

PUBLICATIONS

Books:

1. Interplanetary Astrodynamics, D.B. Spencer and J.S. Parker, Microcosm Press and Springer, Space Technology Library, 2015 (est).
2. The Aerospace Engineering Handbook, R. H. Bishop, D.B. Spencer, and W.A. Crossley, Editors, Taylor and Francis/CRC Press, 2015 (est).
3. Volume 114 of the Science and Technology Series, Results and Opportunities - The Decade of Utilization - 1st Annual ISS Research and Development Conference, co-editor with J.A. Robinson, 2013, 604 pages.
4. Astrodynamics 2001, Advances in the Astronautical Sciences, Volume 109, Parts I, II & III, co-editor with C.A. Seybold, A. Misra, and R. Lisowski, AAS Publication by Univelt, 2001, 2568 pages.
5. Astrodynamics 1997, Advances in the Astronautical Sciences, Volume 97, Parts I & II, co-editor with F.R. Hoots, B. Kaufman and P.J. Cefola, AAS Publication by Univelt, 1997, 2162 pages.

Chapters:

1. *The International Handbook of Space Technology* (Malcolm McDonald, editor), Springer Praxis Books, 2014
 - Chapter 1 - Introduction
2. *Space Mission Engineering: The New SMAD*, (James R. Wertz, David B. Everett and Jeffery J. Puschell, editors), Microcosm Press, 2011
 - Chapter 7 - Orbital Debris
3. *Space Modeling and Simulation: Roles and Applications Throughout the System Lifecycle*, Larry Rainey, editor, The Aerospace Press, 2004.
 - Chapter 12 (Orbital Mechanics and Mission Design),
 - Chapter 14 (Orbital Debris)

Journals:

1. Williams, P.S., D.B. Spencer, and R.S. Erwin, "Coupling of Estimation and Sensor Tasking Applied to Satellite Tracking", *Journal of Guidance, Control, and Dynamics*, Vol. 36, No. 4 pp. 993-1007, DOI: 10.2514/1.59361, 2013.
2. Paul, M.V., D.B. Spencer, S.E. Lego, and J.P. Muncks, "The Penn State Lunar Lion: A University Mission to Explore the Moon", *Acta Astronautica*, Vol. 96, March-April 2014, pp. 65-77, 2013.
3. Kim, J-S, J.V. Urbina, T.J. Kane and D.B. Spencer, "Improvement of TIE-GCM thermospheric density predictions via incorporation of helium data from NRLMSISE-00", *Journal of Atmospheric and Solar-Terrestrial Physics*, DOI 10.1016/j.jastp.2011.10.018, 2011.

4. Scott, C.J., and D.B. Spencer, "Calculating Transfer Families to Periodic Distant Retrograde Orbits Using Differential Correction," *Journal of Guidance, Control and Dynamics*, Vol. 33, No. 5, pp. 1592-1605, 2010.
5. Jordan, D.D., D.B. Spencer, T.W. Simpson, M.A. Yukish and G.M. Stump, "Optimal Continuous-Thrust Trajectories via Visual Trade Space Exploration," *The Journal of the Astronautical Sciences*, Vol. 57, No. 4, pp. 755-766, 2010.
6. Kang, B-N., D.B. Spencer, S. Tang and D.D. Jordan, "Optimal Periodic Cruise Trajectories via a Two Level Optimization Method", *Journal of Spacecraft and Rockets*, Vol. 47, No. 4, pp. 597-613, DOI: 10.2514/1.47365, 2010.
7. Benavides, J.C., and D.B. Spencer, "The four-body linear equations of planar relative motion", *Acta Astronautica*, Vol. 22, Issue 1, pp. 285-300, 2010.
8. Binz, C., D.B. Spencer, D.A. Levin, and T.W. Simpson, "Designing for the Space Environment via Trade Space Exploration", *Journal of Spacecraft and Rockets*, Vol. 47, No. 6, pp. 1070-1073, 2010.
9. Scott, C.J., and D.B. Spencer, "Transfers to Sticky Distant Retrograde Orbits", *Journal of Guidance, Control and Dynamics*, Vol. 33, No. 6, pp. 1940-1946, 2010.
10. Ferringer, M.P., D.B. Spencer, D.B., and P. Reed, "Many-objective reconfiguration of operational satellite constellations with the Large-Cluster Epsilon Non-dominated Sorting Genetic Algorithm-II", *IEEE Congress on Evolutionary Computation*, 2009; CEC '09. Publication Date: 18-21 May 2009, pp. 340-349, DOI: 10.1109/CEC.2009.4982967.
11. Kim, J. S., D. B. Spencer, T. J. Kane, and J. Urbina, "Thermospheric density model blending techniques: Bridging the gap between satellites and sounding rockets", *Radio Science*, 44, RS0A22, DOI:10.1029/2008RS004069, 2009.
12. Hur, P.-S., Melton, R.G., and Spencer, D.B., "Meeting Science Requirements for Attitude Determination and Control in a Low-Power, Spinning Nanosatellite, *Journal of Aerospace Engineering, Sciences and Applications*, Vol. 1, No. 1, pp. 25-33, 2008.
13. Mathew, A., and D.B. Spencer, "Incorporating Cooperative Learning Activities into Traditional Aerospace Engineering Curricula", Vol. 17, No. 3, pp. 25-38, *The Journal of Aviation/Aerospace Education and Research*, 2008.
14. Bessette, C.R., and D.B. Spencer, "Performance Comparison of Stochastic Search Algorithms on the Interplanetary Gravity Assist Trajectory Problem", *Journal of Spacecraft and Rockets*, Vol. 44, No. 3, pp. 722-724, 2007.
15. Kobrick, R.L, and D.B. Spencer, "Optimizing Trajectories for Suborbital Human Spaceflight", *Journal of Spacecraft and Rockets*, Vol. 44, No. 2, pp. 460-463, 2007.
16. Wissler, M.A., D.B. Spencer, and R.G. Melton, "Coast-Arc Orbit Stability During Spiral-Down Trajectories about Irregularly Shaped Body", *Journal of Spacecraft and Rockets*, Vol. 44, No. 1, pp. 254-263, 2007.
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18. Bilén, S.G., C.R. Philbrick, T.F. Wheeler, J.D. Mathews, R.G. Melton, and D.B. Spencer, “An Overview of Space Science and Engineering Education at Penn State”, *Aerospace and Electronic Systems Magazine*, IEEE, Vol. 21, Issue 7, pp. S23-S27, 2006.
19. Ferringer, M.P. and D.B. Spencer, “Satellite Constellation Design Tradeoffs Using Multiple-Objective Evolutionary Computation”, *Journal of Spacecraft and Rockets*, Vol. 43, No. 6, pp. 1404-1411, 2006.
20. Chadwick, W.J. III, D.B. Spencer, and R.G. Melton, “Geometric Visibility of Ground Sites for Beacon/Relays on the Martian Moons”, *Journal of Spacecraft and Rockets*, Vol. 43, No. 1, pp. 228-230, 2006.
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22. Igarashi, J. and D.B. Spencer, “Optimal Continuous Thrust Orbit Transfer Using Evolutionary Algorithms,” *Journal of Guidance, Control and Dynamics*, Vol. 28, No. 3, pp. 547-549, 2005.
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31. Spencer, D.B., and R.D. Culp, “Designing Continuous-Thrust Low-Earth-Orbit to Geosynchronous-Earth-Orbit Transfers”, *Journal of Spacecraft and Rockets*, Vol. 32, No. 6, pp. 1033-1038, 1995.

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Conference Proceedings and Presentations:

1. Policelli, M.J., and D.B. Spencer, "Vertical Takeoff Vertical Landing Spacecraft Trajectory Optimization Via Direct Collocation and Nonlinear Programming", AAS 15-354, AAS/AIAA Space Flight Mechanics Meeting, Williamsburg, VA, January 11-15, 2015.
2. Reiter, J.A., A.K. Nicholas, and D.B. Spencer, "Optimization of Many-Revolution, Electric-Propulsion Trajectories with Engine Shutoff Constraints", AAS 15-237, AAS/AIAA Space Flight Mechanics Meeting, Williamsburg, VA, January 11-15, 2015.
3. DiGirolamo, L.J., A.H. Hoskins, K.A. Hacker and D.B. Spencer, "A Hybrid Motion Planning Algorithm for Safe and Efficient Close Proximity, Autonomous Spacecraft Missions", AIAA 2014-4130, AIAA/AAS Astrodynamics Specialists Conference, San Diego, CA, August 4-7, 2014.
4. Abraham, A.J., D.B. Spencer, and T.J. Hart, "Particle Swarm Optimization of 2-Maneuver, Impulsive Transfers from LEO to Lagrange Point Orbits", 24th International Symposium on Space Flight Dynamics, Laurel, MD, May 2014.
5. Abraham, A.J., D.B. Spencer, and T.J. Hart, "Preliminary 2-D Optimization of Low-Thrust, Geocentric-to-Halo-Orbit Transfers via Particle Swarm Optimization", AAS 14-199, AAS/AIAA Space Flight Mechanics Meeting, Santa Fe, NM, January 26-31, 2014.
6. Hassa, C.L., D.B. Spencer, and S.G. Bilén, "Drag Coefficient Estimation Using Satellite Attitude and Orbit Data", AAS 14-349, AAS/AIAA Space Flight Mechanics Meeting, Santa Fe, NM, January 26-31, 2014.
7. Abraham, A.J., D.B. Spencer, and T.J. Hart. "Optimization of Preliminary Low-Thrust Trajectories From GEO-Energy Orbits to Earth-Moon, L1, Lagrange Point Orbits Using Particle Swarm Optimization." AAS 13-925, AAS/AIAA Astrodynamics Specialist Conference, Hilton Head, SC, August 2013.
8. Spencer, D.B. and B.S. Shank, "Preliminary Development of an Optimized Lambert Problem Solver for Targets in Elliptical Orbits", AAS 13-222, AAS/AIAA Space Flight Mechanics Meeting, Lihue, Hawaii, February 11-14, 2013.
9. McKennon-Kelly, R.E., P.S. Reed, D.B. Spencer and M.P. Ferringer, "Model Diagnostics and Dynamic Emulation: Enhancing the Understanding and Impact of Complex Models in Satellite Constellation Design", AAS 13-441 AAS/AIAA Space Flight Mechanics Meeting, Lihue, Hawaii, February 11-14, 2013.
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12. Liang, K., D.B. Spencer, and J. Yuan, "Optimizing the Perilune of Lunar Landing Trajectories Using Dynamical Systems Theory", AIAA 2012-4430, AIAA/AAS Astrodynamics Specialists Conference, Minneapolis, MN, August 13-16, 2012.
13. Williams, P.S., D.B. Spencer and R.S. Erwin, "Utilizing Stability Metrics to Aid in Sensor Network Management Solutions for Satellite Tracking Problems", AAS 12-111, AAS/AIAA Space Flight Mechanics Meeting, Charleston, SC, January 29-February 2, 2012.
14. Williams, P.S., D.B. Spencer and R.S. Erwin "Comparison of Two Single-Step, Myopic Sensor Management Decision Processes Applied to Space Situational Awareness", AAS 12-112, AAS/AIAA Space Flight Mechanics Meeting, Charleston, SC, January 29-February 2, 2012.
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16. Polito, C.J. and D.B. Spencer, "The Probability of Asteroid-Earth Collisions by way of the Positional Uncertainty Ellipsoid", AAS 11-409, AAS/AIAA Astrodynamics Specialists Conference, July 31-August 4, 2011.
17. Benavides, J.C., and D.B. Spencer, "Analytic Solutions of the N-Body Problem", AAS 10-186, AAS/AIAA Spaceflight Mechanics Meeting, San Diego, CA, February 14-17, 2010.
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19. Ahn, Y.T., and D.B. Spencer, "Preliminary Analysis of a Spacecraft Attitude Control System Using a Shifting Mass Distribution", IAC-09-C1.6.7, International Astronautical Congress, Daejeon, Republic of Korea, October 12-16, 2009.
20. Scott, C.J., and D.B. Spencer, Families of Transfer Trajectories to Distant Retrograde Orbits, Part 1: Transfers to Periodic Orbits, AAS 09-399, AAS/AIAA Astrodynamics Specialists Conference, Pittsburgh, PA, August 9-13, 2010.
21. Scott, C.J., and D.B. Spencer, Families of Transfer Trajectories to Distant Retrograde Orbits, Part 2: Single Impulse Transfers and Transfers to Quasi-periodic Orbits, AAS 09-400, AAS/AIAA Astrodynamics Specialists Conference, Pittsburgh, PA, August 9-13, 2010.
22. Spencer, D.B., Simpson, T.W., Yukish, M.A., and Stump, G., (2009) "Visual Steering Commands to Support Research in Trade Space Exploration", *NSF Engineering Research and Innovation Conference*, Honolulu, HI, June 22-25, 2009, National Science Foundation.

23. Benavides, J.C., and Spencer, D.B., "The Two-Dimensional Linearized Equations of Perturbed Relative Motion", AAS 09-190, AAS/AIAA Spaceflight Mechanics Meeting, February 9-12, 2009, Savannah, GA.
24. Williams, P.S., and Spencer, D.B., "Applications of Non-Linear Constrained Optimization Methods and an Evolutionary Strategy on Low-Thrust LEO to Molniya and LEO to GEO Orbit Transfers", AAS 09-215, AAS/AIAA Spaceflight Mechanics Meeting, February 9-12, 2009, Savannah, GA.
25. Jordan, D.D., Spencer, D.B., Simpson, T.W., Yukish, M.A., and Stump, G.M., "Optimal Continuous-Thrust Orbit Transfers via Trade Space Exploration", AAS 09-218, AAS/AIAA Spaceflight Mechanics Meeting, February 9-12, 2009, Savannah, GA.
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27. Simpson, T.W., D.B. Spencer, M.A. Yukish, and G.M. Stump, "Visual Steering Commands and Test Problems to Support Research in Trade Space Exploration", 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, AIAA 2008-6085, Victoria, British Columbia Canada, September 2008.
28. Scott, C.J., and D.B. Spencer, "Stability Mapping of Distant Retrograde Orbits and Transports in the Circular Restricted Three- Body Problem", AIAA-2008-6431, AIAA/AAS Astrodynamics Specialists Conference, Honolulu, HI, August 2008.
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46. Haerberle, D.W., D.B. Spencer, and T.A. Ely, "Interplanetary Navigation Using a Distributed Deep Space Network Architecture," AIAA 2004-4744, AIAA/AAS Astrodynamics Specialists Conference, Providence, RI, August 2004.
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48. Hur, Phill-Sun, R.G. Melton, and D.B. Spencer, "Attitude Determination and Control of a Nanosatellite Using the Geomagnetic Field Data and Sun Sensors", AAS 04-144, AAS/AIAA Space Flight Mechanics Meeting, Maui, HI, February 2004.

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51. Spencer, D.B., R.G. Melton, and S.G. Chianese, "Selecting Projects for a Capstone Spacecraft Design Course", AAS 03-503, AAS/AIAA Astrodynamics Specialists Conference, Big Sky, MT, August 2003.
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