



**Kristina Alemany**  
Georgia Tech  
[kalemany@gatech.edu](mailto:kalemany@gatech.edu)

*Presentation:* Tues. Sept. 30, 10 AM, Room: Argyl 1

Research Title: Design Space Pruning Heuristics and Global Optimization Method for Conceptual Design of Low-Thrust Asteroid Tour Missions

### **Biographical Sketch**

Kristina Alemany is a graduate research assistant in the Space Systems Design Lab at Georgia Tech, under the advisement of Robert Braun. She is currently working on her PhD in Aerospace Engineering, focusing on low-thrust trajectory optimization. While at Georgia Tech, her research has also focused on the conceptual-level modeling and optimization of lunar transportation architectures and on Mars entry, descent, and landing. Kristina received her M.S. in Aerospace Engineering from Georgia Tech in 2005 and her B.S.E. in Mechanical and Aerospace Engineering from Princeton University in 2003.

### **NASA Research and Education Activities**

- 2002, 2003, and 2004 NASA RASC-AL Conference (Revolutionary Aerospace)
- 2002 LARSS summer intern (Langley Aerospace Research Summer Scholars), NASA Langley Research Center
- 2003-2004 Georgia Tech research funded by NASA Langley Research Center on the Orbital Aggregation and Space Infrastructure System (OASIS)
- 2004-2005 Georgia Tech research funded by NASA Langley Research Center
- 2004 NASA Langley Research Center summer intern
- 2005 – ACM (Alignment, Capture, and Mate) Docking System
- 2005-2006 Georgia tech research funded by NASA Jet Propulsion Laboratory
- 2006 NASA Jet Propulsion Lab summer intern



**Matthew Allner**

University of North Dakota  
[mjallner@msn.com](mailto:mjallner@msn.com)

*Presentation:* Mon. Sept. 29, 3:30, Room: Caron 2

Research Title: Management of Competition and Besting Among Crew Members: A Study at the Mars Desert Research Station (MDRS) in Utah, USA

**Biographical Sketch**

Matthew Allner was born and raised in Sioux City, Iowa where he received a BS in Biology, a BA in Secondary Education, and a minor in Psychology from Briar Cliff University (1997). Married his wife (Jessica) in 2000 and they have two wonderful children, Isabelle and Nathan. Currently finishing his Master's Degree in Space Studies from the University of North Dakota. Also work as a secondary level science teacher in Colorado Springs, Colorado. Active rescue diver and training officer for the Siouxland Dive Rescue Team for three years while in Iowa. Enjoys reading, extreme sports, and time with his family.

**NASA Research and Education Activities**

- Network of Educator Astronaut Teachers (NEAT) Project
- NASA Explorer School (NES) Project
- NASA Student Lunar Design Challenge
- Spaceward Bound Projects, I, II, III, and IV
- 2008 NASA Sponsored Student for the 37<sup>th</sup> Scientific Assembly of the Committee on Space Research (COSPAR)



**Nathaniel Ambler**  
University of North Dakota  
[nambler@ufl.edu](mailto:nambler@ufl.edu)

*Presentation:* Fri. Oct. 3, 10 AM, Room: Alsh 2

Research Title: Solid-State Sensor Behavior in Reduced-Pressure Environments –  
Demonstration using an Experimental Indium Tin Oxide Ozone Gas  
Sensor for Ozone Sounding

### **Biographical Sketch**

Nathaniel P. Ambler is a graduate student at the University of North Dakota. He was awarded a B.S. in Mechanical Engineering in 2005 from the University of Florida where he served as the primary-investigator on an engineering related economic study of aseptic packaging, and as a co-investigator on an effort to automate controls for unmanned vehicles. He worked previously as a teacher of physics and mathematics in secondary education, and as a student researcher at the Kennedy Space Center, with NASA mentor Janira Ramos, on a Helium Recovery System (HRS) for the external tank of the Space Shuttle receiving \$99,000 in support.

### **NASA Research and Education Activities**

- Currently project engineer on the High Altitude Student Platform (HASP) project that is sponsored through NASA Wallops and LSU
- Summer 2007 Graduate Student Intern at NASA – KSC/XA in NE-F7
- Space Florida Rocket Program / Balloon Program



**Emily Chwialkowski**  
University of North Dakota  
[emily.chwialkowski@und.nodak.edu](mailto:emily.chwialkowski@und.nodak.edu)

*Presentation:* Tues. Sept. 30, 3 PM, Room: Laven

Research Title: A Spacecraft Simulator as an Educational Tool for the New Generation of Aerospace Professionals & Space Suit Laboratory

### **Biographical Sketch**

As a graduate student at the University of North Dakota (UND), I am currently enrolled in the Space Studies program. I intend to graduate with a Master of Science degree in Space Studies in May, 2009. My focus of study lies mainly with human-related factors in space. The research I have done with Pablo DeLeon in the Space Suit Laboratory has broadened my knowledge on issues pertaining to space suit design and the physiological/psychological limits of humans in space. I plan to continue my research with Pablo throughout my graduate program.

I graduated with honors from UND in May, 2007 and earned a Bachelor of Science degree in secondary education with a focus in Composite Science.

### **NASA Research and Education Activities**

- NDX-1 (The North Dakota Experiment-1 planetary space suit was funded by a NASA Workforce Development Grant).
- UND Spacecraft Simulator



**Amer Fejzic**

Massachusetts Institute of Technology  
[afejzic@mit.edu](mailto:afejzic@mit.edu)

*Presentation:* Wed. Oct. 1, 3 PM, Room: Laven

Research Title: Results of SPHERES Microgravity Autonomous Docking Experiments in the Presence of Anomalies

**Biographical Sketch**

Amer Fejzic was born in Sarajevo, Bosnia and Herzegovina. He graduated with a B.S. degree in Aeronautical and Astronautical Engineering from the University of Washington in June 2006. Currently, he is a S.M. candidate and graduate research assistant at the MIT Space Systems Laboratory. He has participated in the Massachusetts Space Grant Summer Internship Program of 2007 at the Jet Propulsion Laboratory (JPL), where he worked on rover-arm control. He is currently a member of the SPHERES team at MIT, where his research focuses on developing control and autonomy architectures and algorithms for docking to complex tumbling satellites.

**NASA Research and Education Activities**

- 2007 NASA Space Grant Intern (Massachusetts), JPL



**Emma Hinds**

The George Washington University, Elliott School of International Affairs  
[eshinds@gmail.com](mailto:eshinds@gmail.com)

*Presentation:* Fri. Oct. 3, 10 AM, Room: Dochart 2

Research Title: The Future of Radioisotope Power Systems for American Space Exploration

**Biographical Sketch**

Emma Hinds is a second year MA student in the International Science and Technology Policy program at the Elliott School of International Affairs, the George Washington University, concentrating in Space Policy. She is currently a Strategic Policy Intern at the National Aeronautics and Space Administration (NASA). Prior to her internship at NASA, Emma worked as a research assistant at the Space Policy Institute and completed an internship with the Office of Management and Budget in the Executive Office of the President. Emma received her BA in Politics in 2006 from Mount Holyoke College in South Hadley, MA.

**NASA Research and Education Activities**

- Strategic Policy Intern, NASA Headquarters, Exploration Systems Mission Directorate



**Ryan Kobrick**  
University of Colorado at Boulder  
[Kobrick@Colorado.edu](mailto:Kobrick@Colorado.edu)

*Presentation:* Thurs. Oct. 2, 10 AM, Room: Exhibition Theater

Research Title:     Developing Abrasion Testing Hardware to Evaluate Effects Caused  
                          by Lunar Dust on Construction Materials

### **Biographical Sketch**

Ryan Kobrick is currently working towards his Ph.D. in Aerospace Engineering Sciences at the University of Colorado at Boulder. His current research involves characterizing lunar dust, testing abrasion properties of simulants and dust on future exploration materials at NASA Glenn Research Center (GSRP funded), and making design recommendations. His past research includes investigating portable life support system configurations and X PRIZE Foundation work experiences including X PRIZE Cup development and a Low Cost Space Launch Report for the Air Force Research Laboratory. Ryan has participated in Mars analogue missions including a 100-day simulation in the high Canadian Arctic in 2007.

### **NASA Research and Education Activities**

- NASA GSRP 2007, GRC





**Ashley Korzun**

Georgia Institute of Technology  
[akorzun@gatech.edu](mailto:akorzun@gatech.edu)

Research Title: A Concept for the Entry, Descent, and Landing of High-Mass Payloads at Mars

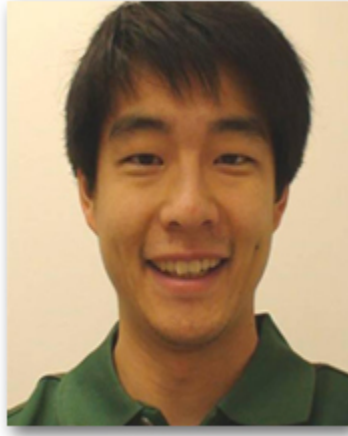
**Biographical Sketch**

Ashley Korzun is a graduate student in aerospace engineering at the Georgia Institute of Technology in the Space Systems Design Lab. Her research focuses on supersonic retropropulsion for planetary entry, descent, and landing (EDL) applications, specifically at Mars, including systems-level analysis and the development of CFD approaches. She has a B.S. in Aerospace Engineering from the University of Maryland, College Park and an M.S. in Aerospace Engineering from the Georgia Institute of Technology.

**NASA Research and Education Activities**

- 3-year award from NASA Fundamental Aeronautics for continuing research into supersonic retropropulsion for high-mass Mars entry systems (initiated 2008)
- NASA Constellation University Institutes Project (CUIP) (2007-present)
- NASA Mars Architecture Working Group (MAWG) EDL team (2007)
- NASA Graduate Student Research Program Fellowship (2006-2008)
- 2006 NASA Academy, NASA Goddard Space Flight Center





**Daniel Kwon**

Massachusetts Institute of Technology  
[dankwon@mit.edu](mailto:dankwon@mit.edu)

*Presentation:* Wed. Oct. 1, 10 AM, Room: Dochart 2

Research Title: Cryogenic Thermal Design of Electromagnetic Formation Flight Satellites

**Biographical Sketch**

Daniel Kwon is a Research Assistant in the Department of Aeronautics and Astronautics at the MIT. He has been a part of the MIT Space Systems Laboratory since 2002 under the supervision of Prof. David Miller and Dr. Raymond Sedwick. His research has focused on electromagnetic formation flight system designs and the design and implementation of an EMFF testbed. Currently, he is spending the year at the University of Maryland, College Park as a Faculty Research Assistant for Prof. Raymond Sedwick in the Department of Aerospace Engineering.

**NASA Research and Education Activities**

- Jet Propulsion Laboratory, Planetary Science Summer School, August 2003
- JPL Summer COOP, Summer of 2000 and 2001



**Jarret Lafleur**

Georgia Institute of Technology  
[jarret.m.lafleur@gatech.edu](mailto:jarret.m.lafleur@gatech.edu)

*Presentation:* Mon. Sept. 29, 3:30 PM, Room: Laven

Research Title: Survey of Flexibility in Space Exploration Systems

**Biographical Sketch**

Jarret Lafleur is a graduate student working under the advisement of Dr. Joseph Saleh in the Space Systems Design Laboratory at the Georgia Institute of Technology. He is currently a National Defense Science and Engineering Graduate (NDSEG) Fellow, and his research considers the design of implementation of flexibility in space systems. Jarret graduated from Georgia Tech with his bachelor's degree in Aerospace Engineering in 2007 and during his time as an undergraduate worked at the Naval Undersea Warfare Center, NASA Johnson Space Center, and NASA White Sands Test Facility. Jarret was also selected in 2005 as an Astronaut Scholar.

**NASA Research and Education Activities**

- NASA Johnson Space Center Co-op Program
- ESMD Systems Engineering Paper Competition
- NASA Institute for Advanced Concepts (NIAC) Student Visions of the Future Program
- 2005 Astronaut Scholar



**Kristyn Ringgold**  
University of California, Davis  
[kmringgold@ucdavis.edu](mailto:kmringgold@ucdavis.edu)

*Presentation:* Mon. Sept. 29, 3:30 PM, Room: Caron #7

Research Title: Normal vestibular signaling is required to phase shift in circadian rhythms with wheel running

### **Biographical Sketch**

Kristyn is currently a member of the research laboratory of Dr. Charles Fuller. She is researching the role of the vestibular system in the modulation of mammalian circadian rhythms. Kristyn is a Ph.D. student in the Molecular, Cellular and Integrative Physiology Graduate Group at the University of California, Davis. She is a member of the Golden Key, Phi Sigma Phi and Gamma Phi academic honor societies and was the recipient of an Achievement Rewards for College Scientists award in 2005. Kristyn graduated with honors from UC Davis, completing her Bachelor's of Science Degree in Psychology (emphasis Biology) in three years.

### **NASA Research and Education Activities**

- None



**Sharon Singer**  
University of Maryland  
[smsinger@ssl.umd.edu](mailto:smsinger@ssl.umd.edu)

*Presentation:* Thurs. Oct. 2, 10 AM, Room: Castle 2 #6

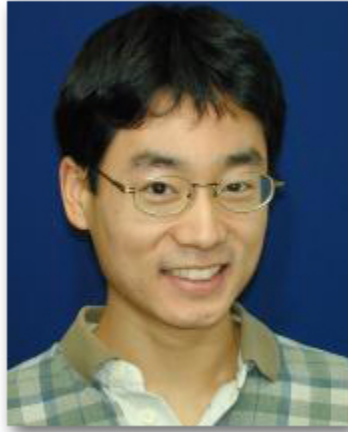
Research Title: A Feasibility Analysis of Primitive Level Task Allocation for a Cooperative Human and Robotic Team

### **Biographical Sketch**

Sharon Singer earned a bachelor's degree in mechanical engineering from Rice University. She is currently a graduate research assistant in the Space Systems Laboratory at the University of Maryland where she has been conducting research on the application of heuristic optimization strategies to aid in scheduling collaborative activities between humans and robots in space operations. She is completing her masters of science degree in aerospace engineering in May of 2008 and continuing in pursuit of a PhD at the University of Maryland.

### **NASA Research and Education Activities**

- 2007 NASA/Jet Propulsion Laboratory's Planetary Science Summer School
- 2003 and 2005 NASA Langley Aerospace Research Summer Scholars Program



**Yuki Takahashi**  
University of California, Berkeley  
[yukimoon@berkeley.edu](mailto:yukimoon@berkeley.edu)

*Presentation:* Thurs. Oct. 2, 10 AM, Room: Exhibition Theater

Research Title:       Analogues between Antarctica and the Moon: A South Pole Experience for Planning Lunar Missions

### **Biographical Sketch**

Yuki Takahashi became inspired to go to outer space at age 12 when he learned about the American space program. With a dream of joining NASA he went to the US for high school, away from family in Japan. He studied physics at Caltech, where he led the SEDS group. Using a Fulbright Grant, he pursued master's research in the UK proposing a Moon-based observatory concept, leading to his involvement in a NASA study on lunar telescope construction. Currently he is completing PhD research at Berkeley in cosmology with a telescope that his team built at the South Pole.

### **NASA Research and Education Activities**

- 1993: Space Academy Level 1, US Space & Rocket Center
- 1995: Space Academy Level 2, US Space & Rocket Center
- 1994-1997: Young Astronauts Club volunteer educator, Midland, MI
- 2000: SIRTf proposal with Dr. Charles Beichman, Chief Scientist of NASA Origins Program, JPL.
- 2001: NASA Reduced Gravity Student Flight Opportunity, JSC.
- 2002: NASA RASC study on "Astronaut-Aided Construction of a Large Lunar Telescope", funded by NASA ICASE w/ Dr. Mike Duke.
- 2003: NASA HQ partial sponsorship for the International Space University Summer Session Program.
- 2006: NASA Planetary Science Summer School, JPL.
- 2006: NASA Student Ambassador to International Astronautical Congress.



**Michael Vergalla**  
Florida Institute of Technology  
[mvergalla@gmail.com](mailto:mvergalla@gmail.com)

Presentation: Tues. Sept. 30, 10 AM, Room: Gala 1, #10

Research Title: Experimental and Numerical Investigation of Low-Gravity Low-Gravity Fluid Dynamics

### **Biographical Sketch**

Born in New Jersey, Michael grew up working in the family's machine shop repairing packaging machinery. With an early eye for the sky he soloed in a Piper Cherokee after 14 hours (age: 16). Four years of AP Sciences prepared Michael for the aerospace engineering program at Florida Institute of Technology. Two important internships fueled scholastic motivation, a CFD internship at Cd-Adapco, and summer research at von Karmen Institute of Fluid Dynamics. Michael also enjoys sailing. A recent accomplishment is winning 1<sup>st</sup> Place for 'Best in Show' at Florida Tech's Design Showcase. Michael will begin graduate school in Fall 2008.

### **NASA Research and Education Activities**

- None



**Geoffrey Wawrzyniak**  
Purdue University  
[gwawrzyn@purdue.edu](mailto:gwawrzyn@purdue.edu)

*Presentation:* Tues. Sept. 30, 3 PM, Room: Argyl 1

Research Title: The Solar Sail Lunar Relay Station: An Application of Solar Sails in the Earth-Moon System

### **Biographical Sketch**

Geoff Wawrzyniak grew up in Franklin, Wisconsin. After completing his bachelor's degree in mechanical engineering at the University of Wisconsin--Madison (1999) and a masters degree in aerospace engineering at the University of Texas at Austin (2001), he was hired at the Jet Propulsion Laboratory. In 2005, he returned to school for a PhD in aerospace engineering under the guidance of Professor Kathleen Howell at Purdue University.

### **NASA Research and Education Activities**

- Masters research at Johnson Space Center working on relative navigation using pseudolites at the Navigation Systems & Technology Laboratory.
- Employed at JPL. Worked on the Navigation teams for Mars Odyssey, Mars Global Surveyor, Mars Exploration Rovers, Genesis, Stardust, and Mars Science Laboratory. Received group and individual awards recognizing contributions to those missions. Software contributions to MarsLS and IPANEMA/IMAN written up in NASA Tech Briefs.





**Danielle Wood**

Massachusetts Institute of Technology  
[dradams@mit.edu](mailto:dradams@mit.edu)

*Presentation:* Tues. Sept. 30, 10 AM, Room: Castle 3

Research Title: How National Socioeconomic Development Level Influences National Space Activity

**Biographical Sketch**

Danielle Wood has completed a dual Master of Science degree program at MIT. One degree is in Aerospace Engineering; the other is in Technology and Policy. Danielle plans to continue at MIT and pursue a PhD in the Engineering Systems Division. Her research focus is on the technology and policy aspects of satellite applications for developing countries.

**NASA Research and Education Activities**

- Jan 2007, Guest Researcher, Goddard Space Flight Center Systems Engineering Branch
- 2005 Fellow, NASA Harriett G. Jenkins Pre-Doctoral Fellowship Program
- Summer 2005, Operations Manager, NASA Academy Internship Program, NASA Goddard Space Flight Center
- Feb 2005, Intern, NASA Marshall Space Flight Center, SERVIR Project
- Summer 2004, Intern, NASA Academy Internship Program, NASA Goddard Space Flight Center
- Summer 1999, Intern, NASA Summer High School Apprenticeship Research Program (SHARP), Kennedy Space Center