"Tailored Force Fields for Space-Based Construction"

John Slough, University of Washington

"The Plasma Magnet"

3:30 - 4:00 PM

BREAK

4:00 - 4:45 PM

NIAC STATUS REPORTS:

Dava Newman, Massachusetts Institute of Technology

"Astronaut Bio-Suit System for Exploration Class Missions"

4:45 - 5:45 PM

Grand Visions Discussion

5:45 - 7:30 PM

RECEPTION: Viewing of Phase I and Student Fellow Presentations



8:00 - 8:45 AM

Registration and Light Breakfast

8:45 - 9:00 AM

Dr. Robert A. Cassanova, NIAC Director
Welcome

9:00 - 10:00 AM

Keynote Speaker: **Dr. Paul MacCready, AeroVironment**
"Far Out Aeronautics and Motions"

10:00 - 10:30 AM

BREAK

10:30 AM -
12:00 PM

NIAC STATUS REPORTS:
Webster Cash, University of Colorado Boulder
"New Worlds Imager"

Simon P. Worden, Steward Observatory, University of Arizona
"A Deep Field Infrared Observatory near the Lunar Pole"

12:00 - 1:00 PM

LUNCH

1:00 - 2:30 PM

NIAC STATUS REPORTS:
Constantinos Mavroidis, Northeastern University
"Bio-Nano-Machines for Space Applications"

Elizabeth McCormack, Bryn Mawr College
"Investigation of the Feasibility of Laser Trapped Mirrors"

2:30 - 3:00 PM

BREAK

3:00 - 4:30 PM

NIAC STATUS REPORTS:
Wendy Boss, North Carolina State University
"Redesigning Living Organisms for Mars"

Paul Todd, SHOT, Inc.
"Robotic Lunar Ecopoiesis Test Bed"

4:30 - 5:00 PM

WRAP-UP

5:00 PM

ADJOURN

The following Phase I Concepts began development through a NIAC contract in September, 2005. Each of these investigators has a poster at the NIAC 7th Annual Meeting. Informal discussions are encouraged with the investigators during the scheduled breaks, luncheons and the reception.

Young K. Bae Bae Institute	“A Contamination-Free Ultrahigh-Precision Formation Flight Method Based on Intracavity Photon Thrusters and Tethers”
James Bickford Draper Laboratory	“Extraction of Antiparticles Concentrated in Planetary Magnetic Fields”
Eric Bonabeau Icosystem Corp.	“Customizable, Reprogrammable, Food Preparation, Production and Invention System”
Brian Gilchrist Univ. of Michigan	“Scalable Flat-Panel Nano-Particle MEMS/NEMS Propulsion Technology for Space Exploration in the 21st Century”
Gerald Jackson Hbar Technologies	“Antimatter Harvesting in Space”
George Maise Plus Ultra Technologies	“Multi-MICE: A Network of Interactive Nuclear Cryoprobes to Explore Ice Sheets on Mars and Europa”
Pamela Menges Aerospace Research Systems	“Artificial Neural Membrane Flapping Wing”
Mason Peck Cornell Univ.	“Lorentz-Actuated Orbits: Electrodynamic Propulsion without a Tether “
James Powell Plus Ultra Technologies	“Magnetically Inflated Cable System for Space Applications”
Herbert Schnopper Smithsonian Astro- physical Observatory	“Ultra-High Resolution Fourier Transform X-ray Interferometer”
Gerald Smith Positronics Research	“Positron-Propelled and Powered Space Transport Vehicle for Planetary Missions”
Nestor Voronka Tethers Unlimited	“Modular Spacecraft with Integrated Structural Electrodynamic Propulsion”

The NIAC Student Fellows Prize (NSFP), sponsored by Universities Space Research Association and managed by NIAC, was initiated in 2005. The following student concepts began development on September 1, 2005. Informal discussions are encouraged with the investigators during scheduled breaks, luncheons and the reception.

Andrew Bingham “Interstellar Exploration by Repeated External Acceleration”
Clarkson University

Nicholas Boechler “Direct Conversion for Solar Space Power”
Georgia Institute of Technology

Aimee Covert “Advanced Concept for Detection of Weather Hazards on Mars: Non-Thermal Microwave Emissions by Colliding Dust/Sand Particles”
Univ. of Michigan

Joe Fronczek “Bio-Inspired Sensor Swarms to Detect Leaks in Pressurized Systems”
New Mexico State University

Brian Sikkema “Wind Driven Power Generation on Titan”
Michigan Technological University

Annual Meeting

October 10 - 11, 2005 • Broomfield, Colorado



The NIAC is proud to announce that its 7th Annual Meeting will be held at the Omni Interlocken Resort in Broomfield, Colorado on October 10-11, 2005. All are invited to attend this meeting, which will feature presentations from NIAC's Fellows and Student Fellows, and keynote speeches from experts in aeronautics, space exploration, and cosmology.

- **MEETING SITE**

The Host Hotel, Omni Interlocken is located at 500 Interlocken Blvd., Broomfield, Colorado 80021

http://www.omnihotels.com/hotels/default.asp?h_id=48

Rooms are available at a discounted rate of \$108.00 (plus tax) available until 5:00 PM, September 19th. For reservations, call the hotel directly at (303) 438-6600, or call Omni's Central Reservations line at (800) 400-1700. When making your reservation, please refer to the meeting name, *NASA Institute for Advanced Concepts Annual Meeting*. Guests will receive the discounted rate and will also receive discounts on leisure services to include golf and spa services.

- **GETTING THERE**

The closest airport is the Denver International Airport, less than 30 minutes away by car. For maps and directions please see:

http://www.omnihotels.com/hotels/default.asp?topic=location&h_id=48.

- **MEETING REGISTRATION**

Deadline: October 3, 2005. Attendees can register for the meeting by contacting Katherine Reilly at kreilly@niac.usra.edu with their name, affiliation, email address, telephone number and specific dates of attendance. There is no charge for registration.