Daniel J. Scheeres, PhD.

University of Colorado Distinguished Professor
A. Richard Seebass Endowed Chair
Celestial and Spaceflight Mechanics Laboratory Head
Colorado Center for Astrodynamics Research Member

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Degrees

Ph.D. Aerospace Engineering The University of Michigan, 1992
On symmetric central configurations with application to satellite motion about rings
Prof. N.X. Vinh, Chairman.

M.S.E. Aerospace Engineering The University of Michigan, 1988

B.S.E. Aerospace Engineering (*summa cum laude*) The University of Michigan, 1987

B.S. Letters and Engineering Calvin College, 1985

Professional Positions

The University of Colorado Boulder
Ann & H.J. Smead Department of Aerospace Engineering Sciences

University of Colorado Distinguished Professor	11/14 – present
A. Richard Seebass Endowed Chair Professor	2/08 – present
Associate Chair for Graduate Studies	7/13 – 6/15
Visiting Professor	8/07 – 2/08

The University of Michigan
Department of Aerospace Engineering

Adjunct Professor	2/08 – 9/10
Graduate Chair, Department of Aerospace Engineering	10/06 – 12/07
Associate Professor	9/02 – 1/08
Assistant Professor	9/99 – 8/02

Institute of Space and Astronautical Science, Japan

Visiting Professor, JSPS Fellow	8/05 – 12/05
Japan Society for the Promotion of Science Fellow	5/99 – 8/99

Iowa State University
Department of Aerospace Engineering and Engineering Mechanics

Assistant Professor	8/97 – 8/99

Jet Propulsion Laboratory, California Institute of Technology

Senior Member of Engineering Staff	3/97 – 7/97
Member of the Technical Staff	9/92 – 3/97
Summer Intern/On-call employee	5/89 – 9/92

Honors and awards

- Elected to the International Academy of Astronautics as a Full Member, 2021.
- Elected to the International Academy of Astronautics as a Contributing Member, 2018.
- Best Paper of Conference Award, 27th AAS/AIAA Space Flight Mechanics Conference San Antonio, Texas, February 2017.
- 2017 University of Michigan Engineering Alumni Merit Award for Aerospace Engineering, conferred October 26, 2017.
- 2017 Department of Aerospace Engineering Sciences Faculty Award for Outstanding Research ($1,000 Award).
- Inducted into the National Academy of Engineering, Class of 2017. *For pioneering work on the motion of bodies in strongly perturbed environments such as near asteroids and comets.*
- NASA Center Group Award, Asteroid Redirect Robotic Mission "Option B" Team. *In recognition of the "Option B" design of the Asteroid Redirect Mission.* Awarded September 19, 2015.
- NASA Group Achievement Award, Asteroid Rendezvous and Redirect Mission Team. *For exceptional leadership in developing the Asteroid Redirect Mission Option B robotic capture system and mission operations concept.* Awarded June 2, 2015.
- 2015 Department of Aerospace Engineering Sciences Faculty Award for Distinguished Performance ($1,000 Award).
- Best Paper of Conference Award, 24th AAS/AIAA Space Flight Mechanics Conference Santa Fe, New Mexico, February 2014 (Awarded February 2015).
- Named Distinguished Professor of The University of Colorado by the Board of Regents, 2014.
- Fellow of the American Institute of Aeronautics and Astronautics, 2014.
- 2012 Dirk Brouwer Award Recipient, American Astronautical Society (awarded February 2013). *For his improvement of spacecraft navigation techniques, and application and development of advanced astrodynamics techniques which have had significant impact on current space exploration missions and will enhance capabilities of future missions.*
- Best Paper of Conference Award, 22nd AAS/AIAA Space Flight Mechanics Conference Charleston, South Carolina, February 2012 (Awarded February 2013).

- 2011 Faculty Research Award from the College of Engineering and Applied Science, University of Colorado Boulder (Awarded March 2012, includes $1K stipend).
- John V. Breakwell Lecture, Astrodynamics Symposium, 62nd International Astronautical Federation Congress, October 5, 2011.
- 2010 Dean's Award for Outstanding Research in the College of Engineering and Applied Sciences, University of Colorado Boulder (Awarded August 2011, includes $5K stipend).
- Best Paper of Conference Award, 2010 AIAA/AAS Astrodynamics Specialists Conference Toronto, Ontario, Canada, August 2010 (Awarded August 2011).
- Best Paper of Conference Award, 19th AAS/AIAA Space Flight Mechanics Meeting, Savannah, Georgia, February 2009 (Awarded February 2011).
- Awarded a University of Colorado, College of Engineering Faculty Fellowship, Fall 2009.
- Elected to the Celestial Mechanics Institute, 2008.
- Fellow of the American Astronautical Society, 2008.
- NASA Tech Brief Award for NTR no 43641: "Solar Sail Spaceflight Simulation Software Version 2.0 (S5 v2.0)", 2006.
- Japan Society for the Promotion of Science Fellowship at the Institute of Space and Astronautical Science, Japan, August 15 – December 29, 2005.
- Associate Fellow of the American Institute of Aeronautics and Astronautics, 2003.
- Member of the International Astronomical Union, Commission on Celestial Mechanics and Dynamical Astronomy, 2003.
- NASA Group Achievement Award, NEAR-Shoemaker Mission Team. *For outstanding achievement in conducting the most comprehensive scientific study of Asteroid 433 Eros, including the first rendezvous, orbit, and landing on an asteroid.* Awarded July 9, 2002.
- Best Paper of Conference Award (with F.-Y. Hsiao), 12th AAS/AIAA Space Flight Mechanics Meeting, San Antonio, Texas, January 2002.
- Letters of commendation for exceptional reviewing, AIAA Journal of Guidance, Control, and Dynamics, 2000, 2001, 2004, 2008.
- Japan Society for the Promotion of Science Fellowship at the Institute of Space and Astronautical Science, Japan, May 23 – August 15, 1999.
- Asteroid (8887) 1994LK1 renamed (8887) Scheeres. *Scheeres has pioneered the investigation of the dynamics of orbits close to small, irregularly shaped minor planets. His research has included studies of the short-term evolution and the long-term stability of orbits around radar-derived models of (4179) Toutatis and (4769) Castalia. His work has far-reaching implications for the operation of spacecraft orbiting minor planets, for the cosmogony of satellites of minor planets and for understanding the distribution of non-escaping impact ejecta on small bodies.* Dictionary of Minor Planet Names, 4th Ed., L.D. Schmadel, Springer, 1999, pg. 1069.

- NASA Group Achievement Award, NEAR Project Team. *For development of the NEAR mission and the return of the first Discovery program science data from the successful Mathilde asteroid flyby.* Awarded June 4, 1998.
- The Johns Hopkins University Applied Physics Laboratory Award for an outstanding publication in the category of Special Publications, for contributions to the special issue of *The Journal of Astronautical Sciences*, Vol 43, 1995, devoted to the Near Earth Asteroid Rendezvous Mission.
- Recipient of a Rockwell International Fellowship at The University of Michigan, 1989-1992.
- Graduated *summa cum laude* from The University of Michigan, 1987.

Graduate Students

Ph.D. committees chaired

1. **Weiduo Hu** Defended April 2002
   "Orbital Motion in Uniformly Rotating Second Degree and Order Gravity Fields"
   Committee Chair, University of Michigan
   Professor, Dept. of Aerospace Engineering, BeiHang University, Beijing, China
2. **Esther Morrow** Defended August 2002, University of California - San Diego
   "Solar Sail Orbit Operations"
   Committee Co-Chair
3. **Benjamin Villac** Defended July 2003, Rackham Pre-Doctoral Scholar
   "Dynamics in the Hill Problem with Applications to Spacecraft Maneuvers"
   Committee Chair, University of Michigan
   Applied Physics Laboratory
4. **Fu-Yuen Hsiao** Defended April 2004
   "Stabilizing and Specifying Motion Relative to Unstable Trajectories: Applications to Spacecraft Formation Flight"
   Committee Chair, University of Michigan
   Professor, Department of Aerospace Engineering, Tamkang Univ., Taiwan
5. **Vincent Guibout** Defended September 2004
   "The Hamilton-Jacobi theory for solving two-point boundary value problems: Theory and numerics with application to spacecraft formation flight, optimal control and the study of phase space structure"
   Committee Chair, University of Michigan
   Chief System Engineer, MBDA, Paris, France
6. **Islam Hussein** Defended February 2005
   "Motion Planning for Multi-Spacecraft Interferometric Imaging Systems"
   Committee Chair, University of Michigan
   Applied Defense Solutions

7. **Chandeok Park** Defended February 2006
"The Hamilton-Jacobi Theory for Solving Optimal Feedback Control Problems With General Boundary Conditions"
Committee Chair, University of Michigan
National Research Council Post-Doctoral Fellow, Naval Post-Graduate School
Professor, Yonsei University, Korea.

8. **Leonel Rios-Reyes** Defended September 2006
"Solar Sails: Modeling, Estimation, and Trajectory Control"
Committee Chair, University of Michigan
Aerospace Corporation, El Segundo, CA

9. **Stephen Broschart** Defended September 2006, NASA GSRP Fellow
"Close Proximity Spacecraft Maneuvers Near Irregularly Shaped Small-bodies: Hovering, Translation, and Descent"
Committee Chair, University of Michigan
Microsoft

10. **Marci Paskowitz** Defended October 2006, François-Xavier Bagnoud Fellow
"Orbit Design and Control of Planetary Satellite Orbiters in the Hill 3-Body Problem"
Committee Chair, University of Michigan
AI Solutions

11. **Ryan Park** Defended November 2006
"Nonlinear Trajectory Navigation"
Committee Chair, University of Michigan
Solar Systems Dynamics Group, Jet Propulsion Laboratory

12. **Jared M. Maruskin** Defended January 2008
"On the Dynamical Propagation of Subvolumes and on the Geometry and Variational Principles of Nonholonomic Systems"
Committee Co-Chair, University of Michigan
Professor, Department of Mathematics, San Jose State University

13. **Julie Bellerose** Defended April 2008, Canadian NSERC Fellow
"The Restricted Full Three Body Problem: Applications to Binary Asteroid Exploration"
Committee Chair, University of Michigan
Navigation Systems Section, Jet Propulsion Laboratory

14. **Prashant Patel** Defended June 2008, NASA GSRP Fellow
"Automating the Generation of Feasible Trajectories for Trade Studies"
Committee Co-Chair, University of Michigan
Institute for Defense Analysis, Alexandria, VA

15. **Sharyl Byram** Defended November 2008
"The Effects of Outgassing Jets on the Rotation of a Comet Nucleus and on the Trajectory of an Orbiting Spacecraft"
Committee Chair, University of Michigan
US Naval Observatory

16. **Eugene Fahnestock** Defended December 2008, NDSEG and NSF Fellow
"The Full Two Body Problem: Simulation, Analysis, and Application to the Dynamics, Characteristics, and Evolution of Binary Asteroid Systems"
Committee Chair, University of Michigan
Solar Systems Dynamics Group, Jet Propulsion Laboratory

17. **Eric Gustafson** Defended May 2010
"Stochastic Optimal Control of Spacecraft"
Committee Chair, University of Michigan
Inner Planets Navigation Group, Jet Propulsion Laboratory

18. **Ryan Woolley** Defended June 2010
"Endgame Strategies for Planetary Moon Orbiters,"
Committee Chair, University of Colorado
Mission Design Section, Jet Propulsion Laboratory

19. **Jennifer Hudson** Defended September 2010, NSF Fellow
"Reduction of Low-Thrust Continuous Controls for Trajectory Dynamics and Orbital Targeting,"
Committee Co-Chair, University of Michigan
Professor, Western Michigan University

20. **Oier Penagaricano** Defended September 2010, Gobierno Vasco Predoctoral Fellow
"A Perturbation Theory for Hamilton's Principal Function: Applications to Boundary Value Problems,"
Committee Chair, University of Michigan
Private business owner

21. **Marcus J. Holzinger** Defended April 2011
"Optimal Control Applications in Space Situational Awareness,"
Committee Chair, University of Colorado
Professor, Department of Aerospace Engineering Sciences, University of Colorado

22. **Jay W. McMahon** Defended June 2011, NESSF Scholarship
"An Analytical Theory for the Perturbative Effect of Solar Radiation Pressure on Natural and Artificial Satellites,"
Committee Chair, University of Colorado
Professor, Department of Aerospace Engineering Sciences, University of Colorado

23. **Christine M. Hartzell** Defended May 2012, NESSF Scholarship
"The Dynamics of Near-Surface Dust on Airless Bodies,"
Committee Chair, University of Colorado
Professor, University of Maryland – College Park

24. **Seth Jacobson** Defended October 2012, NESSF Scholarship
"The evolution of small bodies in the Solar System,"
Committee Chair, Department of Astrophysics and Planetary Science, University of Colorado
Professor, Michigan State University

25. **Kohei Fujimoto** Defended April 2013
"New Methods in Optical Track Association and Uncertainty Mapping of Earth-Orbiting Objects,"
Committee Chair, Department of Aerospace Engineering Sciences, University of Colorado
AstroScale

26. **Dylan Boone** Defended May 2013, NESSF Scholarship, Smead Fellow
"Integration of Geodesy Mission Design and Navigation for Planetary Satellite Orbiters,"
Committee Chair, Department of Aerospace Engineering Sciences, University of Colorado
Navigation Systems Section, Jet Propulsion Laboratory

27. **Yu Takahashi** Defended July 2013
"Gravity Field Characterization around Small Bodies,"
Committee Chair, Department of Aerospace Engineering Sciences, University of Colorado
Navigation Systems Section, Jet Propulsion Laboratory

28. **Aaron Rosengren** Defended March 2014. NSF Fellow, Smead Fellow
"Long-term Dynamical Behavior of Highly Perturbed Natural and Artificial Celestial Bodies,"
Committee Chair, Department of Aerospace Engineering Sciences, University of Colorado
Professor, Department of Aerospace Engineering, University of California San Diego

29. **Simon Tardivel** Defended May 2014.
"The Deployment of Scientific Packages to Asteroid Surfaces,"
Committee Chair, Department of Aerospace Engineering Sciences, University of Colorado
CNES, France

30. **Masatoshi Hirabayashi** Defended August 2014. Japanese Government Fellowship.
"Structural Stability of Asteroids,"
Committee Chair, Department of Aerospace Engineering Sciences, University of Colorado
Professor, Department of Aerospace Engineering, Auburn University

31. **Daniel Lubey** Defended October 2015. NDSEG Fellow, NSTRF Fellow, Smead Fellow
"Maneuver Detection and Reconstruction in Data Sparse Systems with an Optimal Control Based Estimator,"
Committee Chair, Department of Aerospace Engineering Sciences, University of Colorado
Jet Propulsion Laboratory

32. **Antonella Albuja** Defended October 2015. AGEP Fellow, NSF Fellow, Smead Fellow
"Rotational Dynamics of Inactive Satellites as a Result of the YORP Effect,"
Committee Chair, Department of Aerospace Engineering Sciences, University of Colorado
Disney

33. **Hyun Chul "Ddard" Ko** Defended November 2015. Korean Government Scholarship
"Representation of Unknown and Unmodeled Space Events for Satellites: Characteristics and Applications,"
Committee Chair, Department of Aerospace Engineering Sciences, University of Colorado
Korean Air Force

34. **In-Kwan Park** Defended December 2015.
"Dynamical Realism and Uncertainty Propagation,"

Committee Chair, Department of Aerospace Engineering Sciences, University of Colorado
LeoLabs

35. **Zubin Olikara** Defended May 2016. NSF Fellow
"Computation Of Quasi-Periodic Tori And Heteroclinic Connections In Astrodynamics Using Collocation Techniques,"
Committee Chair, Department of Aerospace Engineering Sciences, University of Colorado
Jet Propulsion Laboratory

36. **Siamak G. Hesar** Defended June 2016.
"A Framework for Precise Orbit Determination of Small Body Orbiting Spacecraft,"
Committee Chair, Department of Aerospace Engineering Sciences, University of Colorado
Blue Canyon

37. **David A. Surovik** Defended June 2016. NSTRF Fellow
"Autonomous Mission Design in Extreme Orbit Environments,"
Committee Chair, Department of Aerospace Engineering Sciences, University of Colorado
Post-doc, Rutgers University

38. **Nicola Baresi** Defended May 2017. Fulbright Scholar
"Spacecraft Formation Flight on Quasi-periodic Invariant Tori,"
Committee Chair
Smead Department of Aerospace Engineering Sciences, University of Colorado
University of Surrey

39. **Samantha M. Rieger** Defended December 2017. NSF Fellow, NSTRF Fellow, Smead Fellow
"Natural and Artificial Satellite Dynamics and Evolution around Near-Earth Asteroids with Solar Radiation Pressure,"
Committee Chair
Smead Department of Aerospace Engineering Sciences, University of Colorado
NASA GSFC

40. **Jonathan D. Aziz** Defended March 2018. NSTRF Fellow
"Low-Thrust Many-Revolution Trajectory Optimization,"
Committee Chair
Smead Department of Aerospace Engineering Sciences, University of Colorado
The Aerospace Corporation

41. **Nathan L.O. Parrish** Defended May 2018. NSTRF Fellow
"Low Thrust Trajectory Optimization in Cislunar and Translunar Space,"
Committee Chair
Smead Department of Aerospace Engineering Sciences, University of Colorado
Advanced Space

42. **Stefaan Van wal** Defended May 2018.
"High-Fidelity Simulation of Small-Body Lander/Rover Spacecraft,"
Committee Chair
Smead Department of Aerospace Engineering Sciences, University of Colorado
GOM Space

43. **Stijn De Smet** Defended November 2018.
"On the design of solar gravity driven planetocentric transfers using artificial neural networks,"
Committee Chair
Smead Department of Aerospace Engineering Sciences, University of Colorado
Space-NAV

44. **Alex Davis** Defended June 2020. NSF Fellow
"On Binary Asteroids: Dynamics, Formation and Parameter Estimation,"
Smead Department of Aerospace Engineering Sciences, University of Colorado
Mission Design Section, Jet Propulsion Laboratory

45. **Conor Benson** Defended June 2021. NSF Fellow, NSTRF Fellow, Smead Fellow
"Solar Torque and Dissipation Dynamics for Tumbling Bodies: Theory and Observations,"
Department of Aerospace Engineering Sciences, University of Colorado
Post-Doc, University of Colorado

46. **Marielle Pellegrino** Defended July 2021. Smead Fellow, Draper Fellow
"Using Solar Radiation Pressure and Luni-Solar Resonances for Debris Mitigation,"
Department of Aerospace Engineering Sciences, University of Colorado
Odyssey Space

47. **Vishal Ray** Defended November 2021. FINESST Fellow
"Advances in atmospheric drag force modeling for satellite orbit prediction and density estimation,"
Department of Aerospace Engineering Sciences, University of Colorado
Post-doc, University of Colorado

48. **Chandrakanth Venigalla** Defended November 2021. NSTRF Fellow
"Multi-Spacecraft Cooperative and Non-Cooperative Trajectory Optimization,"
Department of Aerospace Engineering Sciences, University of Colorado
Flight path control section, Jet Propulsion Laboratory

49. **Kristin Nichols** Defended December 2021. NSTRF Fellow
"Electrostatically-Driven Dust Lofting and Migration on Small Bodies,"
Department of Aerospace Engineering Sciences, University of Colorado

50. **Erica Jenson** Defended July 2022. NSF Fellow, NSTRF Fellow
"Stochastic Optimal Control to Minimize State Uncertainty,"
Department of Aerospace Engineering Sciences, University of Colorado

51. **Shota Takahashi** Defended July 2022.
"Autonomous Exploration of Small Near-Earth Asteroids,"
Department of Aerospace Engineering Sciences, University of Colorado

52. **Ryotaro Sakamoto** Defended February 2023.
"Modeling of Deformation and Energy Dissipation for a Tumbling Body,"
Department of Aerospace Engineering Sciences, University of Colorado

53. **Oscar Fuentes Muñoz** Defended July 2023. Balsells Fellow
"Semi-analytical Methods of Orbit Propagation for Near-Earth Asteroids,"
Department of Aerospace Engineering Sciences, University of Colorado

54. **David Lujan** Defended August 2023.
"Methods to Explore Families of Quasi-Periodic Orbits with Applications in Astrodynamics," Department of Aerospace Engineering Sciences, University of Colorado

55. **Jesse A. Greaves** Defended August 2023.
"Autonomous Navigation for Distributed Space Systems via Spacecraft to Spacecraft Absolute Tracking," Department of Aerospace Engineering Sciences, University of Colorado

56. **Yashica Khatri** Defended November 2023.
"Semi-Analytical Uncertainty Propagation and Conjunction Assessment," Department of Aerospace Engineering Sciences, University of Colorado

Ph.D. Candidates

Damennick Henry Smead Fellow, NSTRF Fellow
Department of Aerospace Engineering Sciences, University of Colorado

Alex Meyer Department of Aerospace Engineering Sciences, University of Colorado

Luke Peterson NDSEG Fellow
Department of Aerospace Engineering Sciences, University of Colorado

Gavin Brown Department of Aerospace Engineering Sciences, University of Colorado

Pre-Candidates

Jordan Murphy NSTRGO Fellow
Department of Aerospace Engineering Sciences, University of Colorado

Robyn Natherson NSF Fellow, NSTRGO Fellow
Department of Aerospace Engineering Sciences, University of Colorado

Oliver Boodram Department of Aerospace Engineering Sciences, University of Colorado

Evangelina Evans Smead Fellow
Department of Aerospace Engineering Sciences, University of Colorado

Hai-Shuo Wang Department of Aerospace Engineering Sciences, University of Colorado

Adrien Legrand Department of Aerospace Engineering Sciences, University of Colorado

Queenique Dinh Department of Aerospace Engineering Sciences, University of Colorado

M.S. committees chaired

David J.-P. Dechambre Defended Fall 2000, The University of Michigan
"Computation of Ellipsoidal Gravity Field Harmonics for Small Solar System Bodies"
Committee Chair

Nathan C. Shupe Defended Fall 2010, The University of Colorado
"Orbit Options for an Orion-Class Spacecraft Mission to a Near-Earth Object,"
Committee Chair

Travis S.J. Gabriel Defended Spring 2015, The University of Colorado
"Effects of Energy Dissipation in the Sphere-Restricted Full Three-Body Problem,"
Committee Chair

Sergio Coll Ibars Defended December 2023, The University of Colorado
"Asteroid gravity field estimation using a gravity gradiometer,"
Committee Co-Chair, with Prof. P. Axelrad

Research Interests

Celestial Mechanics

Development of precise constraints on the gravitational evolution of multi-body distributed systems, accounting for coupling between rotational, translational and deformational motion.

Astrodynamics

Investigation of orbital dynamics of highly perturbed systems using analytical, semi-analytical, and numerical methods. Specific problems of current interest include:

- Orbit mechanics about planetary satellites with applications to Lunar and Europa Orbiter missions
- Orbital motion about asteroids and comets with applications to NASA and international space science missions
- Spacecraft formation flight dynamics
- Spacecraft dynamics in unstable orbital environments with applications to missions to Earth-Sun and Earth-Moon libration points
- Space Situational Awareness

Navigation, Orbit Determination and Control

Investigation of spacecraft navigation and non-linear optimal control of spacecraft and mechanical systems in challenging environments. Specific problems of interest include:

- Dynamical evolution of satellites subjected to solar radiation pressure using precision models
- Orbit determination and correlation of single-pass observations
- Metrics and constraints for maneuvering vehicles in Earth orbit
- Precision modeling of non-gravitational models for spacecraft and natural bodies
- Optimal non-linear feedback control exploiting Hamiltonian formalisms
- Navigation and control of spacecraft for sampling small body surfaces
- Navigation models of comet outgassing
- Navigation models of solar sail spacecraft
- Orbit determination and statistical control of spacecraft in unstable orbital environments

Planetary Science

The scientific study of small bodies in the solar system

- PI on NASA SIMPLEx mission Janus, currently in Phase C/D
- Co-I on NASA's DART mission

- Radio Science Lead and Co-Investigator on the New Frontiers OSIRIS-REx Asteroid Sample Return Mission
- Co-Investigator on the Astrodynamics Science Team of the Japanese Hayabusa Mission to Asteroid Itokawa and the Hayabusa2 Mission to Asteroid Ryugu
- Participating Scientist on the Radiometric Science Team of NASA's Near Earth Asteroid Rendezvous Mission to Asteroid Eros
- Investigations into the mechanics and dynamics of the asteroid and comet environment
- Formation and evolution of small-body binary systems
- PI on a submitted Discovery Mission Proposal: Binary Asteroid in-situ Explorer (*BASiX*) Mission.
- Co-I on several proposed NASA Discovery and New Frontiers missions.

Publications

Submitted Journal Articles and Notes

1. R. Natherson and **D.J. Scheeres**. "Reachable Set Computation with Terminal Velocity Constraints," submitted to *Journal of Guidance, Control and Dynamics*, 12/2023.

2. Petr Pravec, Alex J. Meyer, Peter Scheirich, **Daniel J. Scheeres**, Conor J. Benson and Harrison F. Agrusa. "Rotational lightcurves of Dimorphos and constraints on its post-DART impact spin state," submitted to *Icarus*, 12/2023.

3. D. Lujan and **D.J. Scheeres**. "Optimization Over Families of Quasi-Periodic Orbits," submitted to *Journal of the Astronautical Sciences*, 10/2023.

4. J. Greaves and **D.J. Scheeres**. "Autonomous Information Gathering for Distributed Space Systems using Relative Optical Sensing," submitted to *Journal of Guidance, Control and Dynamics*, 10/2023.

5. Y. Khatri and **D.J. Scheeres**. "Hybrid Method of Uncertainty Propagation for Near-Earth Conjunction Analysis," submitted to *Journal of Guidance, Control and Dynamics*, 9/2023.

6. Kyosuke Sato, Mai Bando, Shinji Hokamoto, E.L. Jenson and **D.J. Scheeres**. "Data-Driven Nonlinear Optimal Control Using Koopman Operator for Hamilton Flow," submitted to *Journal of Guidance, Control and Dynamics*, 8/2023.

7. J. Greaves and **D.J. Scheeres**. "Spacecraft to Spacecraft Absolute Tracking for Autonomous Navigation of a Distributed Space System from Relative Sensors," submitted to *Journal of the Astronautical Sciences*, 6/2023.

8. Juan F. Gutierrez; Keric Hill; Erica L. Jenson; Daniel J. Scheeres; Jill C. Bruer; Ryan D. Coder. "Classifying State Uncertainty for Earth-Moon Trajectories," submitted to *Journal of the Astronautical Sciences*, 2/2023.

Journal Articles and Notes

1. Nancy L. Chabot, Andrew S. Rivkin, Andrew F. Cheng, Olivier S. Barnouin, Eugene G. Fahnestock, Derek C. Richardson, Angela M. Stickle, Cristina A. Thomas, Carolyn M. Ernst, R. Terik Daly, Elisabetta Dotto, Angelo Zinzi, Steven R. Chesley, Nicholas A. Moskovitz, Brent W. Barbee, Paul Abell, Harrison F. Agrusa, Michele T. Bannister, Joel Beccarelli, Dmitriy L. Bekker, Megan Bruck Syal, Bonnie J. Buratti, Michael W. Busch, Adriano Campo Bagatin, Joseph P. Chatelain, Sidney Chocron, Gareth S. Collins, Luca Conversi, Thomas M. Davison, Mallory E. DeCoster, J. D. Prasanna Deshapriya, Siegfried Eggl, Raymond C. Espiritu, Tony L. Farnham, Marin Ferrais, Fabio Ferrari, Dora Fohring, Oscar Fuentes-Muñoz, Igor Gai, Carmine Giordano, David A. Glenar, Edward Gomez, Dawn M. Graninger, Simon F. Green, Sarah Greenstreet, Pedro H. Hasselmann, Isabel Herreros, Masatoshi Hirabayashi, Marek Husarik, Simone Ieva, Stavro L. Ivanovski, Samuel L. Jackson, Emmanuel Jehin, Martin Jutzi, Ozgur Karatekin, Matthew M. Knight, Ludmilla Kolokolova, Kathryn M. Kumamoto, Michael Kuppers, Fiorangela La Forgia, Monica Lazzarin, Jian-Yang Li, Tim A. Lister, Ramin Lolachi, Michael P. Lucas, Alice Lucchetti, Robert Luther, Rahil Makadia, Elena Mazzotta Epifani, Jay McMahon, Gianmario Merisio, Colby C. Merrill, Alex J. Meyer, Patrick Michel, Marco Micheli, Alessandra Migliorini, Kate Minker, Dario Modenini, Fernando Moreno, Naomi Murdoch, Brian Murphy, Shantanu P. Naidu, Hari Nair, Ryota Nakano, Cyrielle Opitom, Jens Ormo, J. Michael Owen, Maurizio Pajola, Eric E. Palmer, Pasquale Palumbo, Paolo Panicucci, Laura M. Parro, Jason M. Pearl, Antti Penttila, Davide Perna, Elisabeta Petrescu, Petr Pravec, Sabina D. Raducan, K. T. Ramesh, Ryan Ridden-Harper, Juan L. Rizos, Alessandro Rossi, Nathan X. Roth, Agata Rozek, Benjamin Rozitis, Eileen V. Ryan, William H. Ryan, Paul Sánchez, Toni Santana-Ros, **Daniel J. Scheeres**, Peter Scheirich, Cem Berk Senel, Colin Snodgrass, Stefania Soldini, Damya Souami, Thomas S. Statler, Rachel Street, Timothy J. Stubbs, Jessica M. Sunshine, Nicole J. Tan, Gonzalo Tancredi, Calley L. Tinsman, Paolo Tortora, Filippo Tusberti, James D. Walker, Dany C. Waller, Kai Wunnemann, Marco Zannoni, Yun Zhang. "Achievement of the Planetary Defense Investigations of the Double Asteroid Redirection Test (DART) Mission," *Planetary Science Journal* in press, 12/2023.

2. G.M. Brown and **D.J. Scheeres**. "A Global Method to Compute Asteroid Equilibrium Points for Any Spin Rate," *Journal of Guidance, Control and Dynamics* in press, 11/2023.

3. O. Boodram and **D.J. Scheeres**. "Constrained Evolution of Hamiltonian Phase Space Distributions in the Presence of Natural, Non-conservative Forces," *Celestial Mechanics & Dynamical Astronomy* in press, 11/2023.

4. D.B. Henry and **D.J. Scheeres**. 2024. "Fully numerical computation of heteroclinic connection families in the spatial three-body problem," *Communications in Nonlinear Science and Numerical Simulation* 130: 107780, March 2024.

5. E.L. Jenson and **D.J. Scheeres**. 2024. "Bounding Nonlinear Stretching About Spacecraft Trajectories Using Tensor Eigenpairs," *Acta Astronautica* 214: 159-166.

6. L.T. Peterson and **D.J. Scheeres**. 2023. "Local Orbital Elements for the Circular Restricted Three-Body Problem," *Journal of Guidance, Control and Dynamics* 46(12): 2275-2289.

7. G.M. Brown and **D.J. Scheeres**. 2023. "Analyzing the Structure of Orbit Families that Exist Around Asteroid (101955) Bennu," *Celestial Mechanics & Dynamical Astronomy* (2023) 135:52.

8. L.T. Peterson, J.J. Rosales and **D.J. Scheeres**. 2023. "The Vicinity of Earth-Moon L1 and L2 in the Hill Restricted 4-Body Problem," *Physica D: Nonlinear Phenomena* 455 (2023) 133889.

9. D.B. Henry and **D.J. Scheeres**. 2023. "Quasi-periodic Orbit Transfer Design via Whisker Intersection Sets," *Journal of Guidance, Control and Dynamics* 46(10): 1929-1944.

10. Shota Kikuchi, Yuya Mimasu, Yuto Takei, Takanao Saiki, **Daniel J. Scheeres**, Masatoshi Hirabayashi, Koji Wada, Makoto Yoshikawa, Sei-ichiro Watanabe, Satoshi Tanaka, Yuichi Tsuda. 2023. "Preliminary design of the Hayabusa2 extended mission to the fast-rotating Asteroid 1998 KY26," *Acta Astronautica* 211 (2023) 295-315.

11. **D.J. Scheeres** and G.M. Brown. 2023. "Bounds on Energy and Angular Momentum Loss in the Full n-Body Problem," *Celestial Mechanics and Dynamical Astronomy* (2023) 135:35.

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95. N. Baresi, Z. Olikara and **D.J. Scheeres**. "Survey Of Numerical Methods For Computing Quasiperiodic Invariant Tori In Astrodynamics," paper presented at the AAS/AIAA Spaceflight Mechanics Meeting, Napa Valley, California, February 2016. Paper AAS 16-332

96. M. Bando and **D.J. Scheeres**. "Attractive Set Of Optimal Feedback Control For The Hill Three-Body Problem," paper presented at the AAS/AIAA Spaceflight Mechanics Meeting, Napa Valley, California, February 2016. Paper AAS 16-440

97. A. Albuja, R. Cognion, W. Ryan, E. Ryan and **D.J. Scheeres**. "Rotational Dynamics Of The Goes 8 And Goes 10 Satellites Due To The Yorp Effect," paper presented at the AAS/AIAA Spaceflight Mechanics Meeting, Napa Valley, California, February 2016. Paper AAS 16-416

98. D. Lubey and **D.J. Scheeres**. "State Estimation and Maneuver Reconstruction with The Nonlinear Adaptive Optimal Control Based Estimator," paper presented at the AAS/AIAA Spaceflight Mechanics Meeting, Napa Valley, California, February 2016. Paper AAS 16-423

99. S.G. Hesar, **D.J. Scheeres**, J.W. McMahon and Y. Takahashi. "Surface Proximity Gravitational Field Analysis Of The Asteroid 433 Eros," paper presented at the AAS Guidance, Navigation and Control Meeting, Breckenridge, Colorado, February 2016. Paper AAS 16-104

100. **D.J. Scheeres**, S. Van wal, P. Sánchez, N. Baresi and S. Tardivel. "Deployment And Dynamics Of Surface Packages For Small Body Exploration," paper presented at the 2015 International Astronautical Congress, Jerusalem, Israel, October 2015. Paper IAC-15-A3.4.7

101. N. Baresi, D.P. Lubey and **D.J. Scheeres**. "Model Estimation Using Hovering Satellites About Asteroids," paper presented at the 2015 International Astronautical Congress, Jerusalem, Israel, October 2015. Paper IAC-15.C1.7.1x29322

102. I. Park and **D.J. Scheeres**. "A Hybrid Method for Uncertainty Propagation of Orbital Motion around the Earth," paper presented at the 25th International Symposium on Spacecraft Dynamics, Munich, Germany, October 2015.

103. D.A. Surovik and **D.J. Scheeres**. "Abstraction predictive control for chaotic spacecraft orbit design," in IFAC Conference on Nonlinear Model Predictive Control, September 2015.

104. H.C. Ko and **D.J. Scheeres**. "Orbit Determination and Maneuver Detection Using Event Representation with Thrust-Fourier-Coefficients," paper presented at the 2015 AMOS Conference, Wailea, Maui, September 2015.

105. D.P. Lubey and **D.J. Scheeres**. "Towards Real-Time Maneuver Detection: Automatic State and Dynamics Estimation with the Adaptive Optimal Control Based Estimator," paper presented at the 2015 AMOS Conference, Wailea, Maui, September 2015.

106. J.D. Feldhacker, B.A. Jones, A. Doostan, **D.J. Scheeres** and J.W. McMahon. "Shape Dependence of Kinetic Deflection for a Survey of Real Asteroids," paper presented at the AAS/AIAA Astrodynamics Meeting, Vail, Colorado, August 2015. Paper AAS 15-642

107. J.W. McMahon, **D.J. Scheeres**, D. Farnocchia and S.R. Chesley. "Optimizing Small Body Gravity Field Estimation Over Short Arcs," paper presented at the AAS/AIAA Astrodynamics Meeting, Vail, Colorado, August 2015. Paper AAS 15-669

108. J.W. McMahon, N. Baresi and **D.J. Scheeres**. "On the Projection of Covariance Ellipsoids onto Non-planar Surfaces for Small Body Landing Analysis," paper presented at the AAS/AIAA Astrodynamics Meeting, Vail, Colorado, August 2015. Paper AAS 15-667

109. I. Park and **D.J. Scheeres**. "Analytical Conversion of Mean Orbital Elements into Soculating Elements for Frozen Orbit About Asteroids," paper presented at the AAS/AIAA Astrodynamics Meeting, Vail, Colorado, August 2015. Paper AAS 15-803

110. H.C. Ko and **D.J. Scheeres**. "Maneuver Detection with Event Representation using Thrust-Fourier-Coefficients," paper presented at the AAS/AIAA Astrodynamics Meeting, Vail, Colorado, August 2015. Paper AAS 15-631

111. S. Hesar, **D.J. Scheeres** and J.W. McMahon. "Sensitivity Analysis of the OSIRIS-REx Terminator Orbits to Random De-Sat Maneuvers," paper presented at the AAS/AIAA Astrodynamics Meeting, Vail, Colorado, August 2015. Paper AAS 15-565

112. O. Penagaricano Munoa and **D.J. Scheeres**. "Analytical Perturbation Theory for Dissipative Forces in Two-Point Boundary Value Problems," paper presented at the AAS/AIAA Astrodynamics Meeting, Vail, Colorado, August 2015. Paper AAS 15-684

113. D. Lubey and **D.J. Scheeres**. "Automated State and Dynamics Estimation in Dynamically Mismodeled Systems with Information From Optimal Control Policies," paper presented at the 18th International Conference on Information Fusion, Washington, D.C., July 2015. Paper AAS 15-252

114. **D.J. Scheeres** "Stable and Minimum Energy Configurations in the Spherical, Equal Mass Full 4-Body Problem," invited paper presented at the 2015 International Conference on Computational & Experimental Engineering and Sciences (ICCES) Mini-Symposium: Computational Methods in Celestial Mechanics, July 2015.

115. **D.J. Scheeres**. "Exploration of Rubble Pile Body Geophysics by Missions to NEA Binaries," paper presented at the International Symposium on Space Technology and Science, July 2015.

116. A.A. Albuja and **D.J. Scheeres**. "Representation of Short Period Variations in an Inactive Satellite's Rotational State Due to the YORP Effect," paper presented at the International Symposium on Space Technology and Science, July 2015.

117. D.A. Surovik and **D.J. Scheeres**. "Planning payload deployment to small bodies via reachability analysis," paper presented at the International Symposium on Space Technology and Science, July 2015.

118. D.A. Surovik and **D.J. Scheeres**. "Heuristic search and receding-horizon planning in complex spacecraft orbit domains," paper presented at the International Conference on Automated Planning and Scheduling, June 2015.

119. N. Baresi, **D.J. Scheeres** and H. Schaub. "Bounded Relative Orbits About Asteroids for Formation Flying and Applications," paper presented at the 8th International Workshop on Satellite Constellations and Formation Flying, Delft, Netherlands, June 2015.
Selected as the best student paper of the conference.

120. **D.J. Scheeres**, J.W. McMahon, B.A. Jones and A. Doostan. "Variation of Delivered Impulse as a Function of Asteroid Shape," paper presented at the 2015 IEEE Aerospace Conference, Big Sky, Montana, March 2015.

121. D. Lubey, A. Doostan and **D.J. Scheeres**. "Estimating Object-Dependent Natural Orbital Dynamics with Optimal Control Policies: A Validation Study," paper presented at the AAS/AIAA Spaceflight Mechanics Meeting, Williamsburg, Virginia, January 2015. Paper AAS 15-252

122. D. Lubey and **D.J. Scheeres**. "Robust Tracking and Dynamics Estimation with the Automated Optimal Control Based Estimator," paper presented at the AAS/AIAA Spaceflight Mechanics Meeting, Williamsburg, Virginia, January 2015. Paper AAS 15-251

123. K. DeLuca and **D.J. Scheeres**. "Divergence Characteristic of the Exterior Spherical Harmonic Gravity Potential," paper presented at the AAS/AIAA Spaceflight Mechanics Meeting, Williamsburg, Virginia, January 2015. Paper AAS 15-427

124. S. Tardivel and **D.J. Scheeres**. "Accurate deployment of landers to dynamically challenging asteroids," paper presented at the AAS/AIAA Spaceflight Mechanics Meeting, Williamsburg, Virginia, January 2015. Paper AAS 15-424

125. A. Albuja and **D.J. Scheeres**. "Short Period Variations in Angular Velocity and Obliquity of Inactive Satellites Due to the YORP Effect," paper presented at the AAS/AIAA Spaceflight Mechanics Meeting, Williamsburg, Virginia, January 2015. Paper AAS 15-264

126. **D.J. Scheeres**, S. Van wal and S. Tardivel. "Flyby-Only Science Operations for an Asteroid Exploration Mission," paper presented at the AAS GNC Meeting, Breckenridge, Colorado, February 2015. Paper AAS 15-121.

127. H.C. Ko and **D.J. Scheeres**. "Orbit Determination Across Unknown Maneuvers Using The Essential Thrust Fourier Coefficients," paper presented at the 2014 International Astronautical Congress, Toronto, Canada, September 2014. Paper IAC-14.C1.5.1

128. R. Cognion, A. Albuja and **D.J. Scheeres**. "Tumbling Rates Of Inactive Geo Satellites," paper presented at the 2014 International Astronautical Congress, Toronto, Canada, September 2014. Paper IAC-14.C1.2.12

129. H.C. Ko and **D.J. Scheeres**. "Spacecraft Orbit Anomaly Representation Using Thrust-Fourier-Coefficients with Orbit Determination Toolbox," paper presented at the 2014 AMOS Conference, Wailea, Maui, September 2014.

130. A. Albuja and **D.J. Scheeres**. "Effects of Optical and Geometrical Properties on YORP Effect for Inactive Satellites," paper presented at the 2014 AMOS Conference, Wailea, Maui, September 2014.

131. I.-K Park and **D.J. Scheeres**. "Simplified Propagation of Uncertainty in the Non-Keplerian Problem," paper presented at the 2014 AMOS Conference, Wailea, Maui, September 2014.

132. S. Rieger and **D.J. Scheeres**. "Laplace Plane Dynamics with Solar Radiation Pressure in the Vicinity of an Asteroid," paper presented at the 2014 Space Conference, Astrodynamics Specialist Meeting, August 2014. AIAA-2014-4459

133. **D.J. Scheeres** and J. McMahon. "Analytical Metrics for Asteroid Mitigation," paper presented at the 2014 Space Conference, Astrodynamics Specialist Meeting, August 2014. AIAA-2014-4425

134. A. Sanyal, M. Izadi, **D.J. Scheeres**, G. Misra and E. Samiei. "Estimation of Dynamics of Space Objects from Visual Feedback during Proximity Operations," paper presented at the 2014 Space Conference, Astrodynamics Specialist Meeting, August 2014. AIAA-2014-4419

135. Y. Takahashi and **D. Scheeres**. "Spherical Harmonic Potentials within the Brillouin Sphere," paper presented at the 2014 Space Conference, Astrodynamics Specialist Meeting, August 2014. AIAA-2014-4302

136. D. Surovik and **D.J. Scheeres**. "Autonomous Maneuver Planning at Small Bodies via Mission Objective Reachability Analysis," paper presented at the 2014 Space Conference, Astrodynamics Specialist Meeting, August 2014. AIAA-2014-4147

137. J. McMahon and **D. Scheeres**. "Linearized Lambert's Solution for Computationally Efficient Applications," paper presented at the 2014 Space Conference, Astrodynamics Specialist Meeting, August 2014. AIAA-2014-4150

138. N. Baresi and **D.J. Scheeres**. "Estimation of Asteroid Landing Trajectories Via Line-Of-Sight Measurements," paper presented at the 2014 Space Conference, Astrodynamics Specialist Meeting, August 2014. AIAA-2014-4143

139. I. McNally, **D.J. Scheeres** and G. Radice. "Attitude Dynamics of Large Geosynchronous Solar Power Satellites," paper presented at the 2014 Space Conference, Astrodynamics Specialist Meeting, August 2014. AIAA-2014-4123

140. D.G. Yarnoz, **D.J. Scheeres** and C. McInnes, "On the a and g Families of Symmetric Periodic Orbits in the Photogravitational Hill Problem and Their Application to Asteroids," paper presented at the 2014 Space Conference, Astrodynamics Specialist Meeting, August 2014. Paper AIAA 2014-4119.

141. **D.J. Scheeres**. "Close Proximity Dynamics and Control about Asteroids," invited tutorial paper presented at the 2014 ACC Conference, Portland, Oregon, June 2014.

142. D.P. Lubey and **D.J. Scheeres**. "Combined Optimal Control and State Estimation for the Purposes of Maneuver Detection and Reconstruction," paper presented at the 2014 ACC Conference, Portland, Oregon, June 2014.

143. S. Tardivel, **D.J. Scheeres** and P. Michel. "High-altitude deployment of landers to asteroid surfaces using natural manifolds," paper presented at the 2014 AAS/AIAA Spaceflight Mechanics Meeting, Santa Fe, New Mexico, January 2014. Paper AAS 14-355. *Selected as best paper of the conference*

144. D. Lee, A. Sanyal, E. Butcher and **D.J. Scheeres**. "Finite-Time Observer For Rigid Spacecraft Motion Over An Asteroid," paper presented at the 2014 AAS/AIAA Spaceflight Mechanics Meeting, Santa Fe, New Mexico, January 2014. Paper AAS 14-260.

145. D. Lee, A. Sanyal, E. Butcher and **D.J. Scheeres**. "Finite-Time Control For Body-Fixed Hovering Of Rigid Spacecraft Over An Asteroid," paper presented at the 2014 AAS/AIAA Spaceflight Mechanics Meeting, Santa Fe, New Mexico, January 2014. Paper AAS 14-221.

146. J. McMahon and **D.J. Scheeres**, "Asteroid Proximity Navigation using Direct Altimetry Measurements." paper presented at the 2014 AAS/AIAA Spaceflight Mechanics Meeting, Santa Fe, New Mexico, January 2014. Paper AAS 14-354.

147. **D.J. Scheeres**, E.I. Asphaug, C. Bombardelli, S. Chesley, A. Doostan, E. Herbold, B. Jones, D. Korycansky, J.W. McMahon, P. Miller, J.M. Owen and P. Sńchez. "Comprehensive Modeling Of The Effects Of Hazardous Asteroid Mitigation Techniques," paper presented at the 2014 AAS/AIAA Spaceflight Mechanics Meeting, Santa Fe, New Mexico, January 2014. Paper AAS 14-278.

148. I. McNally, **D.J. Scheeres**, G. Radice. "Orbital Dynamics Of Large Solar Power Satellites: The Geosynchronous Laplace Plane," paper presented at the 2014 AAS/AIAA Spaceflight Mechanics Meeting, Santa Fe, New Mexico, January 2014. Paper AAS 14-445.

149. H. Urrutxua, **D.J. Scheeres**, C. Bombardelli, J.-L. Gonzalo and Jesús Peláez. "What Does It Take To Capture An Asteroid? A Case Study On Capturing Asteroid 2006 RH120," paper presented at the 2014 AAS/AIAA Spaceflight Mechanics Meeting, Santa Fe, New Mexico, January 2014. Paper AAS 14-276.

150. I. McNally, **D.J. Scheeres**, G. Radice and M. Ceriotti. "Orbital Dynamics Of Large Solar Power Satellites," paper presented at the 64th International Astronautical Congress, Beijing, China, October 2013. Paper IAC-13.C3.1.7.

151. H.C. Ko and **D.J. Scheeres**. "Unobserved Maneuver Reconstruction And Propagation Using The Essential Thrust Fourier Coefficients," paper presented at the 64th International Astronautical Congress, Beijing, China, October 2013. Paper IAC-13.C1.1.3.

152. A. Albuja and **D.J. Scheeres**. "Evolution of Angular Velocity for Large Space Debris as a Result of YORP," paper presented at the 64th International Astronautical Congress, Beijing, China, October 2013. Paper IAC-13.A6.2.6.

153. M.W. Busch, M.A. Barucci, L.A.M. Benner, and **D.J. Scheeres** and J.D. Giorgini. "Near-Earth Asteroid 341843 (2008 Ev5), Target Of Esa's Marcopolo-R Mission," paper presented at the 64th International Astronautical Congress, Beijing, China, October 2013. Paper IAC-13.A3.4.5

154. A.J. Rosengren, **D.J .Scheeres** and J.W. McMahon. "The Classical Laplace Plane and its use as a Stable Disposal Orbit for GEO," paper presented at the 2013 AMOS Meeting, Maui, September 2013.

155. A. Albuja and **D.J .Scheeres**. "Defunct Satellites, Rotation Rates and the YORP Effect," paper presented at the 2013 AMOS Meeting, Maui, September 2013.

156. D.P. Lubey and **D.J .Scheeres**. "A Minimum Fuel Based Estimator for Maneuver and Natural Dynamics Reconstruction," paper presented at the 2013 AMOS Meeting, Maui, September 2013.

157. K. Fujimoto, J. Herzog, T. Schildknecht and **D.J. Scheeres**. "Improvements to Optical Track Association with the Direct Bayesian Admissible Region Method," paper presented at the 2013 AMOS Meeting, Maui, September 2013.

158. M. Sanjurjo-Rivo, **D.J .Scheeres**, M. Lara and J. Peláez. "Solution Of Optimal Continuous Low-Thrust Transfer Using Lie Transforms," paper presented at the 2013 AAS/AIAA Astrodynamics Specialist Conference, Hilton Head Island, South Carolina, August 2013. Paper AAS 13-931.

159. K. Fujimoto and **D.J .Scheeres**. "Analytical Non-Linear Conjunction Assessment Via State Transition Tensors In Orbital Element Space," paper presented at the 2013 AAS/AIAA Astrodynamics Specialist Conference, Hilton Head Island, South Carolina, August 2013. Paper AAS 13-913.

160. A.J. Rosengren, **D.J .Scheeres** and J.W. McMahon. "Long-Term Dynamics And Stability Of Geo Orbits: The Primacy Of The Laplace Plane," paper presented at the 2013 AAS/AIAA Astrodynamics Specialist Conference, Hilton Head Island, South Carolina, August 2013. Paper AAS 13-865.

161. D. Lee, A.K. Sanyal, E.A. Butcher and **D.J .Scheeres**. "Spacecraft Hovering Control For Body-Fixed Hovering Over A Uniformly Rotating Asteroid Using Geometric Mechanics," paper presented at the 2013 AAS/AIAA Astrodynamics Specialist Conference, Hilton Head Island, South Carolina, August 2013. Paper AAS 13-821.

162. M. Nazari, R. Wauson, T. Critz, E.A. Butcher and **D.J .Scheeres**. "Observer-Based Body-Frame Hovering Control Over A Tumbling Asteroid," paper presented at the 2013 AAS/AIAA Astrodynamics Specialist Conference, Hilton Head Island, South Carolina, August 2013. Paper AAS 13-820.

163. J.W. McMahon and **D.J .Scheeres**. "Improving Orbit Determination With Low-Order Fourier Solar Radiation Pressure Models," paper presented at the 2013 AAS/AIAA Astrodynamics Specialist Conference, Hilton Head Island, South Carolina, August 2013. Paper AAS 13-774.

164. I.-K. Park, **D.J .Scheeres** and K. Fujimoto. "The Effect Of Dynamical Accuracy For Uncertainty Propagation," paper presented at the 2013 AAS/AIAA Astrodynamics Specialist Conference, Hilton Head Island, South Carolina, August 2013. Paper AAS 13-764.

165. J.W. McMahon and **D.J .Scheeres**. "High-Fidelity Solar Radiation Pressure Effects For High Area-To-Mass Ratio Debris With Changing Shapes," paper presented at the 2013 AAS/AIAA Astrodynamics Specialist Conference, Hilton Head Island, South Carolina, August 2013. Paper AAS 13-763.

166. D.A. Surovik and **D.J .Scheeres**. "Adaptive Envisioning Of Reachable Mission Outcomes For Autonomous Motion Planning At Small Bodies," paper presented at the 2013 AAS/AIAA Astrodynamics Specialist Conference, Hilton Head Island, South Carolina, August 2013. Paper AAS 13-737.

167. D.P. Lubey and **D.J .Scheeres**. "An Optimal Control-Based Estimator For Maneuver Detection And Reconstruction," paper presented at the 2013 AAS/AIAA Astrodynamics Specialist Conference, Hilton Head Island, South Carolina, August 2013. Paper AAS 13-702.

168. K. Fujimoto, **D.J. Scheeres**, J. Herzog and T. Schildknecht. "Applying the Direct Bayesian Admissible Region Approach to The Association of GEO Belt Optical Observations," paper presented at ISTS 2013, The 29th International Symposium on Space Technology and Science, Nagoya-Aichi, Japan, June 2013.

169. Y. Takahashi, **D.J. Scheeres**, and M.W. Busch. "Spin State and Moment of Inertia Characterization of 4179 Toutatis," paper presented at ISTS 2013, The 29th International Symposium on Space Technology and Science, Nagoya-Aichi, Japan, June 2013.

170. K. Fujimoto, **D.J. Scheeres**, J. Herzog and T. Schildknecht. "Association Of Short-Arc Optical Tracks Via The Direct Bayesian Admissible Region: Theory And Application," paper presented at the 6th European Conference on Space Debris, ESA/ESOC Darmstadt, Germany, April 2013.

171. A.J. Rosengren and **D.J. Scheeres**. "Averaged Dynamics Of High Area-To-Mass Ratio Space Debris In Geo," paper presented at the 6th European Conference on Space Debris, ESA/ESOC Darmstadt, Germany, April 2013.

172. **D.J. Scheeres** and B. Sutter. "Design, Dynamics and Stability of the OSIRIS-REx Sun-Terminator Orbits," paper presented at the 23rd AAS/AIAA Space Flight Mechanics Meeting, Kauai, Hawaii, February 2013. Paper AAS 13-411

173. K. Lee, C. Park, S.-Y. Park and **D.J. Scheeres**. "Optimal Formation Keeping near a General Keplerian Orbit under Nonlinear Perturbations," paper presented at the 23rd AAS/AIAA Space Flight Mechanics Meeting, Kauai, Hawaii, February 2013. Paper AAS 13-389

174. H.C. Ko and **D.J. Scheeres**. "Essential Thrust Fourier Coefficient Set of Averaged Gauss' Equations for Orbital Mechanics," paper presented at the 23rd AAS/AIAA Space Flight Mechanics Meeting, Kauai, Hawaii, February 2013. Paper AAS 13-375

175. A. Albuja, **D.J. Scheeres**, J.W. McMahon. "Evolution of Angular Velocity for Space Debris as a Result of YORP," paper presented at the 23rd AAS/AIAA Space Flight Mechanics Meeting, Kauai, Hawaii, February 2013. Paper AAS 13-316

176. Y. Takahashi and **D.J. Scheeres**. "Generalized Density Distribution Estimation for Small Bodies," paper presented at the 23rd AAS/AIAA Space Flight Mechanics Meeting, Kauai, Hawaii, February 2013. Paper AAS13-265.

177. K. Fujimoto and **D.J. Scheeres**. "Non-Linear Bayesian Orbit Determination: Angle Measurements," paper presented at the 63rd International Astronautical Congress, Naples, Italy, October 2012. Paper IAC-12-C1.6.11.

178. A.J. Rosengren and **D.J. Scheeres**. "Long-Term Dynamics of High Area-to-Mass Ration Space Debris in GEO," paper presented at the 63rd International Astronautical Congress, Naples, Italy, October 2012. Paper IAC-12, A6.2.5.

179. K. Miller, R. Dissly, **D.J. Scheeres**, and J. Garvin. "Relative Navigation Sensor Systems for Near Earth Asteroids and Other Challenging Mission Environments," paper presented at the 63rd International Astronautical Congress, Naples, Italy, October 2012. Paper IAC-12-B2.2.12.

180. K. Fujimoto and **D.J. Scheeres**. "Rapid Non-Linear Uncertainty Propagation via Analytical Techniques," paper presented at the 2012 AMOS Meeting, Maui, September 2012.

181. A.J. Rosengren and **D.J. Scheeres**. "Prediction of HAMR Debris Population Distribution Released from GEO Space," paper presented at the 2012 AMOS Meeting, Maui, September 2012.

182. D. Boone and **D.J. Scheeres**. "Understanding and Utilizing Properties of Phase Space near a Periodic Orbit for the Jupiter Europa Orbiter," paper presented at the AIAA/AAS Astrodynamics Specialist Meeting, Minneapolis, August 2012.

183. C. Park, J. H. Yang, and **D.J. Scheeres**. "Optimal Control of Spacecraft Formation Flying Transfers by Using Generating Functions," paper presented at the AIAA/AAS Astrodynamics Specialist Meeting, Minneapolis, August 2012.

184. E. Komendera, E. Bradley, and **D.J. Scheeres**. "Efficiently Locating Impact and Escape Scenarios in Spacecraft Reachability Sets," paper presented at the AIAA/AAS Astrodynamics Specialist Meeting, Minneapolis, August 2012.

185. D.P. Lubey and **D.J. Scheeres**. "Identifying and Quantifying Mis-Modeled Dynamics via Optimal Control Problem Distance Metrics," paper presented at the AIAA/AAS Astrodynamics Specialist Meeting, Minneapolis, August 2012.

186. A.J. Rosengren and **D.J. Scheeres**. "Long-term Dynamics of HAMR Objects in HEO," paper presented at the AIAA/AAS Astrodynamics Specialist Meeting, Minneapolis, August 2012.

187. D.A. Surovik and **D.J. Scheeres**. "Computational Efficiency of Symplectic Integrators for Space Debris Orbit Propagation," paper presented at the AIAA/AAS Astrodynamics Specialist Meeting, Minneapolis, August 2012.

188. K. Fujimoto and **D.J. Scheeres**. "Non-Linear Bayesian Orbit Determination Based on the Generalized Admissible Region," paper presented at Fusion 2012, the 15th International Conference on Information Fusion, Singapore, July 2012.

189. **D.J. Scheeres**, M.A. de Gosson, and J. Maruskin. "Fundamental Limits on Orbit Uncertainty," paper presented at Fusion 2012, the 15th International Conference on Information Fusion, Singapore, July 2012.

190. **D.J. Scheeres** and M.J. Holzinger. "The Control Distance Metric and Constraints on Maneuvering Satellites," paper presented at Fusion 2012, the 15th International Conference on Information Fusion, Singapore, July 2012.

191. Z.P. Olikara and **D.J. Scheeres**. "Numerical Method For Computing Quasi-Periodic Orbits And Their Stability In The Restricted Three-Body Problem," paper presented at the 1st IAA Conference on Dynamics and Control of Space Systems, Porto, Portugal, March 2012.

192. K. Fujimoto and **D.J. Scheeres**. "Non-Linear Propagation of Uncertainty with Non-Conservative Effects," paper presented at the 22nd AAS/AIAA Space Flight Mechanics Meeting, Charleston, South Carolina, January 2012. Paper AAS 12 - 263.

193. Y. Takahashi and **D.J. Scheeres**. "Surface Gravity Fields for Asteroids and Comets," paper presented at the 22nd AAS/AIAA Space Flight Mechanics Meeting, Charleston, South Carolina, January 2012. Paper AAS 12 - 224.
Selected as the "Best Paper" of the Conference.

194. J.W. McMahon and **D.J. Scheeres**. "Appropriate Modeling of Solar Radiation Pressure Effects on Uncontrolled Orbiting Objects for Accurate Dynamical Predictions," paper presented at the 22nd AAS/AIAA Space Flight Mechanics Meeting, Charleston, South Carolina, January 2012. Paper AAS 12 - 215.

195. M.J. Holzinger, K.T. Alfriend, and **D.J. Scheeres**. "Delta-V Distance Object Correlation and Maneuver Detection with Dynamics Parameter Uncertainty and Generalized Constraints," paper presented at the 22nd AAS/AIAA Space Flight Mechanics Meeting, Charleston, South Carolina, January 2012. Paper AAS 12 - 110.

196. M.J. Holzinger and **D.J. Scheeres**. "Reachability Set Subspace Computation for Nonlinear Systems using Sampling Methods," paper presented at the 50th IEEE CDC, Orlando, Florida, December 2011.

197. **D.J. Scheeres**. "Orbital Mechanics about Small Bodies," invited paper presented at the 62nd International Astronautical Congress, Cape Town, South Africa, October 2011.

198. **D.J. Scheeres** and A. Rosengren. "Closed Form Solutions for the Averaged Dynamics of HAMR Objects," paper presented at the 62nd International Astronautical Congress, Cape Town, South Africa, October 2011.

199. M.J. Holzinger and **D.J. Scheeres**. "On-Orbit Range Set Applications," paper presented at the 2011 AMOS Meeting, Maui, September 2011.

200. K. Fujimoto and **D.J. Scheeres**. "Short-Arc Correlation and Initial Orbit Determination For Space-Based Observations," paper presented at the 2011 AMOS Meeting, Maui, September 2011.

201. J.W. McMahon and **D.J. Scheeres**. "A New Look at the Planar Dynamics of Libration-Orbit Coupling for Spacecraft," paper presented at the 2011 AAS/AIAA Astrodynamics Specialist Meeting, Girdwood, Alaska, August 2011. Paper AAS 11-420.

202. N.C. Shupe and **D.J. Scheeres**. "Orbit Options for an Orion-Class Spacecraft Mission to a Near-Earth Object," paper presented at the 2011 AAS/AIAA Astrodynamics Specialist Meeting, Girdwood, Alaska, August 2011. Paper AAS 11-447.

203. D. Boone and **D.J. Scheeres**. "Evaluating Periodic Orbits for the JEO Mission at Europa in terms of Lifetime and Stability," paper presented at the 2011 AAS/AIAA Astrodynamics Specialist Meeting, Girdwood, Alaska, August 2011. Paper AAS 11-518.

204. K. Fujimoto and **D.J. Scheeres**. "Applications of the Admissible Region to Space-Based Observations," paper presented at the 2011 AAS/AIAA Astrodynamics Specialist Meeting, Girdwood, Alaska, August 2011. Paper AAS 11-574.

205. A. Rosengren and **D.J. Scheeres**. "Averaged Dynamics of HAMR Objects: Effects of Attitude and Earth Oblateness," paper presented at the 2011 AAS/AIAA Astrodynamics Specialist Meeting, Girdwood, Alaska, August 2011. Paper AAS 11-594.

206. K. Fujimoto and **D.J. Scheeres**. "Correlation of Multiple Singular Observations and Initial State Estimation by Means of Probability Distributions of High Codimension," paper presented at the 2011 ACC, San Francisco, June 2011.

207. M.J. Holzinger and **D.J. Scheeres**. "LQR Performance Index Distribution with Uncertain Boundary Conditions," paper presented at the 2011 ACC, San Francisco, June 2011.

208. M.J. Holzinger, **D.J. Scheeres** and J. Hauser. "Optimal Reachability Sets Using Generalized Independent Parameters," paper presented at the 2011 ACC, San Francisco, June 2011.

209. K. Fujimoto and **D.J. Scheeres**. "Correlation of Optical Observations of Earth-Orbiting Objects and Initial Orbit Determination with Applications to LEO and Space-Based Observations," paper presented at ISTS 2011, The 28th International Symposium on Space Technology and Science, Okinawa, Japan, June 2011.

210. Y. Takahashi and **D.J. Scheeres**. "Characterization of an Asteroid Gravity Field via Slow Flybys," paper presented at ISTS 2011, The 28th International Symposium on Space Technology and Science, Okinawa, Japan, June 2011.

211. C.M. Hartzell and **D.J. Scheeres**. "Dynamics of Levitating Dust Particles Near Asteroids and the Moon," paper presented at the 2011 AAS/AIAA Spaceflight Mechanics Meeting, New Orleans, February 2011. Paper AAS 11-104.

212. **D.J. Scheeres**, A. Rosengren, and J. McMahon. "The Dynamics of HIgh Area-to-Mass Ratio Objects in Earth Orbit: The Effect of Solar Radiation Pressure," paper presented at the 2011 AAS/AIAA Spaceflight Mechanics Meeting, New Orleans, February 2011. Paper AAS 11-178.

213. S. Tardivel and **D.J. Scheeres**. "A Strategy for Robust Landings on Small Binary Bodies: Application to Asteroid System 1999 KW4," paper presented at the 2011 AAS/AIAA Spaceflight Mechanics Meeting, New Orleans, February 2011. Paper AAS 11-179.

214. K. Fujimoto, **D.J. Scheeres**, and K.T. Alfriend. "Analytical Non-Linear Propagation of Uncertainty in the Two-Body Problem," paper presented at the 2011 AAS/AIAA Spaceflight Mechanics Meeting, New Orleans, February 2011. Paper AAS 11-202.

215. M.J. Holzinger, **D.J. Scheeres**, and R.S. Erwin. "On-Orbit Range Computation Using Gauss' Variational Equations with J_2 Perturbations," paper presented at the 2011 AAS/AIAA Spaceflight Mechanics Meeting, New Orleans, February 2011. Paper AAS 11-243.

216. Y. Takahashi and **D.J. Scheeres**. "Small Body Surface Gravity Field Estimation from Orbit Determination," invited paper presented at the 34th Annual AAS GN&C Conference, Breckenridge, Colorado, February 2011. Paper AAS-11-053.

217. M. Lara, J. Peláez, C. Bombardelli, F.R. Lucas, M. Sanjurjo-Rivo, D. Curreli, E.C. Lorenzini, **D.J. Scheeres**. "Dynamic Stabilization of L_2 Periodic Orbits Using Attitude-Orbit Coupling Effects," paper presented at the 22nd International Symposium on Space Flight Dynamics, San José dos Campos, Brazil, February 28-March 4, 2011.

218. M.J. Holzinger and **D.J. Scheeres**. "Object Correlation and Maneuver Detection Using Optimal Control Performance Metrics," paper presented at the 2010 AMOS Meeting, Maui, September 2010.

219. K. Fujimoto and **D.J. Scheeres**. "Correlation and Initial Orbit Determination for Short-Arc Optical Observations," paper presented at the 2010 AMOS Meeting, Maui, September 2010.

220. D. Boone and **D.J. Scheeres**. "Analysis and Implementation of Geodesy Science for the Jupiter Europa Orbiter Mission," paper presented at the 2010 AIAA/AAS Astrodynamics Specialist Conference, Toronto, August 2010. Paper AIAA-2010-8255.

221. K. Fujimoto and **D.J. Scheeres**. "Correlation of Optical Observations of Earth-Orbiting Objects by Means of Probability Distributions," paper presented at the 2010 AIAA/AAS Astrodynamics Specialist Conference, Toronto, August 2010. Paper AIAA-2010-7975. *Selected as the "Best Paper" of the Conference.*

222. J.S. Hudson and **D.J. Scheeres**. "Equivalent Average Trajectory Dynamics using the Reduced Low-Thrust Coefficients," paper presented at the 2010 AIAA/AAS Astrodynamics Specialist Conference, Toronto, August 2010. Paper AIAA-2010-7829.

223. Y. Takahashi and **D.J. Scheeres**. "Analytical Estimates of Gravity Field via Flybys," paper presented at the 2010 AIAA/AAS Astrodynamics Specialist Conference, Toronto, August 2010. Paper AIAA-2010-8372.

224. J. McMahon and **D.J. Scheeres**. "The Secular Effects of Solar Radiation Pressure on the Orbits of GPS Satellites," paper presented at the 2010 AIAA/AAS Astrodynamics Specialist Conference, Toronto, August 2010. Paper AIAA-2010-.

225. M.J. Holzinger and **D.J. Scheeres**. "Object Correlation, Maneuver Detection, and Maneuver Characterization using Control Effort Metrics with Uncertain Boundary Conditions and Measurements," paper presented at the 2010 AIAA GNC Meeting, Toronto, August 2010. Paper AIAA-2010-8347.

226. K. Fujimoto and **D.J. Scheeres**. "Correlation of Optical Observations of Earth-Orbiting Objects by Means of Probability Distributions," paper presented at the Alfriend Symposium, Monterey, May 2010. Paper AAS 10-319.

227. **D.J. Scheeres** and M. de Gosson. "Applications of Symplectic Topology to Orbit Uncertainty and Spacecraft Navigation," paper presented at the Alfriend Symposium, Monterey, May 2010. Paper AAS 10-304.

228. R.C. Woolley and **D.J. Scheeres**. "Hyperbolic Periodic Orbits in the Three-Body Problem and Their Application to Orbital Capture," paper presented at the Born Symposium, Boulder, May 2010.

229. M.J. Holzinger and **D.J. Scheeres**. "Object Correlation Using Control Effort Metrics with Boundary Condition Uncertainties," paper presented at the US/Russia Space Surveillance Workshop, Maui, Hawaii, April 2010.

230. E.D. Gustafson and **D.J. Scheeres**. "Spacecraft Stochastic Optimal Control," paper presented at the 2010 AAS/AIAA Space Flight Mechanics Meeting, San Diego, February 2010. Paper AAS 10-109.

231. J.S. Hudson and **D.J. Scheeres**. "Determination of Fundamental Low-Thrust Control Frequencies for Fitting Sequences of Orbital States," paper presented at the 2010 AAS/AIAA Space Flight Mechanics Meeting, San Diego, February 2010. Paper AAS 10-213.

232. R.C. Woolley and **D.J. Scheeres**. "Optimal Pathways for Sequences of V-Infinity Leveraging Maneuvers," paper presented at the 2010 AAS/AIAA Space Flight Mechanics Meeting, San Diego, February 2010. Paper AAS 10-219.

233. Y. Takahashi and **D.J. Scheeres**. "Rapid Characterization of a Small Body via Slow Flybys," paper presented at the 2010 AAS/AIAA Space Flight Mechanics Meeting, San Diego, February 2010. Paper AAS 10-244.

234. E.G. Fahnestock, D.D. Durda, K.R. Housen and **D.J. Scheeres**. "Surface Impact or Blast Ejecta Behavior in a Small Binary Asteroid System with Application to in-situ Observation," paper presented at the 2010 AAS/AIAA Space Flight Mechanics Meeting, San Diego, February 2010. Paper AAS 10-248.

235. M.J. Holzinger and **D.J. Scheeres**. "Analytical Reachability Results for a Class of Nonlinear Systems with Ellipsoidal Initial Sets," paper presented at the 2009 Conference on Decision and Control, Shanghai, China, December 2009.

236. J.M. Maruskin and **D.J. Scheeres**. "Metrics on the space of bounded Keplerian orbits and space situational awareness," paper presented at the 2009 Conference on Decision and Control, Shanghai, China, December 2009.

237. M.J. Holzinger and **D.J. Scheeres**. "Reachability Analysis Applied to Space Situational Awareness," paper presented at the 2009 Advanced Maui Optical and Space Surveillance Technologies Conference, Wailea, Maui, Hawaii, September 2009.

238. K.E. Davis, R.L. Anderson, **D.J. Scheeres** and G.H. Born. "Locally Optimal Transfers Between Libration Point Orbits Using Invariant Manifolds," paper presented at the 2009 AAS/AIAA Astrodynamics Specialist Conference, Pittsburgh, August 2009. Paper AAS 09-398.

239. J. Bellerose, H. Yano, and **D.J. Scheeres**. "Solar Radiation Pressure Perturbations at Binary Asteroid Systems," paper presented at the 2009 AAS/AIAA Astrodynamics Specialist Conference, Pittsburgh, August 2009. Paper AAS 09-347.

240. S.B. Broschart, **D.J. Scheeres**, and B.F. Villac. "New Families of Multi-Revolution Terminator Orbits Near Small Bodies," paper presented at the 2009 AAS/AIAA Astrodynamics Specialist Conference, Pittsburgh, August 2009. Paper AAS 09-402.

241. J.W. McMahon and **D.J. Scheeres**. "A New Navigation Force Model for Solar Radiation Pressure," paper presented at the 2009 AAS/AIAA Astrodynamics Specialist Conference, Pittsburgh, August 2009. Paper AAS 09-346.

242. R.C. Woolley and **D.J. Scheeres**. "Shrinking the V-Infinity Sphere: Endgame Strategies for Planetary Moon Orbiters," paper presented at the 2009 AAS/AIAA Astrodynamics Specialist Conference, Pittsburgh, August 2009. Paper AAS 09-377.

243. Y. Tsuda and **D.J. Scheeres**. "State Transition Matrix Approximation Using a Generalized Averaging Method," paper presented at the 2009 AAS/AIAA Astrodynamics Specialist Conference, Pittsburgh, August 2009. Paper AAS 09-444.

244. M.J. Holzinger and **D.J. Scheeres**. "Applied Reachability for Space Situational Awareness and Safety in Spacecraft Proximity Operations," paper presented at the 2009 AIAA Guidance, Navigation and Control Conference, Chicago, August 2009.

245. K. Fujimoto, J.M. Maruskin and **D.J. Scheeres**. "Circular and Zero-inclination Solutions for Optical Observations of Earth-orbiting Objects," paper presented at the 2009 International Symposium on Space Technology and Science Meeting, Tsukuba, Japan, July 2009.

246. **D.J. Scheeres**, K. Fujimoto, J.M. Maruskin, and K.T. Alfriend. "Uncorrelated Optical Observations: Properties and Implications for Object Correlation," US-China Space Surveillance Technical Interchange, Shanghai Astronomical Observatory, CAS, 1-5 June, 2009, Shanghai, China.

247. C.M. Cottingham, W.D. Deininger, R.W. Dissly, K.W. Epstein, D.M. Waller and **D.J. Scheeres**."Asteroid Surface Probes: A Low-Cost Approach for the In Situ Exploration of Small Solar System Objects," paper presented at the 2009 IEEE Big Sky Aerospace Engineering Conference. Paper IEEEAC 1680.

248. K. Davis, R.L. Anderson, G.H. Born and **D.J. Scheeres**. "Connecting Libration Point Orbits of Different Energies Using Invariant Manifolds," paper presented at the 2009 AAS/AIAA Space Flight Mechanics Meeting, Savannah, Georgia, February 9-12, 2009. Paper AAS 09-256.

249. M. Sanjurjo-Rivo, J. Peláez and **D.J. Scheeres**. "Jovian Capture of a Spacecraft With a Self-Balanced Electrodynamic Bare Tether," paper presented at the 2009 AAS/AIAA Space Flight Mechanics Meeting, Savannah, Georgia, February 9-12, 2009. Paper AAS 09-241.

250. D. Curreli, E.C. Lorenzini, C. Bombardelli, M. Sanjurjo-Rivo, F.R. Lucas, J. Peláez, **D.J. Scheeres** and M. Lara. "Exploration of the Jupiter Plasma Torus With a Self-Powered Electrodynamic Tether," paper presented at the 2009 AAS/AIAA Space Flight Mechanics Meeting, Savannah, Georgia, February 9-12, 2009. Paper AAS 09-240.

251. K. Fujimoto and **D.J. Scheeres**. "Circular and Zero-inclination Solutions for Optical Observations of Earth orbiting Objects," paper presented at the 2009 AAS/AIAA Space Flight Mechanics Meeting, Savannah, Georgia, February 9-12, 2009. Paper AAS 09-231.

252. **D.J. Scheeres**. "Orbit Mechanics About Small Asteroids," paper presented at the 2009 AAS/AIAA Space Flight Mechanics Meeting, Savannah, Georgia, February 9-12, 2009. Paper AAS 09-220.
Selected as the "Best Paper" of the Conference.

253. Y. Tsuda and **D.J. Scheeres**. "Computation and Applications of an Orbital Dynamics Symplectic State Transition Matrix," paper presented at the 2009 AAS/AIAA Space Flight Mechanics Meeting, Savannah, Georgia, February 9-12, 2009. Paper AAS 09-158.

254. O. Peñagaricano Muñoa and **D.J. Scheeres**. "A Perturbation Theory for Hamilton's Principal Function," paper presented at the 59th International Astronautical Congress, 2008, Glasgow. Paper IAC-08-C1.3.9.

255. J.E. Bellerose, **D.J. Scheeres** and E.I. Asphaug. "Comparative Study of Target Binary Asteroid Systems: From Observational Data to Analytical Methods," paper presented at the 59th International Astronautical Congress, 2008, Glasgow. Paper IAC-08-A3.5.7.

256. J.M. Maruskin, **D.J. Scheeres**, and K.T. Alfriend. "Orbit Determination of Space Debris," paper presented at the 2008 Advanced Maui Optical and Space Surveillance Technologies Conference.

257. E.G. Fahnestock and **D.J. Scheeres**. "Characterization of Spacecraft and Debris Trajectory Stability within Binary Asteroid Systems," paper presented at the 2008 AIAA/AAS Astrodynamics Specialist Meeting, Honolulu, Hawaii, August 18-21, 2008. AIAA-2008-7203

258. S. Byram and **D.J. Scheeres**. "Spacecraft Dynamics in the Vicinity of a Comet in a Rotating Frame," paper presented at the 2008 AIAA/AAS Astrodynamics Specialist Meeting, Honolulu, Hawaii, August 18-21, 2008. AIAA-2008-7202

259. O. Peñagaricano Muñoa and **D.J. Scheeres**. "A Symplectic Keplerian Map for Perturbed Two- Body Dynamics," paper presented at the 2008 AIAA/AAS Astrodynamics Specialist Meeting, Honolulu, Hawaii, August 18-21, 2008. AIAA-2008-7068

260. L. Rios-Reyes and **D.J. Scheeres**. "Trajectory Control for General Solar Sails," paper presented at the 2008 AIAA/AAS Guidance, Navigation and Control Meeting, Honolulu, Hawaii, August 18-21, 2008. AIAA-2008-6830

261. *M. Nakamiya*, **D.J. Scheeres**, H. Yamakawa and M. Yoshikawa. "Preliminary Analysis of Space Transportation Systems with Spaceports Around Libration Points," paper presented at the 2008 AIAA/AAS Astrodynamics Specialist Meeting, Honolulu, Hawaii, August 18-21, 2008. AIAA-2008-6625

262. J. Hudson and **D.J. Scheeres**. "Trajectory Optimization Using the Reduced Eccentric Anomaly Low- Thrust Coefficients," paper presented at the 2008 AIAA/AAS Astrodynamics Specialist Meeting, Honolulu, Hawaii, August 18-21, 2008. AIAA-2008-6617

263. E. Gustafson and **D.J. Scheeres**. "Dynamically Relevant Local Coordinates for Halo Orbits ," paper presented at the 2008 AIAA/AAS Astrodynamics Specialist Meeting, Honolulu, Hawaii, August 18-21, 2008. AIAA-2008-6432

264. J. Bellerose and **D.J. Scheeres**. "Dynamics and Control for Surface Exploration of Small Bodies," paper presented at the 2008 AIAA/AAS Astrodynamics Specialist Meeting, Honolulu, Hawaii, August 18-21, 2008. AIAA-2008-6251

265. E. Gustafson and **D.J. Scheeres**. "Optimal Timing of Control Law Updates for Unstable Systems with Continuous Control," paper presented at the 2008 American Control Conference, Seattle, Washington, June 13, 2008. FrC15.4.

266. *M. Nakamiya*, **D.J. Scheeres**, H. Yamakawa, and M. Yoshikawa. "Three-Dimensional Analysis of Capture Trajectories to the Periodic Orbits of L1 and L2 Points," paper presented at the 2008 AAS/AIAA Spaceflight Mechanics Meeting, Galveston, Texas, January 27-31, 2008. AAS 08-237.

267. J.E. Bellerose and **D.J. Scheeres**. "Mission to Binary Asteroids: 1999 KW4 as a Case Study," paper presented at the 2008 AAS/AIAA Spaceflight Mechanics Meeting, Galveston, Texas, January 27-31, 2008. AAS 08-170.

268. P. Patel and **D.J. Scheeres**. "A Non-Linear Optimization Algorithm," paper presented at the 2008 AAS/AIAA Spaceflight Mechanics Meeting, Galveston, Texas, January 27-31, 2008. AAS 08-116.

269. J.M. Maruskin, **D.J. Scheeres**, and A.M. Bloch. "Dynamics of Symplectic SubVolumes," paper presented at the 46th IEEE Conference on Decision and Control, New Orleans, Louisiana, December 2007.

270. **D.J. Scheeres**, J.M. Maruskin, and K.T. Alfriend. "Correlation of optical observations of objects in Earth orbit," invited paper S3.2 presented at the Seventh US/Russian Space Surveillance Workshop, Naval Postgraduate School, Monterey, California, October 29-November 1, 2007.

271. **D.J. Scheeres**. "Orbit mechanics about small asteroids," paper presented at the 20th International Symposium on Space Flight Dynamics, Annapolis, Maryland, September 24-28, 2007.

272. J. Peláez and **D.J. Scheeres**. "On the Control of a Permanent Tethered Observatory at Jupiter," paper presented at the 2007 AAS/AIAA Astrodynamics Specialist Conference, Mackinac Island, Michigan, August 19-23, 2007. AAS 07 - 369

273. S.B. Broschart and **D.J. Scheeres**. "On the Implementation of Spacecraft Hovering under Reduced-order Dead- band Control," paper presented at the 2007 AAS/AIAA Astrodynamics Specialist Conference, Mackinac Island, Michigan, August 19-23, 2007. AAS 07 - 397

274. J.M. Maruskin, **D.J. Scheeres** and A.M. Bloch. "SubVolumes in Dynamical Systems and the Tracking of Space Debris," paper presented at the 2007 AAS/AIAA Astrodynamics Specialist Conference, Mackinac Island, Michigan, August 19-23, 2007. AAS 07 - 392

275. J.S. Hudson and **D.J. Scheeres**. "Reduction of Low Thrust Continuous Controls for Trajectory Dynamics," paper presented at the 2007 AAS/AIAA Astrodynamics Specialist Conference, Mackinac Island, Michigan, August 19-23, 2007. AAS 07 - 345

276. S.M. Byram and **D.J. Scheeres**. "Rotational Dynamics of a Comet Nucleus Subject to Outgassing Jets," paper presented at the 2007 AAS/AIAA Astrodynamics Specialist Conference, Mackinac Island, Michigan, August 19-23, 2007. AAS 07 - 335

277. M. Nakamiya, **D.J. Scheeres**, H. Yamakawa, and M. Yoshikawa. "Analysis of Capture Trajectories to the Periodic Orbits in the Vicinity of Libration Points," paper presented at the 2007 AAS/AIAA Astrodynamics Specialist Conference, Mackinac Island, Michigan, August 19-23, 2007. AAS 07 - 320

278. M. Nakamiya, H. Yamakawa, M. Yoshikawa, and **D.J. Scheeres**. "Analysis of Capture Trajectories to Libration Points," paper presented at the 17th AAS/AIAA Space Flight Mechanics Meeting, Sedona, Arizona, January 2007. AAS 07 - 228

279. S. Ross and **D.J. Scheeres**. "Multiple Gravity Assists in the Restricted Three-Body Problem," paper presented at the 17th AAS/AIAA Space Flight Mechanics Meeting, Sedona, Arizona, January 2007. AAS 07 - 227

280. J. Bellerose and **D.J. Scheeres**. "Energy Constraints in the Restricted Full Three-Body Problem: Application to Binary System KW4," paper presented at the 17th AAS/AIAA Space Flight Mechanics Meeting, Sedona, Arizona, January 2007. AAS 07 - 224

281. O. Peñagaricano Muñoa and **D.J. Scheeres**. "A Perturbation Theory for Hamilton's Principal Function: Applications to the Two-Point Boundary Value Problem," paper presented at the 17th AAS/AIAA Space Flight Mechanics Meeting, Sedona, Arizona, January 2007. AAS 07 - 220

282. J. Peláez and **D. J. Scheeres**. "A Permanent Tethered Observatory at Jupiter: Dynamical Analysis," paper presented at the 17th AAS/AIAA Space Flight Mechanics Meeting, Sedona, Arizona, January 2007. AAS 07 - 190

283. P. Patel, **D.J. Scheeres**, A. Gallimore, and T. Zurbuchen. "A Path Based Approach to Finding Optimal Interplanetary Trajectories," paper presented at the 17th AAS/AIAA Space Flight Mechanics Meeting, Sedona, Arizona, January 2007. AAS 07 - 156

284. E.D. Gustafson and **D.J. Scheeres**. "Optimal Control of Uncertain Non-linear Trajectories Using Continuous Thrust," paper presented at the 17th AAS/AIAA Space Flight Mechanics Meeting, Sedona, Arizona, January 2007. AAS 07 - 135

285. M. Paskowitz Possner and **D.J. Scheeres**. "Control of Science Orbits About Planetary Satellites," paper presented at the 17th AAS/AIAA Space Flight Mechanics Meeting, Sedona, Arizona, January 2007. AAS 07 - 132

286. C. Park, **D.J. Scheeres**, A.M. Bloch, and V.M. Guibout. "Globally Optimal Feedback Control Law of the Underactuated Hesienberg System by Generating Functions," paper presented at the 45th IEEE Conference on Decision and Control, San Diego, California, December 2006.

287. J. Bellerose and **D.J. Scheeres**. "Periodic Model of the Restricted Full Three Body Problem," paper presented at the 58th International Astronautical Congress, Valencia, Spain, October 2006.

288. M. Yoshikawa, H. Ikeda, H. Yano, J. Saito, T. Kubota, T. Hashimoto, A. Fujiwara, J. Kawaguchi, T. Kominato, M. Matsuoka, K. Shirakawa, T. Ohnishi, S. Abe, T. Mukai, R. Gaskell, and **D.J. Scheeres**. "Astrodynamics Science about Itokawa, Gravity and Ephemeris," paper presented at the 2006 AIAA/AAS Astrodynamics Specialist Meeting, Keystone, Colorado, August 2006. Paper AIAA-2006-6658

289. **D.J. Scheeres**, R. Gaskell, S. Abe, O. Barnouin-Jha, T. Hashimoto, J. Kawaguchi, T. Kubota, J. Saito, M. Yoshikawa, N. Hirata, T. Mukai, M. Ishiguro, T. Kominato, K. Shirakawa, M. Uo. "The Actual Dynamical Environment About Itokawa," paper presented at the 2006 AIAA/AAS Astrodynamics Specialist Meeting, Keystone, Colorado, August 2006. Paper AIAA-2006-6661

290. R. Gaskell, O. Barnouin-Jha, **D.J. Scheeres**, T. Mukai, N. Hirata, S. Abe, J. Saito, M. Ishiguro, T. Kubota, T. Hashimoto, J. Kawaguchi, M. Yoshikawa, K. Shirakawa, T. Kominato. "Landmark Navigation Studies and Target Characterization in the Hayabusa Encounter with Itokawa," paper presented at the 2006 AIAA/AAS Astrodynamics Specialist Meeting, Keystone, Colorado, August 2006. Paper AIAA-2006-6660

291. E.G. Fahnestock, T. Lee, M. Leok, N.H. McClamroch, and **D.J. Scheeres**. "Polyhedral Potential and Variational Integrator Computation of the Full Two Body Problem," paper presented at the 2006 AIAA/AAS Astrodynamics Specialist Meeting, Keystone, Colorado, August 2006. Paper AIAA-2006-6289.

292. R.S. Park and **D.J. Scheeres**. "Nonlinear Semi-Analytic Method for Spacecraft Navigation," paper presented at the 2006 AIAA/AAS Astrodynamics Specialist Meeting, Keystone, Colorado, August 2006. Paper AIAA-2006-6399.

293. S.M. Byram, **D.J. Scheeres**, and M. Combi. "Realistic Models for the Comet Dynamical Environment," paper presented at the 2006 AIAA/AAS Astrodynamics Specialist Meeting, Keystone, Colorado, August 2006. Paper AIAA-2006-6288.

294. C. Park, **D.J. Scheeres**. "Optimal Control of Spacecraft Orbital Maneuvers by the Hamilton-Jacobi Theory," paper presented at the 2006 AIAA Guidance, Navigation and Control Conference, Keystone, Colorado, August 2006. Paper AIAA-2006-6234.

295. C. Park and **D.J. Scheeres**. "Optimal Control and Hamiltonian Dynamics," paper presented at the 2006 ACC, Minneapolis, Minnesota, June 2006.

296. L. Rios-Reyes and **D.J. Scheeres**. "Solar Sail Navigation: Estimation of Force, Moment, and Optical Parameters," paper presented at the 2006 AAS/AIAA Space Flight Mechanics Meeting, Tampa, Florida, January 2006. AAS 06-225.

297. M.E. Paskowitz and **D.J. Scheeres**. "A Toolbox For Designing Long-Lifetime Orbits About Planetary Satellites: Application to JIMO at Europa," paper presented at the 2006 AAS/AIAA Space Flight Mechanics Meeting, Tampa, Florida, January 2006. AAS 06-191. Invited paper.

298. J. Bellerose and **D.J. Scheeres**. "Periodic Orbits in the Full Two-Body Problem," paper presented at the 2006 AAS/AIAA Space Flight Mechanics Meeting, Tampa, Florida, January 2006. AAS 06-169

299. O. Peñagaricano Muñoa and **D.J. Scheeres**. "Hamilton's Principal Function for the Two-Body Problem," paper presented at the 2006 AAS/AIAA Space Flight Mechanics Meeting, Tampa, Florida, January 2006. AAS 06-165

300. *P. Patel*, **D.J. Scheeres**, A. Gallimore and T. Zurbuchen. "Automating Trade Studies for Optimal Interplanetary Electric Propulsion Missions," paper presented at the 2006 AAS/AIAA Space Flight Mechanics Meeting, Tampa, Florida, January 2006. AAS 06-152.

301. F.Y. Hsiao and **D.J. Scheeres**. "Uncertainty Control Utilizing Natural Dynamics in Hamiltonian Systems," paper presented at the 2006 AAS/AIAA Space Flight Mechanics Meeting, Tampa, Florida, January 2006. AAS 06-136

302. C. Park and **D.J. Scheeres**. "Formulation of a Hamiltonian Cauchy Problem for Solving Optimal Feedback Control Problems," paper presented at the 2005 CDC-ECC conference.

303. *I. Hussein*, **D.J. Scheeres**, D.C. Hyland. "Optimal Formation Control for Imaging and Fuel Usage with Terminal Imaging Constraints," paper presented at the 2005 IEEE Conference on Control Applications.

304. J. Bellerose and **D.J. Scheeres**. "Periodic Orbits in the Vicinity of the Equilateral Points of the Restricted Full Three-Body Problem," paper presented at the 57th International Astronautical Congress, Fukuoka, Japan, October 2005.

305. **D.J. Scheeres**, J. Bellerose, E. Fahnestock "Missions to Binary Asteroids: Tra jectory Design, Navigation and Science," paper presented at the 6th International Astronautics Academy International Conference on Low-Cost Planetary Missions, Kyoto, Japan, October 2005.

306. C. Park, **D.J. Scheeres** and V. Guibout. "Solving Optimal Continuous Thrust Rendezvous Problems with Generating Functions," paper presented at the 2005 AIAA Guidance, Navigation and Control Conference, San Francisco, August 2005. Paper AIAA-2005-6077.

307. L. Rios-Reyes and **D.J. Scheeres**. "Robust Solar Sail Trajectory Control for Large Pre-Launch Modeling Errors," paper presented at the 2005 AIAA Guidance, Navigation and Control Conference, San Francisco, August 2005. Paper AIAA-2005-6173.

308. B. Dachwald, B. Wie, **D. Scheeres**, L. Rios-Reyes, B. Diedrich, M. Macdonald, C. McInnes, W. Seboldt, F. Lura, M. Gorlich, M. Leipold, G. Garbe, and V. Baturkin. "Potential Solar Sail Degradation Effects on Trajectory and Attitude Control," paper presented at the 2005 AIAA Guidance, Navigation and Control Conference, San Francisco, August 2005. Paper AIAA-2005-6172.

309. S.B. Broschart and **D.J. Scheeres**. "Lyapunov Stability of Hovering Spacecraft in Time-Invariant Systems," paper presented at the 2005 Astrodynamics Specialist Conference, Lake Tahoe, California, August 2005. AAS Paper 05-381.

310. R.S. Park and **D.J. Scheeres**. "Nonlinear Mapping of Gaussian State Uncertainties: Theory and Applications to Spacecraft Control and Navigation," paper presented at the 2005 Astrodynamics Specialist Conference, Lake Tahoe, California, August 2005. AAS Paper 05-404.

311. M.E. Paskowitz and **D.J. Scheeres**. "Transient Behavior of Planetary Satellite Orbiters," paper presented at the 2005 Astrodynamics Specialist Conference, Lake Tahoe, California, August 2005. AAS Paper 05-358.

312. J. Bellerose and **D.J. Scheeres**. "Periodic Orbits in the vicinity of the Equilateral Points of the Restricted Full Three Body Problem," paper presented at the 2005 Astrodynamics Specialist Conference, Lake Tahoe, California, August 2005. AAS Paper 05-295.

313. E.G. Fahnestock, **D.J. Scheeres**, H.H. McClamroch and R.A. Werner. "Simulation And Analysis Of Binary Asteroid Dynamics Using Mutual Potential And Potential Derivatives Formulation," paper presented at the 2005 Astrodynamics Specialist Conference, Lake Tahoe, California, August 2005. AAS Paper 05-356.

314. S.M. Byram, **D.J. Scheeres** and M.R. Combi. "Navigation Models of Comet Outgassing Jets," paper presented at the 2005 Astrodynamics Specialist Conference, Lake Tahoe, California, August 2005. AAS Paper 05-284.

315. B. Dachwald, V. Baturkin, V.L. Coverstone, B. Diedrich, G. Garbe, M. Gorlich, M. Leipold, F. Lura, M. Macdonald, C. McInnes, G. Mengali, A.A. Quarta, L. Rios-Reyes, **D.J. Scheeres**, W. Seboldt, and B. Wie. "Potential Effects of Solar Sail Degradation on Trajectory Design," paper presented at the 2005 Astrodynamics Specialist Conference, Lake Tahoe, California, August 2005. AAS Paper 05-413.

316. C. Park and **D.J. Scheeres**. "Extended Applications of Generating Function to Optimal Feedback Control Problems," paper presented at the 2005 American Control Conference.

317. **D.J. Scheeres**, F.-Y. Hsiao, R.S. Park, B.F. Villac, J.M. Maruskin. "Fundamental Limits on Spacecraft Orbit Uncertainty and Distribution Propagation," invited paper presented at the Shuster Symposium, Grand Island, New York, June 2005. Paper AAS 05-471.

318. **D.J. Scheeres**. "Computing Relative Equilibria for General Gravity Fields in the Full 2-Body Problem," invited paper presented at New Trends in Astrodynamics and Applications II, June 2005.

319. *I. Hussein*, A.M. Bloch, **D.J. Scheeres**, N.H. McClamroch. "Optimal Fuel-Image Motion Planning for a Class of Dual Spacecraft Formations," paper presented at the 2005 American Control Conference.

320. *P. Patel*, **D.J. Scheeres** and T. Zurbuchen. "A Shape Based Approach to Spacecraft Trajectories: Analysis and Optimization," paper presented at the 2005 Space Flight Mechanics Meeting, Copper Mountain, Colorado, January 2005. AAS Paper 2005-130.

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3. O. Fuentes-Munoz and D. Scheeres. 2021. "Stochastic characterization of long-term NEO dynamics," *AAS/Division for Planetary Sciences Meeting Abstracts* **53**: 107.03.

4. P. Sánchez and D. J. Scheeres. 2021. "Seismic waves in the asteroid environment," *European Physical Journal Web of Conferences* **249**: 13001.

5. A. J. Meyer, D. J. Scheeres, S. Naidu, L. Benner, P. Pravec, and P. Scheirich. 2021. "Modeling Fully Coupled Dynamics of Janus Binary Asteroid Mission Targets," *AAS/Division of Dynamical Astronomy Meeting* **53**: 405.06.

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145. M. Hirabayashi and **D.J. Scheeres**. "Roles of Shape and Internal Structure in Rotational Disruption of Asteroids," talk presented at the 2015 International Astronomical Union Congress, Symposium 381: Asteroids: New Observations, New Models, Honolulu, Hawaii, August 2015.

146. **D.J. Scheeres** and T. Gabriel. "Analytical Constraints on Rubble Pile Fission, Dynamics and End States," talk presented at the 2015 International Astronomical Union Congress, Symposium 381: Asteroids: New Observations, New Models, Honolulu, Hawaii, August 2015.

147. D.A. Surovik and **D.J. Scheeres**. "Autonomous goal-driven design of non-keplerian orbits," presented at the AI Space Workshop at International Joint Conference on Artificial Intelligence, July 2015.

148. D.A. Surovik and **D.J. Scheeres**. "Automated design of observation and landing trajectories at small bodies," presented at the International Planetary Probe Workshop, June 2015.

149. T. S.J. Gabriel and **D.J. Scheeres**. "End-State Relative Equilibria in the Sphere-Restricted Full Three-Body Problem," talk presented at the 2015 AAS-DDA, Pasadena, California, May 2015.

150. **D.J. Scheeres**, J. McMahon, J. Feldhacker, B. Jones, A. Doostan, M. Bruck Syal, M. Owen, P. Miller, and E. Herbold. "Characterizing The Effect Of Asteroid Topography On Hazardous Asteroid Kinetic Impact Deflection," talk presented at the 2015 IAA Planetary Defense Conference, Frascati, Italy, April 2015. Abstract IAA?PDC?15?03?02.

151. J. Feldhacker, B. Jones, A. Doostan, **D.J. Scheeres** and J. McMahon. "Kinetic Deflection Uncertainties For Real Asteroid Shapes," poster presented at the 2015 IAA Planetary Defense Conference, Frascati, Italy, April 2015. Abstract IAA?PDC?15?P?67.

152. J. McMahon and **D.J. Scheeres**. "Optimizing Surface Ablation Deflection in the Presence of Realistic Asteroid Topography and Rotation," talk presented at the 2015 IAA Planetary Defense Conference, Frascati, Italy, April 2015. Abstract IAA?PDC?15?03?06.

153. S. Tardivel, E. Canalias, M. Deleuze, A.T. Klesh and **D.J. Scheeres**. "Landing MASCOT on asteroid 1999 JU3: solutions for deploying nanosats to small-body surfaces ," abstract presented at the 2015 LPSC, The Woodlands, Texas, March 2015. Abstract 1182.

154. T.S.J. Gabriel and **D.J. Scheeres**. "Modeling the Evolution of the Sphere-Restricted Full Three-Body Problem," abstract presented at the 2015 LPSC, The Woodlands, Texas, March 2015. Abstract 3016.

155. T. Hirabayashi, **D.J. Scheeres**, and B. Rozitis. "Formation Of An Equatorial Ridge On An Oblate Rubble Pile Asteroid," abstract presented at the 2015 LPSC, The Woodlands, Texas, March 2015. Abstract 1967.

156. **D.J. Scheeres**. "End Of Life Scenarios For Small Rubble Pile Asteroids," abstract presented at the 2015 LPSC, The Woodlands, Texas, March 2015. Abstract 2520.

157. Paul Sánchez and **D.J. Scheeres**. "Scaling Rule Between Cohesive Forces and The Size of a Self-Gravitating Aggregate," abstract presented at the 2015 LPSC, The Woodlands, Texas, March 2015. Abstract 2556.

158. **D.J. Scheeres**. "Dynamics of Small Body Explorers," talk presented at the 2015 Spacecraft Reconnaissance of Asteroid and Comet Interiors, Tempe, Arizona, January 2015.

159. M. Hirabayashi and **D.J. Scheeres**. "Stress and Failure Analysis of Rapidly Rotating Asteroid (29075) 1950 DA," poster presented at the 2015 Spacecraft Reconnaissance of Asteroid and Comet Interiors, Tempe, Arizona, January 2015.

160. S.R. Chesly, **D.J. Scheeres**, P.A. Abell, E. Asphaug and D.S. Lauretta. "A Kinetic Impactor Technology Demonstration Option for the BASiX Mission," talk presented at the 2015 Spacecraft Reconnaissance of Asteroid and Comet Interiors, Tempe, Arizona, January 2015.

161. **D.J. Scheeres**. "End of Life Scenarios for Rubble Pile Asteroids," talk presented at the 2014 AGU, San Francisco, California, December 2014.

162. M. Hirabayashi and **D.J. Scheeres**. "Structural Failure Condition for Bifurcated Rubble Pile Asteroids," poster presented at the 2014 AGU, San Francisco, California, December 2014.

163. M. Brozovic, L.A.M. Benner, C. Magri, M.W. Busch, **D.J. Scheeres**, J.D. Giorgini, V. Reddy, M.D. Hicks, J.S. Jao, C.G. Lee, L.G. Snedeker, M.A. Silva, M.A. Slade, K.J. Lawrence. "Goldstone radar evidence for short-axis mode non-principal axis rotation by Near-Earth Asteroid (214869) 2007 PA8," poster presented at the 2014 AGU, San Francisco, California, December 2014.

164. M. Hirabayashi, **D.J. Scheeres**, P. Sánchez and T. Gabriel. "Constraints on the Physical Properties of Main Belt Comet P/2013 R3 from its Breakup Event," talk presented at the 2014 DPS, Tucson, Arizona, November 2014. Abstract 503.08.

165. J.W. McMahon and **D.J. Scheeres** "The Effect of Shape Model Uncertainty on the Geophysical Predictions of Binary Asteroids," talk presented at the 2014 DPS, Tucson, Arizona, November 2014. Abstract 503.05.

166. P. Sánchez and **D.J. Scheeres**. "A Look Inside Rotating Rubble?Pile Asteroids Spun to Disruption," talk presented at the 2014 DPS, Tucson, Arizona, November 2014. Abstract 400.06.

167. W. Bottke , D. Vokrouhlicky , K. Walsh , M. Delbo , P. Michel , D.S. Lauretta , H. Campins , H.C. Connolly , **D.J. Scheeres**, S. Chesley. "In Search of the Source of Bennu, the OSIRIS?REx Sample Return Mission Target," talk presented at the 2014 DPS, Tucson, Arizona, November 2014. Abstract 400.05.

168. **D.J. Scheeres**, S. Chesley and R.C. Anderson. "A Geophysical Laboratory for Rubble Pile Asteroids: The BASiX Mission," poster presented at the 2014 DPS, Tucson, Arizona, November 2014. Abstract 214.16.

169. E. Asphaug , M. Belton , D. Bockelee?Morvan , S. Chesley , M. Delbo , T. Farnham , Y. Gim , R. Grimm , A. Herique , W. Kofman , J. Oberst , R. Orosei , S. Piqueux , J. Plaut , M. Robinson , P. Sava , E. Heggy , W. Kurth , **D.J. Scheeres**, B. Denevi , E. Turtle , P. Weissman. "The Comet Radar Explorer Mission," poster presented at the 2014 DPS, Tucson, Arizona, November 2014. Abstract 209.07

170. P. Sánchez and **D.J. Scheeres**. "Cohesion, Granular Liquids, Granular Solids and their connection to small NEOs," talk presented at the 2014 Asteroids, Comets and Meteors Conference, Helsinki, Finland, July 2014.

171. **D.J. Scheeres**, S. Jacobson, J. McMahon and M. Hirabayashi. "Using Binary Asteroids to Explore the Interior Geophysics of Rubble Pile Asteroids," poster presented at the 2014 Asteroids, Comets and Meteors Conference, Helsinki, Finland, July 2014.

172. M.W. Busch, Y. Takahashi, M. Brozovic, L.A.M. Benner, J.D. Giorgini, **D.J. Scheeres**, J.S. Jao, C.G. Lee and M.A. Slade. "Improved Spin State and Shape Models of Near-Earth Asteroid 4179 Toutatis From 2012 Radar Observations," talk presented at the 2014 Asteroids, Comets and Meteors Conference, Helsinki, Finland, July 2014.

173. **D.J. Scheeres** and P. Sánchez. "The strength of rubble pile bodies: Theory, observations, and predictions," talk presented at the 2014 Asteroids, Comets and Meteors Conference, Helsinki, Finland, July 2014.

174. R.C. Anderson, **D.J. Scheeres**, S. Chesley and the *BASiX* Science Team. "Binary Asteroid In-Situ Explorer Mission (BASiX): A Mission Concept to Explore a Binary Near Earth Asteroid System," poster presented at the 45th Lunar And Planetary Science Conference Program, The Woodlands, Texas, March 2014. Abstract #1571.

175. D.D. Durda, P. Sánchez, A. Fischer, G. Devaud, **D.J. Scheeres**, et al. "The Size Distribution of 'Boulders' Formed During Slope Failure in Piles of Self-Cohesive Powders: Application to the Morphology of Regoliths on Small Asteroids," poster presented at the 45th Lunar And Planetary Science Conference Program, The Woodlands, Texas, March 2014. Abstract #2015.

176. **D.J. Scheeres** and P. Sánchez. "Surface Stability of Rapidly Spinning Spheroids," poster presented at the 45th Lunar And Planetary Science Conference Program, The Woodlands, Texas, March 2014. Abstract #1930.

177. S.A. Jacobson, **D.J. Scheeres**, A. Rossi, F. Marzari. "The Effects of Rotational Fission on the Main Belt Asteroid Population," poster presented at the 45th Lunar And Planetary Science Conference Program, The Woodlands, Texas, March 2014. Abstract #2363.

178. M. Hirabayashi and **D.J. Scheeres**. "Interior Stress Within the NEO Binary System 1999 KW4," poster presented at the 45th Lunar And Planetary Science Conference Program, The Woodlands, Texas, March 2014. Abstract #1644.

179. P. Sánchez and **D.J. Scheeres**. "Cohesive Self-Gravitating Aggregates and Their Path of Disruption," poster presented at the 45th Lunar And Planetary Science Conference Program, The Woodlands, Texas, March 2014. Abstract #1697.

180. O. Golubov, **D.J. Scheeres** and Yurij N.Krugly. "Modeling the tangential YORP effect," poster presented at the 46th Annual American Geophysical Union Fall Meeting, San Francisco, December 9-13, 2013.

181. M. Hirabayashi and **D.J. Scheeres**. "Constraints on the size of Asteroid (216) Kleopatra using stress analysis," poster presented at the 46th Annual American Geophysical Union Fall Meeting, San Francisco, December 9-13, 2013.

182. **D.J. Scheeres**, S. Jacobson, J.W. McMahon and M. Hirabayashi. "Constraining the Interior Geophysics of Rubble Pile Asteroids," talk presented at the 46th Annual American Geophysical Union Fall Meeting, San Francisco, December 9-13, 2013.

183. **D.J. Scheeres** and P. Sánchez. "The Importance of Asteroid Modeling: Supporting Asteroid Initiative Activities," talk presented the NASA Asteroid Initiative Idea Synthesis, Lunary and Planetary Institute, Houston, November 20-22, 2013.

184. M.W. Busch, M. Brozovic, L.A.M. Benner, J.D. Giorgini, Y. Takahashi and **D.J. Scheeres**. "Goldstone/VLA Radar Observations of Near-Earth Asteroid 4179 Toutatis in 2012," talk presented at the 45th Annual Meeting of the American Astronomical Society Division for Planetary Sciences, Denver, October 6-11, 2013.

185. O. Golubov, **D.J. Scheeres** and Yurij N. Krugly. "Modeling the tangential YORP effect," poster presented at the 45th Annual Meeting of the American Astronomical Society Division for Planetary Sciences, Denver, October 6-11, 2013.

186. E. S. Howell, M. W. Busch, V. Reddy, R. J. Vervack, M. C. Nolan, C. Magri, Y. R. Fernandez P. A. Taylor, A. Springmann, **D.J. Scheeres**, Y. Takahashi, J. A. Sanchez. "Using a Radar Shape Model to interpret Spectral Observations of 4179 Toutatis," talk presented at the 45th Annual Meeting of the American Astronomical Society Division for Planetary Sciences, Denver, October 6-11, 2013.

187. J.W. McMahon and **D.J. Scheeres**. "A Statistical Analysis of the Sensitivity of YORP Coeffcients to Shape and Topography Changes," poster presented at the 45th Annual Meeting of the American Astronomical Society Division for Planetary Sciences, Denver, October 6-11, 2013.

188. N. Moskovitz, **D.J. Scheeres**, et al. "Physical Modification of Asteroid 2012 DA14 During its 2013 Near-Earth Flyby," talk presented at the 45th Annual Meeting of the American Astronomical Society Division for Planetary Sciences, Denver, October 6-11, 2013.

189. A. Rossi, S. Jacobson, F. Marzari and **D.J. Scheeres**. "Effects of YORP-induced rotational fission on the small size end of the Main Belt asteroid size distribution," talk presented at the 45th Annual Meeting of the American Astronomical Society Division for Planetary Sciences, Denver, October 6-11, 2013.

190. P. Sánchez and **D.J. Scheeres**. "Rotation Induced Disruption of Cohesive Asteroids," talk presented at the 45th Annual Meeting of the American Astronomical Society Division for Planetary Sciences, Denver, October 6-11, 2013.

191. **D.J. Scheeres** and P. Sánchez. "Global Landslides on Rapidly Spinning Spheroids," talk presented at the 45th Annual Meeting of the American Astronomical Society Division for Planetary Sciences, Denver, October 6-11, 2013.

192. S. Tardivel, **D.J. Scheeres** and P. Michel. "Scientific Packages on Small Bodies: A Deployment Strategy for New Missions poster presented at the 45th Annual Meeting of the American Astronomical Society Division for Planetary Sciences, Denver, October 6-11, 2013.

193. M. Hirabayashi and **D.J. Scheeres**. "Asteroid failure modes due to YORP spin-up: A survey + Plastic computation of internal structure," talk presented at the 45th Annual Meeting of the American Astronomical Society Division for Planetary Sciences, Denver, October 6-11, 2013.

194. **D.J. Scheeres** and P. Sánchez. "Rotational Fission of Cohesive, Self-Gravitating Aggregates," talk presented at the European Planetary Science Congress 2013, University College London, September 8-13, 2013

195. D. Durda, G. Devaud, **D. Scheeres**, P. Sánchez, S. Roark, P. Kaptchen, R. Dissly and A. Campo Bagatin "Laboratory Investigation of Asteroid Regolith Properties," talk presented at the European Planetary Science Congress 2013, University College London, September 8-13, 2013

196. S. A. Jacobson, P. Scheirich, P. Pravec and **D.J. Scheeres**. "Spacecraft Discoveries Enabled by Photometric Observations of the Dynamics of 1996 FG3," talk presented at the European Planetary Science Congress 2013, University College London, September 8-13, 2013

197. P. Sánchez, **D.J. Scheeres**, E. Beau Bierhaus and Benton Clark. "Regolith Penetrometry in Microgravity," poster presented at the European Planetary Science Congress 2013, University College London, September 8-13, 2013

198. **D.J. Scheeres**. "Minimum Energy Configurations in the N-Body Problem and the Celestial Mechanics of Granular Systems," invited talk at the Planetary Motions, Satellite Dynamics, and Spaceship Orbits Workshop, University of Montreal, Montreal, Canada, July 22-26, 2013.

199. **D.J. Scheeres** and S.A. Jacobson. "The Life-Cycles of Small Asteroid Systems," talk presented at the 3rd Workshop On Binaries In The Solar System, Hawaii, the Big Island (USA). June 30 - July 2, 2013.

200. **D.J. Scheeres** and P. Sanchez. "The Strength of Small Rubble Pile Asteroids," talk presented at the 8th Workshop On Catastrophic Disruption In The Solar System (CD8), Hawaii, the Big Island (USA). June 24 - 27, 2013.

201. D. Surovik and **D.J. Scheeres**. "Autonomous Trajectory Planning at Small Bodies," poster presented at the Low Cost Planetary Mission Workshop, Pasadena, California, June 2013.

202. S. Roark, B. Frazier, R. Dissly and **D.J. Scheeres**. "Geophysical Experiments on Small Bodies Using Explosive Surface Probes," talk presented at the International Planetary Probe Workshop San Jose, CA June 17 - 21, 2013.

203. **D.J. Scheeres**. "Binary Asteroid in-situ Explorer: Science and Mission Description," talk presented at the 3rd IPEWG Meeting, Nice, France, May 30, 2013.

204. **D.J. Scheeres**. "Mapping Probability Distributions Nonlinearly in Symplectic Dynamical Systems," talk presented at the SIAM Conference on Applications of Dynamical Systems Snowbird, Utah, May 23, 2013.

205. **D.J. Scheeres**. "Minimum Energy Configurations for the General 3-Body Problem," talk presented at the 44th Annual Meeting of the Division on Dynamical Astronomy, Paraty, Brazil, May 5-9, 2013.

206. A.J. Rosengren and **D.J. Scheeres**. "The Milankovitch Orbital Elements and The Formation of Saturn's Satellite Iapetus," talk presented at the 44th Annual Meeting of the Division on Dynamical Astronomy, Paraty, Brazil, May 5-9, 2013.

207. **D.J. Scheeres** and P. Sánchez. "The Strength of Small Rubble Pile Asteroids," talk presented at the 20133 IAA Planetary Defense Conference, April 2013, Flagstaff, Arizona. Abstract IAA-PDC13-03-04.

208. D.D. Durda, S.E. Roark, **D.J. Scheeres**, P. Sánchez, G. Devaud, P.F. Kaptchen, and R. Dissly. "Experimental approach and apparatus for laboratory investigation of asteroid regolith properties," poster presented at the 44th Lunar and Planetary Science Conference, March 2013. Abstract 2287.

209. M. Hirabayashi, **D.J. Scheeres** and K.A. Holsapple. "Constraints on the size of asteroid 216 Kleopatra using internal stresses," poster presented at the 44th Lunar and Planetary Science Conference, March 2013. Abstract 1592.

210. P. Sánchez, **D.J. Scheeres**, E.B. Bierhaus, B. Clark. "Simulations of Regolith Interactions in Microgravity," abstract presented at the 44th Lunar and Planetary Science Conference, March 2013. Abstract 2271.

211. **D.J. Scheeres** and P. Sánchez. "The Strength of Rubble Pile Asteroids," abstract presented at the 2012 AGU, San Francisco, December 2012.

212. **D.J. Scheeres**. "Minimum Energy Configurations in the N-Body Problem and the Celestial Mechanics of Granular Systems," invited abstract presented at the XVI Colóquio Brasileiro de Dinâmica Orbital, Serra Negra, São Paulo, Brazil, November 2012.

213. **D.J. Scheeres** and P. Sánchez. "The Strength of Rubble Piles," abstract presented at the 2012 DPS meeting, Reno, Nevada, October 2012.

214. **D.J. Scheeres**. "Space Missions to Small Solar System Bodies," invited abstract presented at the COSPAR 2012 meeting, Mysore, India, July 2012.

215. **D.J. Scheeres**. "Scaling Forces to the Asteroid Surface: The role of cohesion," invited abstract presented at the Dust, Atmosphere and Plasma environment of the Moon and Small Bodies (DAP-2012) workshop, Boulder, Colorado, June 2012.

216. **D.J. Scheeres**. "Asteroid Shapes and Spins: How the Internal informs the External," invited abstract presented at the Asteroids, Comets, Meteors 2012 Meeting, Niigata, Japan. Abstract 6189.

217. S.A. Jacobson and **D.J. Scheeres**. "Forming the Observed Binary Asteroid Population," abstract presented at the Asteroids, Comets, Meteors 2012 Meeting, Niigata, Japan. Abstract 6092.

218. M. Hirababayashi and **D.J. Scheeres**. "Fission and Surface Disruption Limits for Rapidly Rotating Asteroids: The Case of Kleopatra," abstract presented at the Asteroids, Comets, Meteors 2012 Meeting, Niigata, Japan. Abstract 6158.

219. P. Sanchez and **D.J. Scheeres**. "Cohesion in 'Rubble-Pile' Asteroids," abstract presented at the Asteroids, Comets, Meteors 2012 Meeting, Niigata, Japan. Abstract 6070.

220. C.M. Hartzell, **D.J. Scheeres**, and X. Wang. "Electrostatic Dust Motion on Asteroids: Current Understanding," abstract presented at the Asteroids, Comets, Meteors 2012 Meeting, Niigata, Japan. Abstract 6055.

221. J.D. Walker , R.P. Bigger, S. Chocron, T. Trenton, Kirchdoerfer, W.F. Huebner, D.D. Durda, **D.J. Scheeres**. "Asteroid Seismology Studies: Influence Of Regolith Thickness And Charge Size.," poster presented at the Asteroids, Comets, Meteors 2012 Meeting, Niigata, Japan. Abstract 6412.

222. **D.J. Scheeres**, J.W. McMahon, Y. Takahashi, S. Chesley, M. Nolan. "Radio Science at 1999 RQ36 for OSIRIS-REx," poster presented at the Asteroids, Comets, Meteors 2012 Meeting, Niigata, Japan. Abstract 6191.

223. D.S. Lauretta, M.A. Barucci, E.B. Bierhaus, J.R. Brucato, H. Campins, P.R. Christensen, B.C. Clark, H.C. Connolly, E. Dotto, J.P. Dworkin, J. Emery, J.B. Garvin, A.R. Hildebrand, G. Libourel, J.R. Marshall, P. Michel, M.C. Nolan, J.A. Nuth, B. Rizk, S.A. Sandford, **D.J. Scheeres**, J.M. Vellinga. "The OSIRIS-REx Mission: Sample Acquisition Strategy and Evidence for the Nature of Regolith on Asteroid (101955) 1999 RQ36," poster presented at the Asteroids, Comets, Meteors 2012 Meeting, Niigata, Japan. Abstract 6291.

224. S.A. Jacobson and **D.J. Scheeres** "Asteroid Evolutionary Tracks," poster presented at the 43rd Annual Meeting of the American Astronomical Society Division on Dynamical Astronomy, Mount Hood, Oregon, May 2012. Abstract 09.15.

225. **D.J. Scheeres**. "Indeterminacy in the Stable States of 4-Grain Rubble Piles," abstract presented at the 43rd Annual Meeting of the American Astronomical Society Division on Dynamical Astronomy, Mount Hood, Oregon, May 2012. Abstract 07.01.

226. M. Hirabayashi and **D. J. Scheeres** "Fission Limit And Surface Disruption Criteria For Asteroids: The Case Of Kleopatra," abstract presented at the 43rd Annual Meeting of the American Astronomical Society Division on Dynamical Astronomy, Mount Hood, Oregon, May 2012. Abstract 07.02.

227. J.W. McMahon and **D.J. Scheeres**. "Effect of Small Scale Surface Topology on Near-Earth Asteroid YORP and bYORP Coefficients," abstract presented at the 43rd Annual Meeting of the American Astronomical Society Division on Dynamical Astronomy, Mount Hood, Oregon, May 2012. Abstract 07.04.

228. S.A. Jacobson and **D. J. Scheeres**. "Long-term Rotation State Evolution of Comet Nuclei Including the Effects of Jet Torques and Internal Dissipation," abstract presented at the 43rd Annual Meeting of the American Astronomical Society Division on Dynamical Astronomy, Mount Hood, Oregon, May 2012. Abstract 08.05.

229. M. Hirabayashi and **D.J. Scheeres**. "Fission Limits For Bifurcated Asteroids: The Case Of Kleopatra," poster presented at the 43rd Lunar and Planetary Science Conference, March 2012. Abstract 2256.

230. **D.J. Scheeres** and S.A. Jacobson. "Comet Rotational Relaxation and Interior Stresses and Loads," abstract presented at the 43rd Lunar and Planetary Science Conference, March 2012. Abstract 2169.

231. P. Sánchez and **D.J. Scheeres**. "Granular van der Waals Bridges and the Cohesion of Rubble-Pile Asteroids," abstract presented at the 43rd Lunar and Planetary Science Conference, March 2012. Abstract 1620.

232. S.A. Jacobson and **D.J. Scheeres**. "Formation of the Asynchronous Binary Asteroids," abstract presented at the 43rd Lunar and Planetary Science Conference, March 2012. Abstract 2737.

233. A. Rossi, F. Marzari, **D.J. Scheeres**, and S.A. Jacobson. "Effects of YORP-Induced Rotational Fission on the Asteroid Size Distribution at the Small Size End," abstract presented at the 43rd Lunar and Planetary Science Conference, March 2012. Abstract 2095.

234. C.W. Hergenrother, **D.J. Scheeres**, M. Nolan, C. d'Aubigny, M.A. Barucci, B.E. Clark, E. Dotto, J.P. Emery, D.S. Lauretta, J. Licandro, and B. Rizk. "Lightcurve and Phase Function Photometry of the OSIRIS-REx Target (101955) 1999 RQ36," abstract presented at the 43rd Lunar and Planetary Science Conference, March 2012. Abstract 2219.

235. J.W. McMahon and **D.J. Scheeres**. "Inferring Small-Scale Surface Variability on Near-Earth Asteroids from Itokawa's Shape Data," abstract presented at the 43rd Lunar and Planetary Science Conference, March 2012. Abstract 1596.

236. **D.J. Scheeres**. "Mathematics in Earth Orbit: The Dynamics of Earth's Artificial Orbital Population," invited presentation at the International Conference on Mathematical Modeling in Industry, São Paolo, Brazil, December 2011.

237. S. Tardivel and **D.J. Scheeres**, "Robust deployment of landers to asteroid surfaces," poster presented at the EPSC-DPS Joint Meeting 2011, Nantes, France, October 2011. Abstract EPSC-DPS2011-1414.

238. P. Sànchez and **D.J. Scheeres** "Rotation and Reshaping of Self-gravitating Aggregates," abstract presented at the EPSC-DPS Joint Meeting 2011, Nantes, France, October 2011. Abstract EPSC-DPS2011-301.

239. **D.J. Scheeres**, M.R. Swift, and P. Sanchez "Quasi-Static Evolution of Self-gravitating Aggregates," abstract presented at the EPSC-DPS Joint Meeting 2011, Nantes, France, October 2011. Abstract EPSC-DPS2011-584.

240. S.A. Jacobson and **D.J. Scheeres** "Evolution of Small Near-Earth Asteroid Binaries," abstract presented at the EPSC-DPS Joint Meeting 2011, Nantes, France, October 2011. Abstract EPSC-DPS2011-647.

241. M.W. Busch, L.A.M. Benner, **D.J. Scheeres**, J.-L. Margot, C. Magri, M.C. Nolan, and J.D. Giorgini "Twenty Years Of Toutatis," abstract presented at the EPSC-DPS Joint Meeting 2011, Nantes, France, October 2011. Abstract EPSC-DPS2011-297.

242. A. Rossi, S. Jacobson, F. Marzari, and **D. Scheeres** "Asteroid fission, binaries and the small main belt population," abstract presented at the EPSC-DPS Joint Meeting 2011, Nantes, France, October 2011. Abstract EPSC-DPS2011-499.

243. C.M. Hartzell and **D.J. Scheeres** "Dynamics of levitating dust near equilibria on asteroids," abstract presented at the EPSC-DPS Joint Meeting 2011, Nantes, France, October 2011. Abstract EPSC-DPS2011-286.

244. C.M. Hartzell and **D.J. Scheeres**. "Levitating Dust on Asteroids," poster presented at the International Primitive Body Exploration Working Group, Pasadena, California, August 2011.

245. Y. Takahashi and **D.J. Scheeres**. "Spacecraft Characterization of Primitive Bodies Using a Sequence of Slow Flybys," poster presented at the International Primitive Body Exploration Working Group, Pasadena, California, August 2011.

246. S. Tardivel and **D.J. Scheeres**. "Ballistic Deployments of Landers on Asteroid Surfaces," poster presented at the International Primitive Body Exploration Working Group, Pasadena, California, August 2011.

247. **D.J. Scheeres**. "Minimum Energy Configurations in the N-Body Problem and the Celestial Mechanics of Granular Systems," abstract presented at Applied Dynamics and Geometrical Mechanics, Mathematisches Forschungsinstitut Oberwolfach, August 2011.

248. **D.J. Scheeres** and Y. Takahashi. "Rapid Characterization of Small Bodies Using Slow Flybys," poster presented at the 9th IAA Low-Cost Planetary Missions Conference, Applied Physics Lab, Laurel, Maryland, June 2011.

249. **D.J. Scheeres**. "Minimum Energy Configurations in the N-Body Problem," abstract presented at the New Trends in Astrodynamics Meeting, New York, New York, June 2011.

250. **D.J. Scheeres** and P. Sánchez. "Implications of asteroid morphology and strength for impulsive mitigation strategies," abstract presented at the 2011 IAA Planetary Defense Conference, Bucharest, Romania, May 2011.

251. S.A. Jacobson and **D.J. Scheeres**. "Long-Term Stable Equilibria for Synchronous Binary Asteroids," abstract presented at the 42nd Division on Dynamical Astronomy Meeting, Austin, Texas, April 2011.

252. J. McMahon and **D.J. Scheeres**. "Dynamical Limits on Planar Libration-Orbit Coupling Around an Oblate Primary with Application to BYORP Evolution," abstract presented at the 42nd Division on Dynamical Astronomy Meeting, Austin, Texas, April 2011.

253. **D.J. Scheeres**. "Minimum Energy Configurations in the N-Body Problem," abstract presented at the 42nd Division on Dynamical Astronomy Meeting, Austin, Texas, April 2011.

254. **D.J. Scheeres** and P. Sánchez. "Evolution of Small, Rapidly Rotating Asteroids," abstract presented at the 42nd Lunar and Planetary Science Conference, Houston, Texas, March 2011. Abstract 2307.

255. S.A. Jacobson and **D.J. Scheeres**. "Long-term Stable Equilibria for Synchronous Binary Asteroids," abstract presented at the 42nd Lunar and Planetary Science Conference, Houston, Texas, March 2011. Abstract 2239.

256. P. Sánchez and **D.J. Scheeres**. "Rotational Reshaping and Yield Stress of Rubble-Pile Asteroids," abstract presented at the 42nd Lunar and Planetary Science Conference, Houston, Texas, March 2011. Abstract 2120.

257. O. Robert, P. Lognonne, **D.J. Scheeres**, N. Goujon, M. Le Feuvre, A. Izzet, C. Blitz, and L. Bowman. " Seismology on a small body: expected results for the BASiX Discovery Mission proposal," poster presented at the 2010 American Geophysical Union Fall Meeting, San Francisco, December 2010.

258. **D. J. Scheeres**, C.M. Hartzell, Paul Sanchez and M. Swift. "Scaling Forces to the Asteroid Surface: The Role of Cohesion," abstract presented at the 2010 American Astronomical Society Division for Planetary Sciences Meeting, Pasadena, California, October 2010. Abstract 63.08.

259. S.A. Jacobson and **D. J. Scheeres**. "Dynamics of Rotationally Fissioned Asteroids," abstract presented at the 2010 American Astronomical Society Division for Planetary Sciences Meeting, Pasadena, California, October 2010. Abstract 63.07.

260. J. McMahon and **D. J. Scheeres**. "Measuring the Binary YORP Effect and the Influence of Librations on Binary Asteroid Evolution," abstract presented at the 2010 American Astronomical Society Division for Planetary Sciences Meeting, Pasadena, California, October 2010. Abstract 63.06.

261. Paul Sanchez and **D. J. Scheeres**. "DEM Simulation of Rotational Disruption of Rubble-Pile Asteroids," abstract presented at the 2010 American Astronomical Society Division for Planetary Sciences Meeting, Pasadena, California, October 2010. Abstract 63.05.

262. Alessandro Rossi, F. Marzari and **D. J. Scheeres**. "Unveiling The Excess Of Slow Rotators In The Small Main Belt Asteroids," abstract presented at the 2010 American Astronomical Society Division for Planetary Sciences Meeting, Pasadena, California, October 2010. Abstract 63.02.

263. M.W. Busch, et al., **D. J. Scheeres**, et al.. "Radar Observations and the Shape of 2008 EV5: Ridges and Craters on Near-Earth Asteroids," abstract presented at the 2010 American Astronomical Society Division for Planetary Sciences Meeting, Pasadena, California, October 2010. Abstract 57.05.

264. E.S. Howell, et al., **D. J. Scheeres**, et al.. "Radar Shape Modeling Of (8567) 1996 HW1 Combined With Thermal Observations," abstract presented at the 2010 American Astronomical Society Division for Planetary Sciences Meeting, Pasadena, California, October 2010. Abstract 57.03.

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266. Richard Dissly, **D.J. Scheeres**, E. Nilsen, S. Roark, W. Frazier, T. Bank, D. Rosing, E. Jordan, The BASiX Science Team. "The Binary Asteroid in-situ Explorer (BASiX) Mission," poster presented at the 2010 American Astronomical Society Division for Planetary Sciences Meeting, Pasadena, California, October 2010. Abstract 49.28L.

267. C.M. Hartzell and **D. J. Scheeres**. "Electrostatic Dust Launching Methods," abstract presented at the 2010 American Astronomical Society Division for Planetary Sciences Meeting, Pasadena, California, October 2010. Abstract 17.01.

268. L.A.M. Benner, J. Margot, M.C. Nolan, J.D. Giorgini, M. Brozovic, **D.J. Scheeres**, C. Magri, S.J. Ostro. "Radar Imaging and a Physical Model of Binary Asteroid 65803 Didymos," poster presented at the 2010 American Astronomical Society Division for Planetary Sciences Meeting, Pasadena, California, October 2010. Abstract 13.17.

269. J. McMahon and **D.J. Scheeres**. "A detailed model of BYORP," abstract presented at the Second Workshop on Binaries in the Solar System Wasowo/Poznan, Poland. July 12-15, 2010.

270. S.A. Jacobson and **D.J. Scheeres**. "Dynamical evolution of binary asteroid systems," abstract presented at the Second Workshop on Binaries in the Solar System Wasowo/Poznan, Poland. July 12-15, 2010.

271. **D.J. Scheeres**. "The celestial mechanics of asteroid rubble piles," abstract presented at the Second Workshop on Binaries in the Solar System Wasowo/Poznan, Poland. July 12-15, 2010.

272. **D.J. Scheeres** and O. Peñagaricano-Muñoa. "The Computation and Application of Hamilton's Principal Function in Astrodynamics," abstract presented at the DSPDES 2010 SIAM Conference, Barcelona, Spain, June 2010.

273. **D.J. Scheeres**, P. Pravec, D. Vokrouhlicky, D. Polishook, A. W. Harris, A. Galad, O. Vaduvescu, F. Pozo, A. Barr, P. Longa, F. Vachier, F. Colas, D. P. Pray, J. Pollock,

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274. S.A. Jacobson and **D.J. Scheeres**. "Formation of Observed Asteroid Systems by Rotational Fission," talk presented at the 2010 American Astronomical Society Division on Dynamical Astronomy meeting, Brookline, Massachusetts, April 25-29, 2010.

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276. **D.J. Scheeres**. "Space Missions and Orbit Mechanics about Small Asteroids," invited talk presented at the 5th International Workshop and Advanced School "Spaceflight Dynamics and Control," Covilha, Portugal, March 17-19, 2010.

277. **D.J. Scheeres**, C.M. Hartzell, P. Sánchez and M. Swift. "The Relevance and Role of Cohesive Forces for Small Asteroids," talk presented at the 41st Lunar and Planetary Science Conference, March 2010. Abstract 1839.

278. R.W. Gaskell, O.S. Barnouin and **D.J. Scheeres**. "The NEAR Shoemaker Landing on Eros," talk presented at the 41st Lunar and Planetary Science Conference, March 2010. Abstract 2093.

279. S.A. Jacobson and **D.J. Scheeres**. "The Evolution of Binary Asteroids Formed by Spin Fission," talk presented at the 41st Lunar and Planetary Science Conference, March 2010. Abstract 2098.

280. S. Roark, C. Cottingham, R. Dissly, **D. Scheeres**, V. Petr, and K. Housen. "Explosive Surface Pods for Cratering Experiments on Small Bodies," poster presented at the 41st Lunar and Planetary Science Conference, March 2010. Abstract 2100.

281. C.M. Hartzell and **D.J. Scheeres**. "The Implications of Lunar Water on Electrostatic Dust Levitation," poster presented at the 41st Lunar and Planetary Science Conference, March 2010. Abstract 2470.

282. P. Sánchez, **D.J. Scheeres** and M. Swift. "Impact Driven Size Sorting in Self-Gravitating Granular Aggregates," talk presented at the 41st Lunar and Planetary Science Conference, March 2010. Abstract 2634.

283. E. Asphaug, A. Barucci, M. Belton, S. Bhaskaran, D. Brownlee, L. Carter, J. Castillo, S. Chesley, P. Chodas, T. Farnham, R. Gaskell, Y. Gim, E. Heggy, K. Klaasen, W. Kofman, M. Kreslavsky, C. Lisse, L. McFadden, E. Pettinelli, J. Plaut, **D. Scheeres**, E. Turtle, P. Weissman and R. Wu. "Deep Interior Radar Imaging of Comets," poster presented at the 41st Lunar and Planetary Science Conference, March 2010. Abstract 2670.

284. **D.J. Scheeres**. "Studying the Fundamental Physical Characteristics of Asteroid Surfaces at Binary Asteroids," invited talk given at the International Workshop on Small Body Exploration by Physical Interactions, October 19-20, 2009. Hotel Villa Fontaine, Tokyo, Japan.

285. C. Cottingham, **D.J. Scheeres**, S. Roark, and R. Dissly. "Surface Instrument Package for Small Body Science," poster presented at the 41st Annual American Astronomical Society - Division of Planetary Sciences Meeting, Puerto Rico. Abstract #68.17.

286. J. McMahon and **D.J. Scheeres**. "Predictions For The Effects Of BYORP On 1999 KW4," talk presented at the 41st Annual American Astronomical Society - Division of Planetary Sciences Meeting, Puerto Rico. Abstract #56.09.

287. S.A. Jacobson and **D.J. Scheeres**. "A Rapid Phase of Tidal Dissipation for Post-Fission Binary Asteroids," talk presented at the 41st Annual American Astronomical Society - Division of Planetary Sciences Meeting, Puerto Rico. Abstract #56.08.

288. **D.J. Scheeres**. "The Orbital Stability of Fissioned Contact Binary Asteroids," talk presented at the 41st Annual American Astronomical Society - Division of Planetary Sciences Meeting, Puerto Rico. Abstract #56.07.

289. A. Rossi, F. Marzari and **D.J. Scheeres**. "Spin Evolution of Small Main Belt Asteroids," talk presented at the 41st Annual American Astronomical Society - Division of Planetary Sciences Meeting, Puerto Rico. Abstract #56.01.

290. C. Hartzell and **D.J. Scheeres**. "The Dynamics of Dust Levitated from Asteroids," poster presented at the 41st Annual American Astronomical Society - Division of Planetary Sciences Meeting, Puerto Rico. Abstract #50.07.

291. M. Brozovic, L.A.M. Benner, C. Magri, S.J. Ostro, **D.J. Scheeres**, J.D. Giorgini, M.C. Nolan, J.-L. Margot, R.F. Jurgens, R. Rose. "Radar observations and a physical model of contact binary asteroid 4486 Mithra," talk presented at the 41st Annual American Astronomical Society - Division of Planetary Sciences Meeting, Puerto Rico. Abstract #43.11.

292. **D.J. Scheeres**. "The Meaning of an Asteroid's Shape," invited talk presented at the 41st Annual American Astronomical Society - Division of Planetary Sciences Meeting, Puerto Rico. Abstract #29.04.

293. P. Sanchez, M.R. Swift, and **D.J. Scheeres**. "Granular Mechanics in the Asteroid Regime," talk presented at the 41st Annual American Astronomical Society - Division of Planetary Sciences Meeting, Puerto Rico. Abstract #27.13.

294. **D.J. Scheeres**. "Stability of the Full 2-Body Problem: Applications to Binary Asteroids," invited talk given at CELMEC V, the Fifth International Meeting on Celestial Mechanics, Balletti Park Hotel, San Martino al Cimino, Viterbo (Italy). September 2009.

295. **D.J. Scheeres**. "The mechanics of motion on and about asteroids," talk presented at the Steve Ostro Memorial Symposium, Jet Propulsion Laboratory, June 3, 2009.

296. **D.J. Scheeres**. "Stability of Relative Equilibria for Coupled Rotational and Translational Motion," talk presented at the 2009 American Astronomical Society – Division on Dynamical Astronomy Meeting, Virginia Beach, Virginia, May 2009. Abstract #10.01.

297. S.A. Jacobson and **D.J. Scheeres**. "Tidal and Dynamical Evolution of Binary Asteroids," talk presented at the 2009 American Astronomical Society – Division on Dynamical Astronomy Meeting, Virginia Beach, Virginia, May 2009. Abstract #10.02.

298. J.W. McMahon and **D.J. Scheeres**. "Secular Orbit Variation due to Solar Radiation Effects: A Detailed Model for BYORP," talk presented at the 2009 American Astronomical Society – Division on Dynamical Astronomy Meeting, Virginia Beach, Virginia, May 2009. Abstract #10.03.

299. **D.J. Scheeres**. "Fundamental Limits on Uncertainty Propagation in Astrodynamical Systems," talk presented in MS107: Applications of Phase Space Analysis to Astrodynamics, 2009 SIAM Conference on Dynamical Systems, Snowbird, Utah. May 2009.

300. **D. J. Scheeres**, P. Sánchez, R. W. Dissly, E.I. Asphaug, K.R. Housen, M.R. Swift, H. Yano, S.E. Roark, and J.C. Soto. "Extra Low-Gear: A Micro-gravity laboratory to simulate asteroid surfaces," poster presented at the 40th Lunar and Planetary Science Conference, March 2009. Abstract 2447.

301. **D.J. Scheeres** and S.A. Jacobson. "Fission and stability of ellipsoidal contact binary asteroids," talk presented at the 40th Lunar and Planetary Science Conference, March 2009. Abstract 2040.

302. E. Asphaug, A. Safaeinili, M.J.S. Belton, **D.J. Scheeres**, S. Chesley, W. Kofman, and D. Yeomans. "Deep Interior: High-resolution volumetric radar imaging of a comet nucleus," poster presented at the 40th Lunar and Planetary Science Conference, March 2009. Abstract 2109.

303. P. Sánchez and **D.J. Scheeres**. "Granular mechanics in asteroid regolith: Simulating and scaling the brazil nut effect," talk presented at the 40th Lunar and Planetary Science Conference, March 2009. Abstract 2228.

304. C. M. Cottingham, S. E. Roark, W. D. Deininger, R. W. Dissly, K. W. Epstein, D. M. Waller, and **D. J. Scheeres**. "Small surface probes for enchanced asteroid and comet rendezvous missions," poster presented at the 40th Lunar and Planetary Science Conference, March 2009. Abstract 2310.

305. **D.J. Scheeres**, R.W. Gaskell and P. Sánchez. "YORP and Density Inhomogeneity within Itokawa ," talk presented at the 2008 American Geophysical Union, San Francisco, December 2008.

306. **D.J. Scheeres**, C. Park, V. Guibout, A.M. Bloch. "Optimal Control and Hamiltonian Dynamics," talk presented at the American Mathematical Society, Meeting 1044, Huntsville, AL, Special Session on Geometric Mechanics, Control and Integrability.

307. E.G. Fahnestock and **D.J. Scheeres**. "Primary Surface Particle Motion as a Mechanism for YORP-driven Binary Asteroid Evolution," talk presented at the 40th Annual American Astronomical Society - Division of Planetary Sciences Meeting, Ithaca.

308. **D.J. Scheeres**, R.W. Gaskell and P. Sánchez. "Density Inhomogeneity, YORP and Itokawa," poster presented at the 40th Annual American Astronomical Society - Division of Planetary Sciences Meeting, Ithaca.

309. **D.J. Scheeres**. "Creation and Dissociation of Binary Asteroids [# 8059]," abstract presented at the 2008 Asteroids, Comets, Meteors Meeting, Baltimore 2008.

310. A. Rossi, F. Marzari and **D.J. Scheeres**. "The effect of YORP on the NEO spin rate distribution [# 8070]," poster presented at the 2008 Asteroids, Comets, Meteors Meeting, Baltimore 2008.

311. E.G. Fahnestock and **D.J. Scheeres**. "YORP-Driven Expansion of Binary Asteroid Systems [# 39.0202]," abstract presented at the 39th American Astronomical Society Division on Dynamical Astronomy, Boulder, May 2008.

312. **D.J. Scheeres**. "Relative Equilibria in the Sphere-Restricted Full 2-Body Problem [# 39.0901]," abstract presented at the 39th American Astronomical Society Division on Dynamical Astronomy, Boulder, May 2008.

313. E.G. Fahnestock and **D.J. Scheeres**. "Primary Surface Particle Motion and YORP-Driven Expansion of Asteroid Binaries," talk presented at the Binary Asteroid Dynamics Workshop, Meudon, France, May 2008.

314. **D.J. Scheeres**. "Reconfiguration and Fission of Rubble Pile Asteroids," talk presented at the Binary Asteroid Dynamics Workshop, Meudon, France, May 2008.

315. **D.J. Scheeres**. "Dynamics of Binary Asteroids," talk presented at the 7th Alexander von Humboldt Colloquium for Celestial Mechanics, Bad Hofgastein, Salzburg, Austria March 30 - April 5, 2008.

316. **D.J. Scheeres**, S. Mirrahimi and R.W. Gaskell. "YORP sensitivity to shape and shadowing [# 2348]," abstract presented at the 39th Lunar and Planetary Science Conference, 2008.

317. S.M. Byram and **D.J. Scheeres**. "Rotational Dynamics of a Comet Nucleus Subject to Outgassing Jets [# 1287]," poster presented at the 39th Lunar and Planetary Science Conference, 2008.

318. **D.J. Scheeres**, E.G. Fahnestock and J.E. Bellerose. "Binary Asteroid System Dynamics and Scientific Exploration," invited presentation at the 1st International Primitive Bodies Exploration Working Group meeting, Okinawa, Japan, January 13-16, 2008.

319. **D.J. Scheeres**, A.M. Block, C. Park and *J. Maruskin*. "New Theoretical and Applied Methods in Optimal Control," presentation at the NSF CMMI meeting, Knoxville, Tennessee, January 7-10, 2008.

320. **D.J. Scheeres**, O. Pinon and R.W. Gaskell. "Dynamics Of Dust Fines On Asteroids: Applications To Eros And Itokawa (13.07)," talk presented at the 39th Annual DPS meeting, Orlando, Florida, October 7-12, 2007.

321. **D.J. Scheeres** and S. Mirrahimi. "Evolution of Asteroid Rotation States Subject to the YORP Effect (05.06)," invited talk presented at the 39th Annual DPS meeting, Orlando, Florida, October 7-12, 2007.

322. **D.J. Scheeres** and E.G. Fahnestock. "Ejecta Dynamics and Regolith Transport within Binary Asteroid Systems (51.06)," poster presented at the 39th Annual DPS meeting, Orlando, Florida, October 7-12, 2007.

323. **D.J. Scheeres** and E.G. Fahnestock. "Stand-off Estimation of Binary Asteroid Mass Distributions," poster presented at the Seventh IAA International Conference on Low-Cost Planetary Missions, Pasadena, California, September 12-14, 2007.

324. **D.J. Scheeres**. "Minimum energy catastrophic disruptions," abstract presented at the VIIth Workshop on Catastrophic Disruption in the Solar System, Alicante, Spain, June 2007.

325. **D.J. Scheeres**, O. Peñagaricano, C. Park and V.M. Guibout. "Solving Two-Point Boundary Value Problems in Astrodynamics and Optimal Control," abstract presented at the 21st Canadian Conference on Applied Mechanics, Ryerson University, Toronto 2007.

326. J.E. Bellerose and **D.J. Scheeres**. "Dynamics of the Restricted Full Three-Body Problem," abstract presented at the 21st Canadian Congress of Applied Mechanics, Ryerson University, Toronto 2007.

327. **D.J. Scheeres**. "Minimum Energy Configurations of Resting Equilibria," abstract presented at the 38th American Astronomical Society Division on Dynamical Astronomy, Ann Arbor, May 2007.

328. J.E. Bellerose and **D.J. Scheeres**. "Periodic Orbits in the Restricted Full Three-Body Problem," abstract presented at the 38th American Astronomical Society Division on Dynamical Astronomy, Ann Arbor, May 2007.

329. J. Maruskin and **D.J. Scheeres**. "The Eccentric Frame Method and the Hernquist-Newton Potential," abstract presented at the 38th American Astronomical Society Division on Dynamical Astronomy, Ann Arbor, May 2007.

330. E.G. Fahnestock and **D.J. Scheeres**. "The Dynamics of 1999 KW4 and Similar Binary Near-Earth Asteroids," abstract presented at the 38th American Astronomical Society Division on Dynamical Astronomy, Ann Arbor, May 2007.

331. J. Hudson and **D.J. Scheeres**. "Reduction of Arbitrary Orbit Perturbation Problems to a Standard Form," poster presented at the 38th American Astronomical Society Division on Dynamical Astronomy, Ann Arbor, May 2007.

332. S.M. Byram, **D.J. Scheeres**, and M.R. Combi. "Implications of Outgassing Jets for the Comet Dynamical Environment [#1694]," poster presented at the 38th Lunar and Planetary Science Conference, 2007.

333. H. Miyamoto, H. Yano, A.M. Nakamura, **D.J. Scheeres**, R. Nakamura, M. Ishiguro, S. Abe, T. Hashimoto, N. Hirata, T. Kubota, T. Michikami, T. Nakamura, T. Noguchi, J. Saito, S. Sasaki, A. Tsuchiyama, Y. Yokota. "Rock Piles on Itokawa Observed by the Highest Resolution Images [#1614]," poster presented at the 38th Lunar and Planetary Science Conference, 2007.

334. H. Demura, R. Gaskell, N. Hirata, H. Miyamoto, S. Sasaki, **D.J. Scheeres**, J. Saito. "Geomorphology Group of Hayabusa Global Shape and General Geology of Itokawa [#2309]," abstract presented at the 38th Lunar and Planetary Science Conference, 2007.

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338. E.G. Fahnestock and **D.J. Scheeres**. "Dynamical Characterization and Stabilization of Gravity Tractor Designs for NEO Impact Risk Mitigation," poster presented at the 2007 Planetary Defense Conference, Washington D.C., March 2007.

339. **D. J. Scheeres**, E. G. Fahnestock, S. J. Ostro, J.-L. Margot, L. A. M. Benner, S. B. Broschart, J. Bellerose, J. D. Giorgini, M. C. Nolan, C. Magri, P. Pravec, P. Scheirich, R. Rose, R. F. Jurgens, S. Suzuki, E. M. de Jong. "Dynamical Investigation of Asteroid (66391) 1999 KW4," abstract presented at the American Astronomical Society Division of Planetary Sciences meeting, Pasadena, California, October 2006.

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360. S.J. Ostro, L.A.M. Benner, J.D. Giorgini, R.F. Jurgens, J.-L. Margot, M.C. Nolan, P. Pravec, and **D.J. Scheeres**. "Radar Observations of Binary Near-Earth Asteroid 66391 (1999 KW4)," abstract presented at the Arecibo Asteroid Dynamics Workshop, Arecibo Observatory, Puerto Rico, February 2004.

361. R.S. Park, E. Fischbach, G. Giampieri, J.M. Longuski, **D.J. Scheeres**. "A test of General Relativity: Estimating PPN parameters γ and β from spacecraft radiometric tracking data," poster presented at Spacepart03: Fundamental Physics in Space for the next 20 Years, December 2003.

362. A. Rossi, F. Marzari, **D.J. Scheeres**. "Evolution of NEO rotation rates due to close encounters with Earth and Venus," abstract presented at the American Astronomical Society Division of Planetary Sciences meeting, Monterey, California, September 2003.

363. **D.J. Scheeres**. "The dynamical environment of binary asteroids," abstract presented at the American Astronomical Society Division on Dynamical Astronomy meeting, Cornell University, May 2003.

364. V. Guibout and **D.J. Scheeres**. "Stability of Surface Motion on Rotating Ellipsoids," abstract presented at the American Astronomical Society Division on Dynamical Astronomy meeting, Cornell University, May 2003.

365. **D.J. Scheeres**, E.I. Asphaug, J. Colwell, R. Dissly, P.E. Geissler, L.A. McFadden, V. Petr, R. Reinert, H. Yano. "Asteroid surface science with pods," abstract presented at the 34th Lunar and Planetary Science Meeting, Houston, Texas, March 2003. Abstract 1444.

366. D.W.G. Sears, **D.J. Scheeres**, and R.P. Binzel. "The HERA multiple Near-Earth asteroid sample return mission: Selection of the target asteroids," abstract presented at the 34th Lunar and Planetary Science Meeting, Houston, Texas, March 2003. Abstract 1047.

367. E. Asphaug, J. Colwell, R. Dissly, K. Kanizay, V. Petr, and **D.J. Scheeres**. "Meteoroid bombardment and blast experiments on asteroids," abstract presented at the 34th Lunar and Planetary Science Meeting, Houston, Texas, March 2003. Abstract 1537.

368. E. Asphaug, M.J.S. Belton, A. Cangahuala, L. Keith, K. Klaasen, L. McFadden, G. Neumann, S.J. Ostro, R. Reinert, A. Safaenili, **D.J. Scheeres**, and D.K. Yeomans. "Exploring asteroid interiors: The Deep Interior mission concept," abstract presented at the 34th Lunar and Planetary Science Meeting, Houston, Texas, March 2003. Abstract 1906.

369. A.I. Neishtadt, **D.J. Scheeres**, V.V. Sidorenko, A.A. Vasiliev. "The influence of reactive torques on comet nucleus rotation," abstract presented at the 2002 Asteroids, Comets, Meteors Meeting, Berlin, July 2002.

370. **D.J. Scheeres**, V.V. Sidorenko, A.I. Neishtadt, and A.A. Vasiliev. "Evolution of comet nuclei rotation," abstract presented at the Annual Meeting of the American Astronomical Society Division of Dynamical Astronomy, Timberline Lode, Oregon, April 2002.

371. D.W.G. Sears, C.M. Pieters, D. Britt, **D.J. Scheeres**, L. Gefert, S. Gorevan, and J. Preble. "Life after NEAR: The HERA Mission," poster presented at the American Geophysical Union Fall 2001 meeting, December 2001. Poster P32B-0550.

372. **D.J. Scheeres**, V.V. Sidorenko, A.I. Neishtadt, and A.A. Vasiliev. "Evolution of comet nuclei rotation," abstract presented at the 33rd Annual Meeting of the American Astronomical Society Division of Planetary Sciences, New Orleans, November 2001.

373. A.I. Neishtadt, **D.J. Scheeres** , V.V. Sidorenko, and A.A. Vasiliev. "Evolution of comet nucleus rotation," invited talk presented at the ASTROKAZAN 2001 International Conference, September 24-28, 2001, Kazan, Russia.

374. M. Lara and **D.J. Scheeres**. "Determining stability regions in highly perturbed, nonlinear dynamical systems using periodic orbits," poster presented at the VII Jornadas Zaragoza-Pau de Matematica Aplicada y Estadistica meeting, September 17-18, Jaca, Spain.

375. D.W.G. Sears, L. Gefert, and **D.J. Scheeres**. "Asteroid constraints on multiple Near-Earth asteroid sample return," poster presented at the 64th Annual Meeting of the Meteoritical Society, September 2001, Rome, Italy.

376. A.I. Neishtadt, **D.J. Scheeres** , V.V. Sidorenko, and A.A. Vasiliev. "Evolution of comet nucleus rotation," abstract presented at the Joint U.S-Russian Researchers in Space Science conference, July 2001, University of Maryland - College Park.

377. **D.J. Scheeres**. "Stability of Binary Asteroids," abstract presented at CELMEC III, June 2001, Rome, Italy.

378. **D.J. Scheeres**. "Dynamical constraints on asteroid binaries," abstract presented at Asteroids 2001, June 2001, Palermo, Italy.

379. P. Washabaugh and **D.J. Scheeres**. "Energy and stress distributions in ellipsoids," abstract presented at Asteroids 2001, June 2001, Palermo, Italy.

380. A. Rossi, **D.J. Scheeres**, and F. Marzari. "Evolution of NEOs rotation rate due to repeated close encounters with the earth," abstract presented at Asteroids 2001, June 2001, Palermo, Italy.

381. P. Geissler, **D.J. Scheeres**, and D.D. Durda. "The fate of aseteroidal ejecta," poster presented at Asteroids 2001, June 2001, Palermo, Italy.

382. D.W.G. Sears and **D.J. Scheeres**. "HERA: Multiple NEAR-Earth asteroid sample return, asteroid constraints on sampling," poster presented at Asteroids 2001, June 2001, Palermo, Italy.

383. **D.J. Scheeres**. "Stability of Asteroid Binaries," abstract presented at the 32nd Annual AAS Division on Dynamical Astronomy, Lunar and Planetary Institute, Houston, TX, April 2001.

384. D. W. G. Sears, C. Allen, D. Britt, D. E. Brownlee, A. F. Cheng, C. R. Chapman, B. C. Clark, B. G. Drake, I. A. Franchi, S. Gorevan, H. Kochan, J. S. Lewis, M. M. Lindstrom, K. Nishiizumi, C. M. Pieters, M. S. Race, **D. J. Scheeres**, E. R. D. Scott, and H. Yano. "Near-Earth Asteroid Sample Return Missions," abstract presented at the 33rd Lunar and Planetary Science Conference, Houston, Texas, March 2001.

385. **D.J. Scheeres**. "Trajectories in Close Proximity to Asteroids," invited presentation at the Near Earth Asteroids Sample Return Workshop, Lunar and Planetary Institute, Houston, Texas, December 2000. LPI Abstract 8009.

386. E. Morrow, **D.J. Scheeres**, C.R. McInnes, and D. Lubin. "Solar Sails at Asteroids: Close Proximity Operations for Scientific Missions," poster presented at the 32nd Annual Meeting of the American Astronomical Society Division of Planetary Sciences, Pasadena, California, October 2000. Session 14, Abstract 369.

387. **D.J. Scheeres**, B. Khushalani, J. Bordi, A.S. Konopliv, J.K. Miller, and D.K. Yeomans. "Constraints on Eros density distributions from the measured shape and gravity field," poster presented at the 32nd Annual Meeting of the American Astronomical Society Division of Planetary Sciences, Pasadena, California, October 2000. Session 65, Abstract 645.

388. **D.J. Scheeres**, S.J. Ostro, E.I. Asphaug, R.S. Hudson, and R.A. Werner. "Alteration of Asteroid Spin States During Close Planetary Encounters," abstract presented at the 31st Annual Meeting of the American Astronomical Society Division of Planetary Sciences, Abano Terme, Italy, October 1999. Bulletin of the American Astronomical Society 31:1112.

389. **D.J. Scheeres**. "The Costs of Close Proximity Ops at Asteroids and Comets," paper presented at the International Symposium for Deepspace Communications and Navigation, Pasadena, California, September 1999.

390. **D.J. Scheeres**, B. Khushalani, and R.A. Werner. "Estimating Asteroid Density Distributions from Shape and Gravity Information," poster presented at the Asteroids, Comets, Meteors 1999 Conference, Cornell University, July 1999.

391. **D.J. Scheeres** and F. Marzari, "Orbital evolution of ejecta blankets from comet Tempel 1," abstract presented at the Asteroids, Comets, Meteors 1999 Conference, Cornell University, July 1999.

392. A. Enzian, . . . , **D.J. Scheeres**, "Periodic Comets 46P/Wirtanen and 9P/Tempel 1: Gas Dynamical Modeling of the Near-Nucleus Coma Environment," poster presented at the Asteroids, Comets, Meteors 1999 Conference, Cornell University, July 1999.

393. **D.J. Scheeres** and F. Marzari, "Orbit Dynamics in the comet environment," poster presented at the 30th Annual Meeting of the American Astronomical Society Division of Planetary Sciences, Madison, Wisconsin, October 1998. Bulletin of the American Astronomical Society 30:1091.

394. **D.J. Scheeres**, D.L. Mitchell, and S.J. Ostro, E.I. Asphaug, R.S. Hudson, "Ejecta Distribution Patterns using Multiple 433 Eros Models," poster presented at the 28th Annual Meeting of the American Astronomical Society Division of Planetary Sciences, Tucson, Arizona, October 1996. Bulletin of the American Astronomical Society 28(3): 1104.

395. E. Asphaug, W. Benz, S.J. Ostro, **D.J. Scheeres**, E.M. DeJong, S. Suzuki, and R.S. Hudson, "Disruptive Impacts into Small Asteroids," abstract presented at the 28th Annual Meeting of the American Astronomical Society Division of Planetary Sciences, Tucson, Arizona, October 1996. Bulletin of the American Astronomical Society 28(3): 1102.

396. D. Dunham, R. Farquhar, J. McAdams, B. Williams, **D. Scheeres**, L. Wasserman, A. Klemola, H. Harris, and J. Manek, "Targeting (253) Mathilde," abstract presented at the 28th Annual Meeting of the American Astronomical Society Division of Planetary Sciences, Tucson, Arizona, October 1996. Bulletin of the American Astronomical Society 28(3): 1098.

397. **D.J. Scheeres**, S.J. Ostro, and R.S. Hudson, "Orbits about asteroid 4179 Toutatis," poster presented at the 27th Annual Meeting of the American Astronomical Society Division of Planetary Sciences, Mauna Lani Bay, Hawaii, October 1995.

398. **D.J. Scheeres**, S.J. Ostro, R.S. Hudson, and R.A. Werner, "Orbits about asteroid 4769 Castalia," poster presented at the 26th Annual Meeting of the American Astronomical Society Division of Planetary Sciences, Bethesda, Maryland, November 1994.

Book reviews

1. **D.J. Scheeres**. 2003. Review of June 8, 2004: Venus in Transit. *Journal of Guidance, Control, and Dynamics* 26(4): 670.

2. **D.J. Scheeres**. 2002. Review of Solar System Dynamics. *Meteoritics and Planetary Science* 37(4): 613.

3. **D.J. Scheeres**. 1998. Review of Applied Mathematics in Aerospace Science and Engineering. *Journal of Guidance, Control, and Dynamics* 20(2): 360.

Government reports, software, or industrial reports

1. A. B. Davis and **D. J. Scheeres**. 2021. "GUBAS: General Use Binary Asteroid Simulator," *Astrophysics Source Code Library* : ascl:2107.013.

2. Continuing Kepler's Quest: Assessing Air Force Space Command's Astrodynamics Standards, Final Report from the Committee for the Assessment of the U.S. Air Force's Astrodynamic Standards; Aeronautics and Space Engineering Board; Division on Engineering and Physical Sciences; National Research Council. 2012. P. Nielsen plus contributions from 13 co-authors, including **D.J. Scheeres**, National Research Council Report, The National Academies Press, Washington D.C.

3. Defending Planet Earth: Near-Earth Object Surveys and Hazard Mitigation Strategies, Final Report from the Committee to review Near-Earth Object surveys and hazard mitigation strategies and associated panels. , 2010. I.I. Shapiro plus contributions from 30 co-authors, including **D.J. Scheeres**, National Research Council Report, The National Academies Press, Washington D.C.

4. **D.J. Scheeres**, J.K. Miller, D.K. Yeomans. 2003. "The Orbital Dynamics Environment of 433 Eros: A Case Study for Future Asteroid Missions," *InterPlanetary Network Progress Report* 42-152.

5. **D.J. Scheeres**, M.W. Lo. 2002. "Integrated Trajectory and Navigation Design in Unstable Orbital Environments," *InterPlanetary Network Progress Report* 42-150.

6. **D.J. Scheeres**, D. Han, and Y. Hou. 2001. "Orbit Determination Uncertainty Distributions and Mappings in an Unstable Halo Orbit," *InterPlanetary Network Progress Report* 42-146.

7. **D.J. Scheeres**. 2001. "Design and Analysis of Landing and Low-Altitude Asteroid Flyovers," *InterPlanetary Network Progress Report* 42-146.

8. **D.J. Scheeres**, S. Bhargava, and A. Enzian. 2000. "A Navigation Model of the Continuous Outgassing Field Around a Comet," *Telecommunications and Data Acquisition Progress Report* 42-142.

9. **D.J. Scheeres**. 2000. "A Comparison of Close-Proximity Operations at Comets and Asteroids," *Telecommunications and Data Acquisition Progress Report* 42-141.

10. **D.J. Scheeres** and F. Marzari. 1999. "Dynamics of dust ejected from comet Tempel 1 due to the Deep Impact cratering event," report written for the Deep Impact Discovery Mission PI, M. A'Hearn.

11. N. Samarasinha, H. Boehnhardt, L. Jorda, F. Marzari, B. Mueller, and **D.J. Scheeres**. 1998. "Rotation Models of Comet 46P/Wirtanen," report written for the Rosetta Science Working Group on Comet 46P/Wirtanen.

12. **D.J. Scheeres**. 1998. "Interactions Between Ground-Based and Autonomous Navigation for Precision Landing at Small Solar-System Bodies," *Telecommunications and Data Acquisition Progress Report* 42-132.

13. E. DeJong, S. Suzuki, **D.J. Scheeres**, S.J. Ostro, and R.S. Hudson, "Orbits About Asteroid 4179 Toutatis," JPL Video Release, AVC-96-096. Distributed to a wide international and national science and educational audience.

14. E. DeJong, S. Suzuki, **D.J. Scheeres**, S.J. Ostro, and R.S. Hudson, "Visualization of Earth Approaching Asteroids - 1. Orbits About Asteroid 4769 Castalia (1989 PB)," JPL Video Release, AVC-95-147. Distributed to a wide international and national science and educational audience.

15. W.C. Masters, **D.J. Scheeres**, and S.W. Thurman. 1993. "Enhanced Orbit Determination Filter: Inclusion of Ground System Errors as Filter Parameters," *Telecommunications and Data Acquisition Progress Report* 42-116: 37–41.

16. **D.J. Scheeres**. 1993. "Failure Modes of Reduced-Order Orbit Determination Filters and Their Remedies," *Telecommunications and Data Acquisition Progress Report* 42-114: 34–42.

Invited Seminars and Talks

1. "The Geophysics of Rubble Pile Asteroids," Heiland Lecture at the Colorado School of Mines, November 29, 2023.

2. Panelist on the Distinguished Forum on Space Exploration and Discovery CHEY Institute for Advanced Studies, Dallas, Texas, August 3, 2023.

3. "Asteroid Exploration: Recent results on the geophysical environments of primitive asteroids from the OSIRIS-REx and Hayabusa2 missions," keynote talk at the COMET meeting, ISAE-SUPAERO, Toulouse, France, April 11, 2023.

4. "Collapse and Ejection in the N-body problem and the Formation of Rubble Pile Asteroids," invited seminar at IMCEE, Paris, France, March 27, 2023.

5. "Asteroid Exploration: Recent progress and future prospects," invited seminar at Surrey University, Guilford, United Kingdom, March 22, 2023.

6. "The Computation and Application of Quasi-Periodic Orbits in Space Trajectory Design," invited seminar at the Technical University of Delft, Netherlands, March 13, 2023.

7. "Binary Asteroids: Pathways to Understanding Rubble Pile Asteroids," invited seminar at Aristotle University, Thessaloniki, Greece, March 8, 2023.

8. "The Computation and Application of Quasi-Periodic Orbits in Space Trajectory Design," invited seminar at INRIA, Nice, France, February 24, 2023.

9. "Binary Asteroids: Pathways to Understanding Rubble Pile Asteroids," invited seminar at Côte d'Azur Observatory, Nice, France, February 23, 2023.

10. "Asteroid Exploration: Recent progress and future prospects," invited (remote) lecture at the 2022 KAIST, Daejeon, December 14, 2022.

11. "Missions to Binary Asteroids: A Pathway to Understanding the Morphological Evolution of Rubble Pile Asteroids," invited space science lecture at ISAS/JAXA, November 28, 2022.

12. "The Computation and Application of Quasi-Periodic Orbits (QPOs) in Space Trajectory Design," invited seminar given at Kyushu University, Department of Aeronautics and Astronautics, October 26, 2022.

13. "Asteroid Exploration: Recent progress and future prospects," invited lecture at the Korea Advanced Institute of Science & Technology (KAIST), Daejeon, October 12, 2022.

14. "Astrodynamics for Small Body Missions," Invited (remote) lecture in the Space Engineering: Satellite building and advanced space exploration, Australia National University, September 13, 2022.

15. "Limits on Energy and Angular Momentum for Escape and Collapse in the Full N-Body Problem," invited lecture at the CELMEC VIII, University of Rome Tor Vergata, Italy, September 5-9, 2022.

16. "Mechanics of Rubble Pile Bodies," invited lectures at the CELTA-Cortina ASI Summer School, Isle of Skye, August 22-26, 2022.

17. "The Future of Asteroid Exploration and the Hayabusa2 and OSIRIS-REx Missions," Virginia Tech, January 24, 2022.

18. "Exploration of Asteroids," University of Colorado Retired Professors Seminar Series, November 10, 2021.

19. "New Missions to Asteroids: The major insights into minor planets coming soon," Science Writers Conference, University of Colorado, October 5, 2021.

20. "The Future of Asteroid Exploration and the Hayabusa2 and OSIRIS-REx Missions," Purdue Distinguished Engineering Lecture, Purdue University, September 12, 2019.

21. "Orbital Dynamics Around Asteroids," invited seminar at the Keldysh Institute of Applied Math, Moscow, Russia, June 28, 2019.

22. "The Geophysical Environment of Asteroids (101955) Bennu and (162173) Ryugu," invited highlight talk at the 2nd IAA SciTech Forum, Moscow, Russia, June 25, 2019.

23. "The Future of Asteroid Exploration and the OSIRIS-REx Mission," Waddey Invited Seminar given at Auburn University, April 4, 2019.

24. "Asteroids! OSIRIS-REx at Bennu and Hayabusa2 at Ryugu," public talk given at the Denver Museum of Nature and Science, Denver, November 15, 2018.

25. "The Computation and Application of Quasi-Periodic Orbits (QPOs) in Space Trajectory Design," invited seminar given at GALCIT, California Institute of Technology, November 9, 2018.

26. "Minimum Energy Configurations in the N-Body Problem and the Celestial Mechanics of Granular Systems," invited lecture given at MSRI, University of California Berkeley, October 8, 2018.

27. Series of 5 lectures given at the Harbin Institute of Technology, Harbin, China, July 30 – August 1, 2018.

28. "The Future of Asteroid Exploration and the OSIRIS-REx Mission," seminar given at NASA's Johnson Space Center, July 26, 2018.

29. "The OSIRIS-REx Mission and The Mechanics of Asteroid Exploration," invited seminar given at the Department of Aerospace Engineering, University of Texas – Austin, April 19, 2018.

30. "New relative equilibria for the Full N-Body Problem," post-tenure review seminar given at the Smead Department of Aerospace Engineering Sciences, University of Colorado Boulder, February 14, 2018.

31. "The OSIRIS-REx Mission and The Mechanics of Asteroid Exploration," invited seminar given at the Department of Aerospace Engineering, University of Michigan, October 26, 2017.

32. "Minimum Energy Relative Equilibria and their Implications for the Full N-Body Problem," invited lecture given at the CELMEC VII Conference, Balletti Park Hotel, San Martino al Cimino, Viterbo, Italy, September 4, 2017.

33. "The Mechanics of Rubble Pile Bodies," school lecture given at the school: "Satellite Dynamics and Space Missions: Theory and Applications of Celestial Mechanics," Balletti Park Hotel, San Martino al Cimino, Viterbo, Italy, September 1, 2017.

34. "The Mechanics of Asteroid Exploration: OSIRIS-REx and Future Missions," school lecture given at the school: "Satellite Dynamics and Space Missions: Theory and Applications of Celestial Mechanics," Balletti Park Hotel, San Martino al Cimino, Viterbo, Italy, August 31, 2017.

35. "The Mechanics of Asteroid Exploration: Updates since 2013," seminar given at the Beijing Institute of Technology, Beijing, China, July 13, 2017.

36. "The Mechanics of Asteroid Exploration," seminar given at the Chinese Academy of Sciences, Beijing, China, July 12, 2017.

37. "New relative equilibria and their implications in the Full 3-Body Problem," seminar given at Nanjing University, China, July 10, 2017.

38. "The Mechanics of Asteroid Exploration," seminar given at the Purple Mountain Observatory, Nanjing, China, July 7, 2017.

39. "The Strength of Rubble Pile Asteroids: Evidence and Implications," seminar given at Nanjing University, China, July 6, 2017.

40. Invited address to the University of Colorado Engineering Honors Program yearly banquet, Hotel Boulderado, Boulder, Colorado, May 1, 2017.

41. On-air live interview about the close approach of asteroid 2014 JO25, Channel 9 News, Denver, Colorado, April 19, 2017.
http://www.9news.com/news/local/science/huge-asteroid-to-zip-near-earth-on-wednesday/432433485mje

42. "Near-Earth Asteroids: An Introduction," invited talk at the 2016 Chinese-American Kavli Frontiers of Science Symposium, Beckman Center, Irvine, California, October 15, 2016.

43. Interviews in OSIRIS-REx press coverage in support of launch:

    - University of Colorado Press Release, "Coming to your solar system soon: A rendezvous with an asteroid," September 1, 2016.
    http://www.colorado.edu/today/2016/09/01/coming-your-solar-system-soon-rendezvous-asteroid

- Denver Channel 9 news story: "Colorado-built spacecraft headed on asteroid mission," Maya Rodriguez, KUSA, September 5, 2016.
  http://www.9news.com/news/local/science/colorado-built-spacecraft-headed-on-asteroid-mission/313886056
- Daily Camera news story: "CU scientists key in asteroid rendezvous," by Charlie Brenner, September 8, 2016, page 1B.
- Voice of America radio interview, Science Edition – Press Conference USA, September 9, 2016 edition.
- University of Colorado News Story, "Asteroid mission successfully launched from Florida," September 9, 2016.
  http://www.colorado.edu/today/2016/09/09/asteroid-mission-successfully-launched-florida

44. "New relative equilibria and their implications in the Full 3-Body Problem," Complex/Dynamical Systems Seminar given at the Department of Applied Math, University of Colorado, September 1, 2016.

45. "The Mechanics of Asteroid Exploration," seminar given at the Faculty of Aerospace Engineering, TU-Delft, June 7, 2016.

46. "The Strength of Rubble Pile Asteroids: Evidence and Implications," seminar given at the Department of Physics and Astronomy, University of Western Ontario, April 28, 2016.

47. "The Mechanics of Asteroid Exploration," Gebhardt Distinguished Seminar presented at the Daniel Guggenheim School of Aerospace Engineering, Georgia Technical University, April 7, 2016.

48. "The Strength of Rubble Pile Asteroids: Evidence and Implications," seminar given at NASA-Ames Research Center, March 30, 2016.

49. "The Geophysical and Dynamical Environment of Phobos and Deimos," seminar given at ELSI, Tokyo Institute of Technology, Tokyo, Japan, February 15, 2016.

50. "The Strength of Rubble Pile Asteroids: Evidence and Implications," seminar given at IFAC-CNR, Florence, Italy, January 29, 2016.

51. "The Strength of Rubble Pile Asteroids," seminar given at Lowell Observatory, Flagstaff, Arizona, December 3, 2015.

52. "Microgravity within the Mars Gravity Well," lecture given for the Academic Graduate-Level Course, *Phobos and Deimos: The Moons of Mars*, offered by Brown University and the University of Central Florida, November 9, 2015.

53. "The Geophysics of Bennu: Pre-Encounter Models," seminar given at the OSIRIS-REx Science Team 9, Applied Physics Laboratory, Laurel, Maryland, October 20, 2015.

54. "Geophysical Exploration of Asteroids with Surface Packages," invited talk given at the Institute for Space and Astronautical Science (ISAS), Sagamihara, Japan, July 2015.

55. "The Strength of Rubble Pile Asteroids," seminar given at Kobe University, Kobe, Japan, July 2015.

56. "The Mechanics of Asteroids: Implications for Exploration and Mitigation," seminar presented at the Department of Aerospace Engineering, University of Liege, Belgium, April 22, 2015.

57. "Dynamics of Small Body Explorers," invited talk given at the AstroRecon 2015 Conference, Arizona State University, January 9, 2015.

58. "The Strength of Rubble Pile Asteroids," invited talk given at the Hayabusa 2014: 2nd Symposium of Solar System Materials, Sagimihara, Japan, December 5, 2014.

59. "The Strength and Mechanics of Asteroids: Implications for Exploration and Mitigation," Minta Martin Seminar given at the University of Maryland, Department of Aerospace Engineering, October 29, 2014.

60. "The Strength of Rubble Pile Asteroids," seminar given at the Jet Propulsion Laboratory / California Institute of Technology, September 8, 2014.

61. "The Mechanics of Asteroids: Implications for Exploration and Mitigation," Keynote lecture presented at the 1st Stardust Global Virtual Workshop (SGVW-1) on Asteroids and Space Debris, Strathclyde University, Glasgow, Scotland, May 6, 2014.

62. "Minimum Energy Configurations in the N-body Problem and the Celestial Mechanics of Granular Systems," invited research seminar at IMCCE, Observatoire de Paris, March 18, 2014.

63. "The Mechanics of Exploring Asteroids," invited plenary lecture at the 54th Israel Annual Conference on Aerospace Sciences, Tel Aviv/Haifa, February 20, 2014.

64. "Optimal Control, Active Satellites and Space Situational Awareness," invited research seminar at the Technion, Haifa, Israel, February 17, 2014.

65. "Optimal Control and Space Situational Awareness: A Surprising Couple," invited research seminar at Texas A&M University, College Station, Texas, November 14, 2013.

66. "The Mechanics of Exploring Asteroids," seminar given at Tsinghua University, China, September 27, 2013.

67. "The Mechanics of Exploring Asteroids," seminar given at the Beijing Institute of Technology, China, September 24, 2013.

68. "The Mechanics of Exploring Asteroids," seminar given at Beihang University, China, September 23, 2013.

69. "The Exploration of Asteroids: Our close and (sometimes) dangerous neighbors," public lecture given in Grand Junction, Colorado, April 2013. Part of the "Changing Landscapes of Science Lecture Series."

70. "The Strength of Rubble Pile Asteroids," seminar given at the Nice Observatory, Nice, France, March 2013.

71. "The Mechanics of Exploring Asteroids," Dirk Brouwer Award lecture, AAS/AIAA Spaceflight Mechanics Meeting, Kauai, February 2013.

72. "Astrodynamics of Asteroids," four invited lectures given at the First Astronet-II School, University of Rome Tor Vergata, Rome, Italy, January 14 and 15, 2013.

73. "The Strength of Rubble Pile Asteroids," invited seminar at the University of Central Florida, January 11, 2013.

74. "Minimum Energy Configurations in the N-Body Problem and the Celestial Mechanics of Granular Systems," invited talk presented at the XVI Colóquio Brasileiro de Dinâmica Orbital, Serra Negra, São Paulo, Brazil, November 29, 2012.

75. "Optimal Control, Active Satellites and Space Situational Awareness," invited research seminar at the University of New Mexico, Albuquerque, November 16, 2012.

76. "Exploration of Small Bodies: Asteroids and Comets," invited seminar to undergraduates at the University of New Mexico, Albuquerque, November 16, 2012.

77. "Space Missions to Small Solar System Bodies," invited talk presented at the COSPAR 2012 meeting, PSD.1, Mysore, India, July 16, 2012.

78. "Scaling Forces to the Asteroid Surface: The role of cohesion," invited talk at the Dust, Atmosphere and Plasma environment of the Moon and Small Bodies (DAP-2012) workshop, Boulder, Colorado, June 2012.

79. "Asteroid Shapes and Spins: How the Internal informs the External," invited talk at the Asteroids, Comets, Meteors 2012 Meeting, Niigata, Japan, May 16, 2012.

80. "Exploration of Small Bodies: Asteroids and Comets," keynote talk at the Annual Mustard Seed School (a K-8 school) Annual Organization meeting, Hoboken, New Jersey, April 21, 2012.

81. "Astrodynamics: Orbital Motion of Spacecraft in Strongly Perturbed Environments," five invited lectures given at the 9th Winter School in Dynamical Systems, Pamplona , 23 January 2012 - 27 January 2012.

82. "Optimal Control, Active Satellites and Space Situational Awareness," invited talk at Space Command, Colorado Springs, Colorado, December 6, 2011.

83. "Mathematics in Earth Orbit: The Dynamics of Earth's Artificial Orbital Population," invited talk at the International Conference on Mathematical Modeling in Industry, Sao Paulo, Brazil, December 2011.

84. "Minimum Energy Configurations in the N-Body Problem," seminar in Institute of Astronomy, Geophysics and Atmospheric Sciences at the University of Sao Paulo, Brazil, December 2011.

85. On-air live radio interview regarding the close approach to asteroid 2005 YU55, News Radio 850KOA Denver, November 2, 2011.

86. "Exploration of Small Bodies: Asteroids and Comets," invited presentation and panel member at *SpaceVision 2011*, Students for the Exploration and Development of Space National Conference, October, 2011.

87. "Orbital Mechanics at Small Bodies," John V. Breakwell Invited Lecture, Astrodynamics Symposium, 62nd International Astronautical Federation Congress, October 5, 2011.

88. "A Kiss and Tell With an Asteroid," radio interview with Z. Barr at Colorado Public Radio, June 23, 2011.

89. "SSA Activities at CU Boulder," presentation at the 1st AAS Space Surveillance Workshop, University College, London, June 14, 2011.

90. "The Asteroid Environment: Knowns and Unknowns," invited presentation at the *Target NEO: Providing a Resilient NEO Accessibility Program for Human Exploration Beyond LEO* Open Global Community NEO Workshop, George Washington University, February 22, 2011.

91. "Optimal Control and Space Situational Awareness," Department of Aerospace Engineering Seminar, The University of Illinois, Champaign-Urbana, November 8, 2010.

92. "The Life-cycles of Small Asteroids," SÉMINAIRES "Temps & Espace", IMCCE/Observatoire of Paris, January 11, 2010.

93. "Celestial Mechanics and the lifestyles of small asteroids," Department of Applied Mathematics Colloquium, University of Colorado, May 1, 2009.

94. "The Life-cycles of Small Asteroids," Department of Astronomy Seminar, University of Maryland at College Park, April 1, 2009.

95. "A Proposed Characterization Mission to a Binary Asteroid," National Research Council Panel on Asteroid Mitigation, Washington DC, March 31, 2009.

96. "The Life-cycles of Small Asteroids," LASP Seminar series, University of Colorado at Boulder, March 19, 2009.

97. "Asteroid Exploration: On Earth and in Space," Department of Mechanical and Aerospace Engineering Seminar, University of Missouri – Columbia, March 5, 2009.

98. "The Life-cycles of Small Asteroids," Astrophysics Seminar, Ohio University, February 25, 2009.

99. "The Life-cycles of Small Asteroids," Institute for Space and Astronautical Science, Japanese Exploration Agency, Japan, January 26, 2009.

100. "Orbital Mechanics about and on Comet 67P/C-G," Workshop on trajectories about small bodies, CNRS, Toulouse, France, December 11, 2008.

101. "Orbit Mechanics of and About Asteroids," 5 seminars at the XIII Ciclo de Cursos Especiais, Observatório Nacional, Rio de Janeiro, Brazil, October 27-31, 2008.

102. "Characterization and Correlation of One-Pass Optical Observations," Space Situational Awareness Workshop, Maui, HI, September 22, 2008.

103. "Characterization and Correlation of One-Pass Optical Observations," Kirtland Air Force Research Lab, August 5, 2008.

104. "Asteroid Exploration: On Earth and in Space," University of Texas at Austin, Center for Space Research, July 28, 2008.

105. "The Life-cycles of Small Asteroids," Institute for Astronomy Colloquium, University of Hawaii at Manoa, April 23, 2008.

106. "Celestial Mechanics of the Full Two-Body Problem: Applications to Binary Asteroids," Applied Mathematics Dynamics Seminar, University of Colorado, February 14, 2008.

107. "Asteroid Exploration: On Earth and In Space," ISTI-CNR, Pisa, Italy, June 21, 2007.

108. "Asteroid Exploration: On Earth and In Space," University of Zaragoza, Zaragoza, Spain, June 18, 2007.

109. "Asteroid Exploration: On Earth and In Space," Massachusetts Institute of Technology, Earth and Planetary Science Seminar, April 25, 2007.

110. "Asteroid Exploration: On Earth and In Space," California Institute of Technology, Planetary Science Seminar, February 27, 2007.

111. "Asteroid Exploration: On Earth and In Space," University of Michigan, Department of Aerospace Engineering Seminar, January 18, 2007.

112. "The Full Two Body Problem," Texas A&M University, Department of Aerospace Engineering Seminar, November 16, 2006.

113. "The Full Two Body Problem," University of Illinois, Champaign-Urbana, Department of Aerospace Engineering Seminar, November 6, 2006.

114. "Asteroids Up Close and Personal," Calvin College, Grand Rapids, Physics/Astronomy Seminar, October 17, 2006.

115. "Space Missions to Asteroids: NEAR and Hayabusa," Harbin Institute of Technology, Harbin, China, July 20, 2006.

116. "The Full Two-Body Problem: Celestial Mechanics and Binary Asteroids," Harbin Institute of Technology, Harbin, China, July 20, 2006.

117. "Asteroid Mission Design and Navigation," Harbin Institute of Technology, Harbin, China, July 21, 2006.

118. "Space Missions to Asteroids," Beihang University, Beijing, China, July 18, 2006.

119. "The Full Two-Body Problem," ETSI Aeronauticos, Technical University of Madrid, May 30, 2006.

120. "Solving Two Point Boundary Value Problems with Generating Functions," Department of Applied Mathematics, University of Murcia, Spain, May 2006.

121. "The Full Two-Body Problem: Celestial Mechanics and Binary Asteroids," Department of Applied Mathematics, University of Murcia, Spain, May 2006.

122. "Space Missions to Asteroids," University of Alicante, Spain, May 2006.

123. "Stability of Binary Asteroids Formed Through Fission," Southwest Research Institute – Boulder, February 20, 2006.

124. "The Full Two Body Problem," UCLA Department of Mechanical and Aerospace Engineering, February 16, 2006.

125. "Optimal Feedback Control and Hamiltonian Dynamics," Tokyo Metropolitan University, December 9, 2005.

126. "Space Exploration Missions to Asteroids," Tokyo Metropolitan University, December 9, 2005.

127. "Fundamental Limits on Spacecraft Orbit Uncertainty and Distribution Propagation," Guidance, Navigation and Control Section, Jet Propulsion Laboratory, July 29, 2005.

128. "The Full Two Body Problem: Celestial Mechanics and Binary Asteroids," Applied and Interdisciplinary Mathematics Seminar, Department of Mathematics, University of Michigan, April 8, 2005.

129. "Space Exploration and Astrodynamics," Shipman Society Seminar, University of Michigan, October 27, 2004.

130. "Exploration and Astrodynamics," Undergraduate Student Seminar, Department of Aerospace Engineering, University of Michigan, September 17, 2004.

131. "The High Impact of Low Thrust Propulsion," FEGI Student Seminar, University of Michigan, August 6, 2004.

132. "Dynamics of Planetary Satellite Orbiters: Applications to JIMO at Europa," Navigation Systems Section, Jet Propulsion Laboratory, August 2, 2004.

133. "The Dynamical Environment about Asteroid 25143 Itokawa: Scientific Implications," Institute of Space and Astronautical Science, Japan, June 8, 2004.

134. "The Dynamical Environment about Asteroid 25143 Itokawa: Navigation Implications," Institute of Space and Astronautical Science, Japan, June 7, 2004.

135. "Asteroid Fission and Final Rotation Rates," Spaceflight Dynamics Section, ISTI-CNR, Pisa, Italy, April 2004.

136. "Full Body Problems: Where to next?," Full Body Problem Workshop, California Institute of Technology, November 14, 2003.

137. "The Full 2-Body Problem," Michigan Aerospace Seminar, Department of Aerospace Engineering, University of Michigan, October 9, 2003.

138. "Past, Present and Pending Space Missions to Asteroids and Comets," Space Science Seminar Series, Atmospheric and Oceanic Space Science Department, University of Michigan, September 26, 2003.

139. "Close Proximity Spacecraft Operations About Asteroids and Comets," University of Michigan ΣΓΤ chapter, September 25, 2003.

140. "The Dynamical Environment of Binary Asteroids," Non-linear Astrodynamics Group, California Institute of Technology, July 2003.

141. "The Dynamical Environment of Binary Asteroids," Navigation Systems Section, Jet Propulsion Laboratory, July 2003.

142. "The Full Two-Body Problem and the Dynamics of Binary Asteroids," University of Padova, Italy, June 2003.

143. "The Orbital Dynamics Environment of 433 Eros," Spaceflight Dynamics Section, ISTI-CNR, Pisa, Italy, June 2003.

144. "The Full Two-Body Problem and the Dynamics of Binary Asteroids," Cornell University, Theoretical and Applied Mechanics Seminar, May 2003.

145. "Mission Phases for Close Proximity Operations at Small Bodies and Other Issues," invited seminar at the B612 Foundation Founder's Meeting, March 14, 2003.

146. "Dynamics of Mutual Attraction: Gravitational Coupling of Rotation and Translation," California Institute of Technology, CDS Seminar, November 2002.

147. "Close Proximity Operations at Small Bodies: Orbiting, Hovering, and Hopping," Workshop on Scientific Requirements for Mitigation of Hazardous Comets and Asteroids, Arlington, Virginia, September 3-6, 2002.

148. "Engineering Constraints of Sample Collection," Workshop on Scientific Criteria for the Samples for the Hera Mission, workshop held at the Meteoritical Society Meeting, UCLA, July 21, 2002.

149. "Orbit Determination and Control of a Spacecraft in a Libration Point Orbit," Jet Propulsion Laboratory/California Institute of Technology, Pasadena, July 19, 2002.

150. On-air live interview concerning asteroid impact and hazard mitigation, P.W. Smith Show, WJR 760 AM, July 7, 2002.

151. "Orbit Determination and Control of a Spacecraft in a Libration Point Orbit," CNUCE, Pisa, Italy, June 2002.

152. "Orbit Determination and Control of a Spacecraft in a Libration Point Orbit," University of Barcelona, Barcelona, Spain, June 2002.

153. "The Orbital Dynamics Environment of 433 Eros," Faculty of Mathematics, University of Barcelona, Barcelona, Spain, June 2002.

154. "Dynamics of Binary Asteroids," UM Astronomy Colloquium, March 2002.

155. "Landing on an Asteroid: NASA's NEAR Mission," The University of Michigan, Department of Aerospace Engineering Undergraduate Seminar, Ann Arbor, September 2001.

156. "Spacecraft Formation Flight in Unstable Orbital Environments," UM Control Seminar Series, April 2001.

157. "Orbit Determination in Unstable Orbits," Jet Propulsion Laboratory/California Institute of Technology, Pasadena, August 2, 2000.

158. "Stability of Asteroid Binary Systems," CNUCE, Pisa, Italy, July 2000.

159. "Hovering and Orbit Dynamics of the Muses-C S/C at Asteroid 1989 ML," Institute of Space and Astronautical Science, Japan, May 24, 2000.

160. "NEAR at Eros: A science report on the mission to date," Institute of Space and Astronautical Science, Japan, May 22, 2000.

161. "NEAR at Eros: An Overview of the Mission to Date," Institute of Space and Astronautical Science, Japan, May 15, 2000.

162. "Ejecta Dynamics at Comet Tempel 1," Deep Impact Cratering Workshop, Ball Aerospace, February 2, 2000.

163. "NASA's Near Earth Asteroid Rendezvous (NEAR) Mission to Asteroid Eros," The University of Michigan, Department of Aerospace Engineering Undergraduate Seminar, Ann Arbor, October 1999.

164. "Measuring the Attraction of Eros," Dept. of Aeronautics and Astronautics, Purdue University, October 5, 1999.

165. "Design and Objectives of the NEAR Orbital Mission about 433 Eros," Institute of Space and Astronautical Science, Japan, July 23, 1999.

166. "Orbital Dynamics of the NEAR Spacecraft About Asteroid 433 Eros," Tsukuba Space Center (NASDA), Japan, June 24, 1999.

167. "Measuring the Mathilde and Eros Gravity Fields for the NEAR Mission," Institute of Space and Astronautical Science, Japan, June 3, 1999.

168. "Stability and Control of Hovering Orbits about Small Bodies," Jet Propulsion Laboratory/California Institute of Technology, March 16, 1999.

169. "Stability analysis of a Europa Orbiter," Jet Propulsion Laboratory/California Institute of Technology, Pasadena, March 15, 1999.

170. "Making Mathilde (and Toutatis) Tumble," University of California – Santa Cruz, February 1999.

171. "Spacecraft dynamics in the comet environment," University of Padova, Italy, July 13, 1998.

172. "Spacecraft dynamics in the comet environment," Jet Propulsion Laboratory/California Institute of Technology, Pasadena, June 4, 1998.

173. "Navigation in Unstable Orbits," Libration Point Mission Workshop, California Institute of Technology, February 6, 1998.

174. "Navigating Asteroid Flybys," Iowa State University AIAA chapter, November 1997.

175. "Landing Softly on a Comet," Iowa State University, Dept. of Aerospace Engineering and Engineering Mechanics, Ames, March 1997.

176. "Rosetta spacecraft dynamics at the comet Wirtanen," European Space Operations Center, Darmstadt, Germany, November 1996.

177. "Navigating to Near-Earth Asteroids," The University of Michigan, Department of Aerospace Engineering, Ann Arbor, November 1996.

178. "Spacecraft Dynamics about Asteroids," The University of Minnesota, Department of Aerospace Engineering and Mechanics, Minneapolis, March 1996.

Service to Professional Societies

Memberships

National Academy of Engineering Elected, 2017

International Academy of Astronautics Corresponding Member, Elected 2018

Celestial Mechanics Institute Board Member since 2008, Elected President 2016

American Astronautical Society Fellow, 2008

American Institute of Aeronautics and Astronautics Fellow, 2014

American Astronomical Society
Member of the Division for Planetary Sciences
Member of the Division on Dynamical Astronomy: Elected Vice-Chair for 2010/2011, Chair for 2011/2012, Past-Chair for 2012/2013.

International Astronomical Union Commission 07, Celestial Mechanics and Dynamical Astronomy

International Astronautical Federation Astrodynamics Committee

Journal Editorships

Associate Editor SIAM Journal on Applied Dynamical Systems (2010-2021)

Scientific Editor The Astronomical Journal, published by the Institute of Physics (2009-2016).

Scientific Editor The Astronomical Journal / The Astrophysical Journal, published by the Institute of Physics (2016-).

Associate Editor Celestial Mechanics & Dynamical Astronomy: An International Journal of Space Dynamics, published by Springer (2003-2020).

Associate Editor Journal of the Astronautical Sciences, published by the American Astronautical Society (2003-2018).

Associate Editor Journal of Guidance, Control, and Dynamics, published by the American Institute of Aeronautics and Astronautics (2005-2019).

Editorial Board Journal of Nonlinear Science, published by Springer (2008-2012).

Review Activities

NASA Review Panel Member Space Situational Awareness, 2011-2012.

NASA Proposal Review Panel Chair Near Earth Object Observations, August 2012.

NRC Panel Member Astrodynamics Standards panel, 2011-2012.

NRC Panel Member Mitigation of hazardous asteroids panel, 2009-2010.

NASA James Web Space Telescope Orbit Determination Review 2006, 2010.

NASA Discovery Data Analysis Program Proposal Review Board 2004.

NASA Planetary Astronomy Proposal Review Board 2003.

NASA Planetary Data Systems Review Board Planetary Data Systems Small Bodies Node: Comet review (April 2006), Lead reviewer for radio science data sets for the Stardust mission (August 2003), Near Earth Asteroid Rendezvous mission (August 2001).

NASA Red Team Review Board Member of the Genesis Mission Red Team Review Board, held at Lockheed-Martin, Denver, 2000.

JPL Peer Review Board Member of the Genesis Mission Peer Review Board, held at the California Institute of Technology, 1998.

Paper Reviews for the Journals *Science*; *Nature*; *Geophysical Review Letters*; *Icarus*; *Astronomical Journal*; *Astronomy and Astrophysics*; *Planetary and Space Science*; *Journal of Guidance, Control and Dynamics*; *Celestial Mechanics and Dynamical Astronomy*; *Journal of Spacecraft and Rockets*; *IEEE Transactions on Control Systems Technology*; *Physica D*; *Chaos*; *Nonlinearity*; *Journal of the Astronautical Sciences*; *Journal of Geophysical Research – Planets*; *Astrophysics and Space Science*; *Acta Astronautica*; *Journal of Power and Propulsion*; *Reviews of Geophysics*, *International Journal of Control*, *SIAM Journal on Applied Dynamical Systems*, *Astronomical Journal*, *Astrophysical Journal*, *Conference on Decision and Control*.

Proposal Reviews JPL New Millennium Program proposals, NASA Office of Space Science Proposals for the Planetary Geology and Geophysics Progam and the Planetary Atmospheres and Theoretical Modeling Program, U.S. Civilian Research and Development Foundation, JPL Telecommunications and Mission Operations Technology Program proposals, German-Israel Foundation for Scientific Research and Development, Israel Science Foundation.

Committee Activities

Vice-Chair American Astronomical Society's Division on Dynamical Astronomy, term starts July 2010. Culminates in position as Chair of AAS-DDA for one year, starting July 2011.

Member American Institute of Aeronautics and Astronautics Astrodynamics Technical Committee.

Member International Astronautical Federation Astrodynamics Committee.

Member American Astronomical Society Division of Dynamical Astronomy Committee (2001-2004).

Member American Astronautical Society Technical Committee on Space Flight Mechanics (1998-2003, 2005 - 2010).

Chair American Astronautical Society's Dirk Brouwer Award Committee (2007-2010).

Chair American Astronomical Society Division on Dynamical Astronomy Student Travel Stipend Committee (2004-2005).

Chair American Astronautical Society's Breakwell Student Travel Award Committee (2001-2004).

Conference Activities

Session Chair 2013 AAS-DPS meeting, Denver, Colorado. Co-chaired a contributed session.

Member Scientific organizing committee for the 3rd Workshop on Binary Asteroids, Kona, Hawaii, June 2013.

Session National Chairperson American Astronautical Society – Guidance, Navigation and Control Conference, Breckenridge, February 2013.

Session National Chairperson American Astronautical Society – Guidance, Navigation and Control Conference, Breckenridge, February 2011.

Member Scientific organizing committee for the 2nd Workshop on Binary Asteroids, Poznan, Poland, July 2010.

Session Chair 2010 AAS-DPS meeting, Pasadena, California. Co-chaired a contributed session.

Session Chair 2010 LPSC meeting, Houston, Texas. Co-chaired a contributed session.

Session Chair 2009 AAS-DPS meeting, San Juan, Puerto Rico. Co-chaired a contributed session.

Micro-Symposium Organizer Applications of Phase Space Analysis to Astrodynamics, 2009 SIAM Conference on Dynamical Systems, Snowbird, Utah. May 2009.

Member Scientific organizing committee for the 7th Alexander von Humboldt Colloquium for Celestial Mechanics, Bad Hofgastein, Austria, March 30 - April 5, 2008.

Invited Session Chair 2007 AAS-DPS meeting, Orlando, Florida. Co-chaired an invited session: *YORP Observed!*

General Chair 2007 AAS/AIAA Astrodynamics Specialist Conference, Mackinac Island, Michigan.

Co-Chair 2007 AAS-DDA Annual Meeting, Ann Arbor, Michigan.

Member Scientific organizing committee for the Workshop on Spacecraft Reconnaissance of Asteroid and Comet Interiors, Santa Cruz, California, October 5-6, 2006.

Member Scientific organizing committee for the Hayabusa Symposium 2006.

General Chair 2006 AIAA/AAS Astrodynamics Specialist Conference, Keystone, Colorado.

Technical Chair Winter 2003 AAS/AIAA Space Flight Mechanics Conference, Ponce, Puerto Rico.

Member Scientific organizing committee for the International Workshop on the Scientific Requirements for Mitigation of Hazardous Comets and Asteroids, Washington D.C., September 2002.

General Chair Winter 2001 AAS/AIAA Space Flight Mechanics Conference, Santa Barbara, California.

Session Chair Several AAS/AIAA Space Flight Mechanics and Astrodynamic Specialists Meeting sessions.

Session Chair Several AAS-DDA Meeting sessions.

Session Chair 2004 American Control Confernence, Boston, June 2004, Optimal Control session.

Session Co-Chair 24th International Symposium on Space Technology and Science, Miyazaki, Japan, June 2004, Student session, Guidance and Navigation session, Planetary Science session.

Session Co-Chair 23rd International Symposium on Space Technology and Science, Matsue, Japan, May 2002, Country-wide Education and Outreach Activity session.

Session Co-Chair AAS-DPS 2001 Meeting, Cometary Nuclei and Dynamics session.

Session Chair SPACE 98 conference, Albuquerque, New Mexico, April 1998.