CURRICULUM VITAE

Contact Information

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Citizenship: United States of America

Education

M.S. (1986) Physics, Vanderbilt University, Nashville, TN
B.A. (1984) Chemistry and Physics, Transylvania University, Lexington, KY
International Space University (1991), Space Business & Management, Toulouse, France

Employment

2008 – Present
Deputy Manager, Advanced Concepts Office
NASA Marshall Space Flight Center, Huntsville, Alabama

2005 - 2008
Manager, Science Programs and Projects Office
NASA Marshall Space Flight Center, Huntsville, Alabama

2002 – 2005
Manager, In-Space Propulsion Technology Project
NASA Marshall Space Flight Center, Huntsville, Alabama

2000 – 2002
Manager, In-Space Transportation Technology, Advanced Space Transportation Program, NASA Marshall Space Flight Center, Huntsville, Alabama

1999 – 2000
Manager, Interstellar Propulsion Research Project, Advanced Space Transportation Program, NASA Marshall Space Flight Center, Huntsville, Alabama

1996 – 1999
Study Manager for Space Tether Missions and Applications, Program Development Directorate, NASA Marshall Space Flight Center, Huntsville, Alabama

1990 – 1996
Study Manager for Space Science Advanced Concepts, Program Development Directorate, NASA Marshall Space Flight Center, Huntsville, Alabama

1986 – 1990
Research Physicist, General Research Corporation, Huntsville, Alabama

Space Flight Project Experience

2007 – 2011
Co-Investigator, T-Rex Space Tether Experiment (with JAXA)

1997 - 2003
Principal Investigator, Propulsive Small Expendable Deployer System

Awards & Recognition

Featured in the January 2013 issue of *National Geographic* magazine
LinkedIn "Top 5% Viewed Biographies for 2012"
NASA MSFC Director's Commendation, 2011
Rotary Stellar Award Finalist, 2007
Vanderbilt University Holladay Lecturer in Physics, 2007
NASA Exceptional Achievement Medal, 2000
NASA Exceptional Achievement Medal, 1999
Professional of the Year: Huntsville Association of Technical Societies, 1998
Who's Who in Science and Engineering, 1991 – present
MENSA

Technical Committees and Advisory Boards

2012 – Present
Advisory Board Member, Journal of the British Interplanetary Society

2012
Scientific Organizing Committee Member, 4th IAA Symposium on Searching for Life's Signatures

2011 and 2013
Chair, Tennessee Valley Interstellar Workshop

2007 – 2011
Co-Chair, DIA-USA/SMDC-ORNL-NASA/MSFC Emerging and Enabling Technology Conference

2007 – Present
Scientific Committee Member, IAA Symposia on Realistic Near-Term Advanced Scientific Deep Space Missions

2004 – Present
Co-Chair, Joint Army-Navy-NASA-Air Force (JANNAF) Spacecraft Propulsion Subcommittee

Professional Societies

2013 – Present
World Future Society

2012 – Present
Science Fiction and Fantasy Writers of America

2012 – Present
British Interplanetary Society

2009 - Present
National Space Society

Inactive
American Institute of Aeronautics and Astronautics
Mensa

Patents

"A Laser-Triggered Fiber Optic Neutron Sensor," 1994
"Combination Solar Sail and Electrodynamic Tether Propulsion System," 2003
"Electrodynamic Tether," 2006

Books Authored

Sky Alert! – When Satellite Fail (2013)
Going Interstellar (2012) with Jack McDevitt
Back to the Moon (2010 – hardcover; 2011 - paperback) with co-author Travis Taylor
Paradise Regained: The Regreening of Planet Earth (2009) with co-authors Gregory Matloff and C Bangs
Solar Sails (2008) with co-authors Giovanni Vulpetti and Gregory Matloff (Honorable Mention - First Runner Up - in the 2008 Cosmology and Astronomy category of the 2008 PROSE Awards given by the Association of American Publishers)
Living off the Land in Space (2007) with co-authors Gregory Matloff and C Bangs

Textbook Chapters

The International Handbook of Space Technology (2012), Chapter 21: Advanced Concepts
AIAA Aerospace Materials and Applications (2012), Chapter 13: Advanced Materials for In-Space Propulsion

Technical Consultant

Europa Report (movie) Theatrical Release planned for 2013
Lost In Space: The Movie 1998 Theatrical Release, New Line Cinemas
Citadel novel by John Ringo
Deep Six novel by Jack McDevitt
Cradle of Saturn novel by James P. Hogan
Deep Space Probes textbook by Gregory Matloff
Kicking the Sacred Cow popular science book by James P. Hogan
Hyperthought novel by M. M. Buckner

Television Appearances

Aliens: The Definitive Guide, The Science Channel (2013)
Evacuate Earth, NatGeo TV (December 2012)
Physics of the Impossible with Michio Kaku, "How to Build a Starship," the Science Channel (2010)
Exodus Earth, The Science Channel (2010)
Space, The Discovery Channel (2002)

Selected Publications

Les Johnson, Michael Meyer, Bryan Palaszewski, David Coote, Dan Goebel and Harold White, "Development priorities for in-space propulsion technologies," Acta Astronautica, Vol. 82, No. 2, February 2013.

Les Johnson, Roy Young, Nathan Barnes, Louis Friedman, Vaios Lappas and Colin McInnes, "Solar Sails: Technology and Demonstration Status," International Journal of Aeronautical and Space Science, Vol. 13, No. 4, 2012.

Sven Bilen, Les Johnson, et al, "The PROPEL Electrodynamic Tether Demonstration Mission," AIAA Space 2012 Conference, Pasadena, CA, September 11 – 13, 2012.

Les Johnson, et al, "Multiple NEO Rendezvous Using Solar Sail Propulsion," AIAA Global Space Exploration Conference, Washington, DC, May 22-24, 2012.

Michael Meyer, Les Johnson, Bryan Palaszewski, David Coote, Dan Goebel and Harold White, "Roadmap for In-Space Propulsion Technology," AAAF-ESA-CNES Space Propulsion 2012 Conference, Bordeaux, France, May 7 – 10, 2012.

Les Johnson, George Khazanov, Brian Gilchrist, Robert Hoyt, Nobie Stone and David Lee, "Space Tethers," The Journal of Space Technology and Science, Vol. 26, no.1, spring 2012.

Fujii, H.A., … Johnson, L., et al, "Space Demonstration of Bare Electrodynamic Tape-Tether Technology on the Sounding Rocket S520-25," AISS-2011-6503, AIAA Guidance, Navigation, and Control Conference, Portland, Oregon, August 8-11, 2011.

Les Johnson, Michael Meyer, Bryan Palaszewski, David Coote, Dan Goebel and Harold White, "Technology Area Roadmap for In-Space Propulsion Technologies," Proceedings of the IAA Seventh Symposium on Realistic Near-Term Advanced Scientific Space Missions, Aosta, Italy, July 11-14, 2011.

Les Johnson, Roy Young, Edward Montgomery, and Dean Alhorn, "Status of Solar Sail Technology within NASA," Advances in Space Research, Volume 48 (2011), 1687 – 1694.

Les Johnson, Mark Whorton, et al, "NanoSail-D: A Solar Sail Demonstration Mission," Acta Astronautica, Vol. 68 (2011) 571-575.

Les Johnson and Mike Meyer, "Technology Roadmap for In-Space Propulsion Technologies," 2010 AFRL/JPL/NASA Advanced Space Propulsion Workshop, Colorado Springs, Colorado, November 2010.

Les Johnson, et al, "Solar Sail Propulsion Enabling New Capabilities for Heliophysics," 2011 Heliophysics Decadal Survey, arXiv: 1012.5250v1 [physics.space-ph], November 10, 2010.

Les Johnson, Roy Young, Edward Montgomery, and Dean Alhorn, "Status of Solar Sail Technology Within NASA," Second International Symposium on Solar Sailing, New York, New York, July 2010.

L. Johnson, H.A. Fujii, and J.R. Sanmartin, "Electrodynamic Propulsion System Tether Experiment (T-Rex)," May 2010 JANNAF Propulsion Meeting, Colorado Springs, CO.

Les Johnson and Dan Thomas, "A Comparison of Lunar Lander Options for Robotic Exploration of the Moon," Journal of the British Interplanetary Society, Vol. 62, No. 1, January 2009.

Hironori Fujii, Takeo Watanabe, Les Johnson, et al, "Sounding Rocket Experiment of Bare Electrodynamic Tether System," Acta Astronautica, Vol. 64 (2009), pp. 313-324

L. Johnson, H.A. Fujii, and J.R. Sanmartin, "Fortissimo: A Japanese Space Test of Bare Anode Tethers," Dec. 2008 JANNAF Propulsion Meeting, Orlando, Florida

Gregory L. Matloff, Roman Zezerashvili, Claudio Maccone, and Les Johnson, "The beryllium hollow-body solar sail: exploration of the Sun's gravitational focus and the inner Oort Cloud," 2008, physics, space-ph, arXiv:0809.3535

L. Johnson and Paul Gilbert, "NASA's Discovery Program: Moving toward the Edge (Of the Solar System)," Journal of the British Interplanetary Society, Vol. 61, No. 8, August 2008.

Gregory L. Matloff, Les Johnson, and Claudio Maccone, "Helios and Prometheus: A Solar/Nuclear Outer-Solar System Mission," Journal of the British Interplanetary Society, Vol. 60, No. 12, December 2007

Les Johnson, Roy M. Young, and Edward E. Montgomery, "Recent Advances in Solar Sail Propulsion Systems at NASA," Acta Astronautica, Vol. 61 (2007), 376-382

Johnson, Les; Young, Roy; and Montgomery, Edward E., Status of Solar Sail Propulsion: Moving Toward an Interstellar Probe," New Trends in Astrodynamics and Applications III, AIP Conf. Proc., February 7, 2007, Volume 886, pp. 207-214

Les Johnson, Bonnie James, Randy Baggett, and Edward E. Montgomery, "NASA's In-Space Propulsion Technology Program: A Step Toward Interstellar Exploration," 41st Symposium Realistic Near-Term Advanced Scientific Space Missions, Aosta, Italy, 4-6 Jul. 2005

Les Johnson, David Harris, Ann Trausch, Gregory L. Matloff, Travis Taylor, and Kathleen Cutting, "A Strategic Roadmap to Centauri," Journal of the British Interplanetary Society, Vol. 58, No. 9/10, September/October 2005

L. Johnson, D. Harris, A. Trausch, G.L. Matloff, T. Taylor, and K. Cutting, "In-Space Propulsion: Connectivity to In-Space Fabrication and Repair," NASA/TM-2005-214184, September 2005

Griffin, Brand; Thomas, Brent; Vaughan, Diane; Drake, Bret; Johnson, Les; Woodcock, Gordon, "A Comparison of Transportation Systems for Human Missions to Mars, 40th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit; Fort Lauderdale, FL; July 11-14, 2004

Les Johnson, Leslie Alexander, Randy Baggett, Joseph Bonometti, Melody Herrmann, Bonnie James, and Edward E. Montgomery, "NASA's In-Space Propulsion Technology Program: Overview and Status," 52nd Joint Army-Navy-NASA- Air Force Propulsion Meeting, 10-13 May, 2004

Johnson, Les; Alexander, Leslie; Baggett, Randy M; Bonometti, Joseph A; Herrmann, Melody; James, Bonnie F; Montgomery, Sandy E, "NASA In-Space Propulsion Technology Program: Overview and Update," 36th Annual Division for Planetary Science Meeting; 8-10 Nov. 2004

E.E. Montgomery, L. Johnson, R. Young, J. Presson, "Solar Sail Propulsion: A Simple, Propellantless, Rapidly Maturing Technology," American Astronomical Society, DPS meeting #36, #10.02; Bulletin of the American Astronomical Society, Vol. 36, 2004

L. Johnson and J. Robinson, "NASA's In-Space Propulsion Technology Program," American Astronomical Society, DPS meeting #36, #10.01; Bulletin of the American Astronomical Society, Vol. 36, 2004

E. Montgomery and C. Johnson, "The Development of Solar Sail Propulsion for NASA Science Missions," 45th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, Palm Springs, California, Apr. 19-22, 2004

Les Johnson, Enrico Lorenzini, Brian Gilchrist, Nobie Stone, and Ken Wright, "Propulsive Small Expendable Deployer System (ProSEDS) Experiment: Mission Overview and Status," AIAA-2003-5094, 39th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Huntsville, Alabama, July 20-23, 2003

Woodcock, Gordon; Farris, Robert; Johnson, Les; Jones, Jonathan; Kos, Larry; Trausch, Ann, "Benefits of Nuclear Electric Propulsion for outer Planet Exploration," 38th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Indianapolis, IN; 7-10, July 2002

B. Eberle, B. Farris, L. Johnson, J. Jones, and L. Kos, "Selection and Prioritization of Advanced Propulsion Technolgies for Future Space Missions," 38th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Indianapolis, Indiana, July 7-10, 2002

Les Johnson, B. Farris, B. Eberle, G. Woodcock, and B. Negast, "Integrated In-Space Transportation Plan," NASA/CR-2002-212050, October 2002

Johnson, Les, "Propulsion Technologies for Exploration of the Solar System and Beyond," Review of Scientific Instruments, Volume 373, No. 2, Pages 1079-1082, 2001

Johnson, Les, "Propellantless Propulsion Technologies for In-Space Transportation," 52nd IAF Conference, Toulouse, France; 1-5 Oct. 2001

Kirk Sorensen, Les Johnson, and Ken Welzyn, "Conceptual design issues of a Spinning Tether Orbital Transfer System (STOTS)," Aerospace Sciences Meeting and Exhibit, 38th, Reno, NV, Jan. 10-13, 2000

Johnson, L; Leifer, S. "Propulsion Options for Interstellar Exploration," AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, 36th, Huntsville, AL; 16-19 July 2000

Matloff, Gregory L., and Johnson, Les, "Magnetic surfing - Reformulation of Lenz's law and Applications to Spacecraft Propulsion," AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, 36th, Huntsville, AL, 16-19 July, 2000

Les Johnson, "The Tether Solution," IEEE Spectrum, Volume 37, Issue No. 7, Pages 38-43, July 2000

L. Johnson, R.D. Estes, E. Lorenzini, M. Martinez-Sanchez, and J. Sanmartin, "Propulsive Small Expendable Deployer System Experiment," Journal of Spacecraft and Rockets, 2000, vol. 37, no. 2

E. C. Lorenzini; M. L. Cosmo; M. Kaiser; M. E. Bangham; D. J. Vonderwell; L. Johnson, "Mission Analysis of Spinning Systems for Transfers from Low Orbits to Geostationary," Journal of Spacecraft and Rockets, 2000 vol.37 no.2 (165-172)

R. D. Estes; E. C. Lorenzini; J. Sanmartin; M. Martinez-Sanchez; C. L. Johnson; and I. E. Vas , "Bare Tethers for Electrodynamic Spacecraft Propulsion," Journal of Spacecraft and Rockets 2000, vol.37 no.2 (205-211)

L. Johnson, B. Gilchrist, R. D. Estes and E. Lorenzini, "Overview of Future NASA Tether Applications," Advances in Space Research, 1999, Volume 24, Issue 8, p. 1055-1063

Santangelo, Andrew; Johnson, Les; Gilchrist, Brian; Hoffman, John; Lorenzini, Enrico; Estes, Robert, "Advancing electrodynamic tethers to commercially viable systems -

STEP-AIRSEDS," NASA/JPL/MSFC/AIAA Annual Advanced Space Propulsion Workshop, 10th, Huntsville, AL; 5-8 Apr. 1999

Johnson, Les; Estes, Robert D; Lorenzini, Enrico; Martinez-Sanchez, Manuel; Sanmartin, Juan; Vas, Irwin, "Electrodynamic Tethers for Spacecraft Propulsion," AIAA, Aerospace Sciences Meeting & Exhibit, 36th, Reno, NV; 12-15 Jan. 1998

Johnson, Les; Ballance, Judy; Gilchrist, Brian; Estes, Robert D; Lorenzini, Enrico, "Propulsive Small Expendable Deployer System (ProSEDS) Space Experiment," AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, 34th, Cleveland, OH; 13-15 July 1998

Johnson, L; Herrmann, M., "International Space Station Electrodynamic Tether Reboost Study," 1998, NASA Technical Memorandum 1998-208538

Johnson, L., Gilchrist, B., Estes, R. D., Lorenzini, E, Martinez-Sanchez, M., and Sanmartin, J., "Electrodynamic Tether Propulsion for Spacecraft and Upper Stages, July 1998 JANNAF Propulsion Meeting, Volume 1, pages 253-262

Gallagher, D L; Johnson, L; Moore, J; Bagenal, F, "Electrodynamic Tether Propulsion and Power Generation at Jupiter," NASA Technical Publication 1998-208475

Johnson, L., and Herrmann, M., "Tether-Based Investigation of the Ionosphere and Lower Thermosphere Concept Definition Study Report, NASA Technical Memorandum, 1997-108843

Armstrong, T.P, and Johnson, L., "Magnetosphere Imager Science Definition Team Interim Report," NASA Technical Memorandum, 1995

Johnson, L., and Herrmann, M., "Inner Magnetosphere Imager mission: a new window on the plasma universe," Optical Engineering 33(02), 329-334, February 1994

Johnson, Les and Herrmann, Melody, "Imaging the Earth's magnetosphere from space - The inner magnetosphere imager mission," Instrumentation for Magnetospheric Imagery II; Proceedings of the Conference, San Diego, CA; UNITED STATES; 14 July 1993. pp. 2-10. 1993

Herrmann, Melody, and Johnson, Les, "Spacecraft design considerations for an inner-magnetosphere imager mission," Proceedings of SPIE -- Volume 1744 Instrumentation for Magnetospheric Imagery, June 1992, pp. 2-12

Johnson, Charles L., and Brown, Norman S., "Near-term SEI science missions utilizing an evolutionary lunar transportation system," IAF, International Astronautical Congress, 43rd, Washington, Aug. 28-Sept. 5, 1992

Charles L. Johnson, Kurtis L. Dietz, T. W. Armstrong, and B. L. Colborn, "Mitigation of Adverse Environmental Effects on Lunar-Based Astronomical Instruments," Space '92, Proceedings of the Third International Conference held in Denver, Colorado, May 31-June 4, 1992

Johnson, Charles L., and Dietz, Kurtis L., "Effects of the lunar environment on optical telescopes and instruments," Proceedings of SPIE -- Volume 1494, Space Astronomical Telescopes and Instruments, September 1991, pp. 208-218

Selected Recent Public Speaking Appearances and Technical Conferences*

2012

- The University of Tennessee at Martin (Martin, TN)
- The Rochester Institute of Technology (Rochester, NY)
- Georgia Tech (Atlanta, GA)
- Calhoun Community College (Huntsville, AL)
- Korean Advanced Institute of Science and Technology (Daejon, South Korea)
- International Space University Summer Session Program (Cocoa Beach, FL)
- Global Space Exploration Conference (Washington, DC)*
- Concepts and Approaches for Mars Exploration Workshop (Houston, TX)*
- MidSouthCon Science Fiction Convention (Memphis, TN)
- DeepSouthCon Science Fiction Convention (Huntsville, AL)
- LibertyCon Science Fiction Convention (Chattanooga, TN)
- Constellation Science Fiction Convention (Huntsville, AL)
- Contraflow Science Fiction Convention (New Orleans, LA)
- DragonCon (Atlanta, GA)

2011

- The University of Illinois at Urbana/Champaign (Urbana, IL)
- International Space University Summer Session Program (Graz, Austria)
- 7th IAA Symposium on Realistic Advanced Scientific Space Missions (Aosta, Italy)*
- International Space Development Conference (Huntsville, AL)*
- The Chattanooga Public Library (Chattanooga, TN)
- MidSouthCon Science Fiction Convention (Memphis, TN)
- LibertyCon Science Fiction Convention (Chattanooga, TN)
- DragonCon (Atlanta, GA)
- Constellation Science Fiction Convention (Huntsville, AL)
- FenCon Science Fiction Convention (Dallas, TX)