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Utah State University
Mechanical and Aerospace Engineering Department
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PROFESSIONAL EXPERIENCE:

2004-present **Utah State University, Logan, UT**
Assistant Professor, Mechanical and Aerospace Engineering
Teaching and research in spacecraft guidance systems, navigation systems,
and trajectory design for rendezvous, docking, and atmospheric entry.

2006 **NASA/Headquarters, Washington, D.C.**
Consultant for NASA's Independent Program Assessment Office (IPAO): Served on the Magnetospheric MultiScale Mission (MMS) Independent Review Team (IRT)

2005 **NASA/Headquarters, Washington, D.C.**
Consultant for NASA's Independent Program Assessment Office (IPAO): Served on the Hubble Robotic Servicing and De-orbit Mission (HRSDM) Independent Review Team (IRT)

1998-2004 **The Charles Stark Draper Laboratory, Cambridge, MA**
Senior Member Technical Staff

Mars Atmospheric Entry, Descent, and Landing Simulation:
Responsible for developing high-fidelity computer simulations for validation of JPL's Mars entry, descent, and landing concepts. Responsible for ensuring student participation, selecting the simulation framework and platform, development of project plan.

Mars Orbital Rendezvous Experiment: Served as a task leader for the mission design and analysis portion of this JPL sponsored project. Participated in the proposal process and statement of work development. Performed integrated system analysis and evaluation with detailed (linear covariance) statistical and deterministic simulations. Developed sub-projects for students.

Orbital Express Satellite Servicing: Developed a concept of operations for the orbital rendezvous phase of this DARPA sponsored project. Participated in the development of a preliminary guidance, navigation, and attitude control system design.

Competent Munitions Advanced Technology Demonstration: Responsible for the development, analysis, and evaluation of optimal trajectories and optimal guidance laws for guided gun-fired artillery shells.

Rice University, Houston, TX

1993-1998 Ph.D. studies and research (see Education Section below)

NASA's Johnson Space Center, Houston, TX

1990-1993 **Deputy Chief, Spacecraft Performance Analysis Branch**

Provided technical oversight for several internal projects including: 1) optimal trajectory design for spacecraft with electric propulsion systems, 2) libration point halo orbit design and halo orbit control-law development, 3) in-situ navigation infrastructure design for manned Mars missions, and 4) Mars precision navigation and landing analysis.

1984-1990 **Aerospace Engineer**

Responsibilities included preliminary design and evaluation of a navigation infrastructure for a First Lunar Outpost. Participated in a Global Positioning System (GPS) software design project. Developed a novel momentum management control system for space station. Performed flexible-body modal analysis for space station. Developed and analyzed novel close-loop endo/exo-atmospheric ascent guidance algorithms for Space Shuttle and the Advanced Launch System (ALS).

EDUCATION:

Rice University, Houston, TX

May 1999 **Ph.D.** in Space Physics and Astronomy

Dissertation: "Classical Electron-Ion Scattering in Strongly Magnetized Plasmas: A Generalized Coulomb Logarithm and Gaunt Factor"

Supervisor: Dr. Jon Weisheit

The University of Texas at Austin, Austin, TX

May 1984 **M.S.** in Aerospace Engineering and Engineering Mechanics

Master's Thesis: "Computer Aided Control System Design"

Supervisor: Dr. Jason Speyer

May 1982 **B.S.** in Aerospace Engineering and Engineering Mechanics

Areas of Concentration: Numerical Methods, Orbital Mechanics

AWARDS AND FELLOWSHIPS:

1997 The Rice University William F. Marlar Outstanding Scholar Award
1996 NASA/Texas Space Grant Consortium Fellowship
1996 Outstanding Student Paper/Poster Award, AIP Atomic Processes in
 Plasmas Conference, San Francisco
1993-1997 Rice University Fellowship
1987-1992 4 NASA/Johnson Space Center Outstanding Performance Awards

PUBLICATIONS

D. Geller, "A Brief Study of Ground Controlled Orbital Rendezvous: When is Autonomy Required?", Submitted to the Journal of Guidance, Dynamics, and Control, August, 2006.

D. Geller, "Analysis of the Relative Attitude Estimation and Control Problem for Satellite Inspection and orbital Rendezvous", Submitted to the Journal of Astronautical Sciences, February, 2006

D. Geller, "Linear Covariance Techniques for Orbital Rendezvous Analysis and Autonomous Onboard Mission Planning", Accepted to the Journal of Guidance, Dynamics, and Control, January, 2006

D. Geller, J. Weisheit, "Classical Electron-Ion Scattering in Strongly Magnetized Plasmas". Paper published in the Physics of Plasmas Journal, Vol. 4, December, 1997.

K. Byun, B. Wie, D. Geller, J. Sunkel, "Robust H(infinity) Control Design for the Space Station with Structured Parameter Uncertainty", Journal of Guidance, Control and Dyn., Vol. 14, No. 6, 1991.

B Wie, K. W. Byun, V. W. Warren, D. Geller, D. Long, J. Sunkel, "New Approach to Attitude/Momentum Control for the Space Station", Journal of Guidance, Control and Dynamics, Vol. 12, No. 5, 1989.

W. Warren, B. Wie, D. Geller, "Periodic-Disturbance Accommodating Control of the Space Station for Asymptotic Momentum Management". Journal of Guidance, Control and Dynamics, Vol. 13, No. 6, 1990.

PAPERS AND PRESENTATIONS:

D. Geller, "A Brief Study of Ground Controlled Orbital Rendezvous: When is Autonomy Required?", AIAA/AAS GN&C Conference, Keystone, CO, August 2006

D. Woffinden, D. Geller, "Relative Angles-Only Navigation and Pose Estimation For Autonomous Orbital Rendezvous", AIAA/AAS GN&C Conference, Keystone, CO, August 2006

N. Stastny, D. Geller, “Autonomous Optical Navigation at Jupiter: A Linear Covariance Analysis”, AIAA/AAS GN&C Conference, Keystone, CO, August 2006

D. Geller, “Analysis of the Relative Attitude Estimation and Control Problem for Satellite Inspection and orbital Rendezvous”, AAS Guidance and Control Conference, Breckenridge, February 2006

D. Geller, “Linear Covariance Techniques for Orbital Rendezvous Analysis and Autonomous Onboard Mission Planning”, AIAA Guidance, Navigation, and Control Conference, San Francisco, August 2005

D. Geller, A. Vaughan, “An Analysis Plan for the Mars Telecommunications Orbiter Rendezvous and Autonomous Navigation Flight Experiment”, AAS 05-214, presented at the AAS/AIAA Space Flight Mechanics Conference, Copper Mountain, CO, 2005.

D. Woffinden, D. Geller, T. Mosher, J. Kwong “On-Orbit Satellite Rendezvous Inspection”, presented at the AAS/AIAA Space Flight Mechanics Conference, Copper Mountain, CO, 2005.

T. Brand, L. Fuhrman, D. Geller, P. Hattis, S. Paschall, Y. C. Tao, “GN&C Technology Needed to Achieve Pinpoint Landing Accuracy at Mars”. Paper presented at the 2004 AIAA GN&C Conference, Providence, RI, August 2004.

J. E. Riedel, J. Guinn, M. Delpach, J. B., Dubois, D. Geller, P. Kachmar, “A Combined Open—Loop and Autonomous Search and Rendezvous Navigation System for the CNES/NASA Mars Premier Orbiter”, AAS 03-012 presented at the 26th Annual AAS Guidance and Control Conference, Breckenridge Co, February, 2003.

R. J. Chari, D. K. Geller, H. L. Norris, C. N. D’Souza, T. J. Brand, “Autonomous Orbital Rendezvous Using Angles-Only Navigation”. AAS 01-479 presented at the 2001 AAS/AIAA Astrodynamics Conference, Quebec City, Canada, August 2001.

G. Carman, D. Ives, D. Geller, “Apollo-Derived Mars Precision Lander Guidance”. AIAA 98-4570 presented at the AIAA Atmospheric Flight Mechanics Conference, Boston, August, 1998.

D. Geller, J. Weisheit, “Classical Electron-Ion Scattering in Strongly Magnetized Plasmas”., Presented at the AIP Atomic Processes in Plasmas Conference, San Francisco, January, 1996