

EUGENE H. LEVY

EDUCATION

A.B., Physics, 1966, Rutgers University.
Ph.D., Physics, 1971, University of Chicago.

PRESENT POSITION

RICE UNIVERSITY [2000–PRESENT]:

Andrew Hays Buchanan Professor of Astrophysics, Department of Physics & Astronomy, 2010–present.
Provost, Howard R. Hughes Chair, Professor of Physics & Astronomy, 2000–2010.

PROFESSIONAL HISTORY

UNIVERSITY OF ARIZONA [1975–2000]:

Dean of the College of Science, University of Arizona, 1993–2000.
Head of Planetary Science Department / Director of Lunar & Planetary Laboratory, 1983–1994.
Professor of Planetary Science and in the Lunar & Planetary Laboratory, 1983–2000.
Associate Professor, 1978–1983.
Assistant Professor, 1975–1978.
Professor of Physics, 1995–2000.
Director and Founder, Arizona/NASA Space Grant College Consortium, 1989–2000.
Theoretical Astrophysics Program, 1985–2000.
Applied Mathematics Program, 1981–2000.

BARTOL RESEARCH INSTITUTE [1973–1975]:

Research in Physics and Astrophysics, Swarthmore, Pennsylvania, (now located at University of Delaware, Newark, DE) 1973–1975.

UNIVERSITY OF MARYLAND [1971–1973]:

Postdoctoral Fellow, Department of Physics and Astronomy, Astronomy Program.

UNIVERSITY OF CHICAGO [1966–1971]:

NASA Pre-doctoral Fellow, University of Chicago, 1966–1969.
Research Assistant, Department of Physics, Laboratory for Astrophysics and Space Research, Enrico Fermi Institute, 1969–1971.
Teaching Assistant, Department of Physics, occasionally during 1966–1969 (supplement to fellowship).

EASTMAN KODAK COMPANY [SUMMER 1966]:

Research Physicist, Eastman Kodak Physics Research Laboratory, Rochester, New York.

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RESEARCH CONCENTRATION & TEACHING

My research interests and activities encompass several areas of theoretical astrophysics, planetary geophysics, solar and space physics, magnetohydrodynamics and electrodynamics. Among specific areas in which I have worked are the generation, behavior, and influence of magnetic fields in natural bodies, including the Earth, Sun, and planets, the origin of the geomagnetic reversal, and the theory of cosmic rays. I have also explored physical processes associated with the formation of stars and planetary systems. In addition, I have worked on the development of observational techniques for the discovery and study of other planetary systems.

I have taught both graduate and undergraduate courses listed in departments of Planetary Science, Physics, and Astronomy; I enjoy the diverse challenges of teaching at the various levels. At the graduate level, I especially focus on helping students toward physical insights, and toward seeing the simplicity of physical phenomena, often hidden under mathematical formalism. At the other end of the teaching spectrum, in general education courses aimed at non-science students, I am gripped by the opportunity to paint on a broad intellectual canvas, and to bring students to understand in a serious – and yet simple – way ideas about which they had not previously glimpsed real understanding...or perhaps even the notion that understanding is accessible.

AWARDS, FELLOWSHIPS & HONORARIES

NASA Pre-doctoral Fellow, University of Chicago, 1966-1969.

Center for Theoretical Physics Fellow, University of Maryland, 1971-1973.

NASA Distinguished Public Service Medal, 1983.

Distinguished Visiting Scientist, Jet Propulsion Laboratory: California Institute of Technology, 1985-1991.

Alexander von Humboldt-Stiftung Senior Scientist Award, Federal Republic of Germany, 1989, resident at Max-Planck-Institut für extraterrestrische Physik, Garching bei München.

Martin Luther King, Jr. Distinguished Leadership Award. Awarded by the University of Arizona Martin Luther King, Jr. Center, 1996.

Hispanic Alumni Association Outstanding Administrator Award (inaugural recipient). Awarded by the University of Arizona Hispanic Alumni Association, 1999.

Fellow of the American Association for the Advancement of Science.

Phi Beta Kappa, Sigma Xi.

SCHOLARLY SOCIETIES & LISTINGS (PAST AND PRESENT)

American Astronomical Society
& Division of Planetary Sciences
American Physical Society
American Geophysical Union
International Astronomical Union

Who's Who in America
Who's Who in Frontier Science & Technology
Who's Who in Technology Today
Who's Who of Emerging Leaders in America
Who's Who in Science and Engineering
Who's Who in the World

RESEARCH & OTHER GRANTS

Principal Investigator on research grants from the National Aeronautics and Space Administration and the National Science Foundation. In addition, I have received education-enhancement grants from the NASA Space Grant Program, as well as academic program-development support from the Alfred P. Sloan Foundation.

PROJECT/CONSORTIUM LEADERSHIP

I initiated and served as Leader and Principal Investigator of the *Astrometric Imaging Telescope Project*, a spacecraft-design-project collaboration between the University of Arizona (with collaborators at the University of Pittsburgh and the University of California at San Diego) and, initially the NASA Ames Research Center, and subsequently the Jet Propulsion Laboratory of the California Institute of Technology. The project aimed to develop methods, instrumentation, and an earth-orbiting spacecraft design for the purpose of discovering and studying planetary systems around other stars. 1985-94.

I established and served for a decade as Director of the *NASA/Arizona Space Grant College Consortium*. This NASA-funded, statewide consortium of Arizona universities, colleges, technical institutes and industries was designed to foster educational experiences for students – especially undergraduate students – to support outreach to the public schools, and to encourage and provide motivating educational research opportunities, especially for individuals from underrepresented minority populations and women. 1988-2000.

CONCURRENT ACTIVITIES

APPOINTMENTS AS MEMBER OR CHAIR OF PRIMARILY NATIONAL AND INTERNATIONAL ADVISORY COMMITTEES, ETC.

Member. *Committee on Planetary and Lunar Exploration of the Space Science Board (COMPLEX)*, NRC/National Academy of Sciences, 1976-79.

Member. *Comet Halley Science Working Group*, National Aeronautics and Space Administration, 1977.

Chair and Convener. *American Geophysical Union Special Symposium on the Generation of Planetary Magnetic Fields*, 1977.

Co-Chair. *Space Science Board Study: Exploration of Primitive Solar-System Bodies – Asteroids and Comets*, NRC/National Academy of Sciences, 1978.

Member. *NASA Space Science Steering Committee – Spacelab Physical Science Review Panel*, 1979.

Chair. *Committee on Planetary and Lunar Exploration of the Space Science Board (COMPLEX)*, NRC/National Academy of Sciences, 1979-82.

Member. *Space Science Board*, NRC/National Academy of Sciences, 1979-82.

Consultant. Magnetohydrodynamics applications to national defense, Rockwell International Corporation, 1980.

Chair. *Fields and Particles Panel of the International Comet Mission Review Committee*, NASA; Member of the Theory Panel, 1980.

Member. *Theory Advisory Panel of the Space Science Board*, NRC/National Academy of Sciences, 1980.

Member. *Review Panel: Origin of Plasmas in the Earth's Neighborhood*, National Aeronautics and Space Administration, 1980.

Member. *Solar System Exploration Committee of the National Aeronautics and Space Administration Advisory Council*, 1980-83.

Member. *COSPAR International Technical Panel on Comets*, 1980-82.

Member. *U.S.-NASA Delegation to U.S.-U.S.S.R.-Europe Conference on International Cooperation in Investigations of Comet Halley*, Padua, Italy, 1981.

Member. *U.S.-NASA Delegation to U.S.-U.S.S.R. Space-Cooperation Treaty Joint Working Group on Near-Earth Space, the Moon, and Planets*, 1981.

Member of the Steering Committee and Co-Founder. *Universities Space Science Working Group*, Association of American Universities, 1982-86.

Member. International Programme Advisory Board, *International Conference on Cometary Exploration*, Budapest, Hungary, 1982.

Head of U.S. Delegation and Co-Chair. *International Joint Working Group on Cooperation in Planetary Exploration*, NRC/National Academy of Sciences & European Science Foundation 1982-84.

Member. *Ames Research Center Planetary Detection Study*, National Aeronautics and Space Administration, 1983.

Member. *Solar System Exploration Division Management Council*, National Aeronautics and Space Administration, 1983-87.

Member. *Study Panel on Renewing U.S.-Soviet Cooperation in Space Science*, United States Congress Office of Technology Assessment, 1984.

Member of the Steering Group and of the Planetary Panel. *Space Science Board Committee on "Major Directions for Space Science, 1995-2015"*, NRC/National Academy of Sciences, 1984-86.

Member. *Committee on Future Space Station Science Projects*, National Aeronautics and Space Administration, 1985.

Member. *Space Station Science Users Working Group*, National Aeronautics and Space Administration, 1985-88.

Member. *Space and Earth Science Advisory Committee of the National Aeronautics and Space Administration Advisory Council*, 1985-88.

Chair. *Comet Rendezvous and Asteroid Flyby Review Panel*, National Aeronautics and Space Administration, 1986.

Member. *Mars Exploration Strategy Advisory Group*, National Aeronautics and Space Administration, 1986.

Chair. *Advisory Committee on International Cooperation for Mars Sample Return*, Space Science Board, NRC/National Academy of Sciences, 1986-88.

Member. *Mars Rover Sample Return Science Working Group*, National Aeronautics and Space Administration, 1987-89.

Co-Chair of the Planetary Exploration Group. *Pacific Rim Nations International Space Year Conference*, Kailua Kona, Hawaii, 1987.

Member and Executive Committee. *Toward Other Planetary Systems Science Working Group (TOPSSWG)*, National Aeronautics and Space Administration, 1988-92.

Member. *Lunar and Planetary Geophysics Review Panel*, National Aeronautics and Space Administration, 1988-90.

Member. *Committee on Cooperation with the U.S.S.R. on Planetary Sciences*, NRC/National Academy of Sciences. 1988-89.

Member. *Organizing Committee for Evolution of Planetary Systems Symposium: Centennial Meeting of the Astronomical Society of the Pacific*, Berkeley, California, 1989.

Chair and Convener. *Protostars and Planets III: International Conference on the Formation of Stars and Planetary Systems*, 1990.

Member. *Astronomy and Astrophysics Survey Committee, Science Opportunities Panel*, NRC/National Academy of Sciences (For the National Science Foundation and NASA), 1989-90.

Member. *Origins of Solar Systems Program Review Panel*, National Aeronautics and Space Administration, 1990-93.

Member. *Study Panel on the Robotic Exploration of the Moon and Mars*, United States Congress Office of Technology Assessment, 1991.

Chair of the Council of Institutions (1991-92); Member of Board of Directors (1991-98); Vice-Chair of the Board of Directors and Member of the Steering Committee (1993-98). *Universities Space Research Association (USRA)*.

Member. Organizing Committee, *First International Conference on Discovery and Study of Other Planetary Systems*. National Aeronautics & Space Administration, Jet Propulsion Laboratory, 1992.

Chair. Planet Formation and Detection Group, *Origins of Solar Systems Program Review Panel*, National Aeronautics and Space Administration, 1993-95.

Member. *International Science Foundation (Soros Fund) Selection Panel: Former Soviet Union Science Projects*, 1993-94.

Member. *Arizona Governor's Science and Technology Advisory Committee*, 1993-2000.

Chair. *Origins of Solar Systems Program Management Operations Working Group*, National Aeronautics and Space Administration, 1994-96.

Member. *American Astronomical Society Policy Committee on Public Education*, 1994-97.

Chair. *Discovery-4 Space-Flight-Mission Selection Board*, National Aeronautics and Space Administration, 1995.

Panelist. *U.S. Senate Republican Conference Issues Forum on Science and Technology*, Washington, D.C., 1996.

Member. *NASA Institute for Advanced Concepts (NIAC) Review Panel*.

Member. *Keck Observatory Telescope Allocation Committee (NASA Keck TAC: Public Time Allocation)*, 1998-2000.

Member. *Discovery Missions Review Panel*, National Aeronautics and Space Administration, 1998.

Member. *Astronomy and Astrophysics Survey Committee, "Benefits Panel"*, NRC/National Academy of Sciences (For the National Science Foundation and NASA), 1999.

Chair. *External Review Committee of the Department of Space Physics and Astronomy*, Rice University, 1999.

Member. Board of Directors, *National Space Grant Alliance*, 1999-2000.

Member. *Planning Committee for the International Space Station Institute*, Associated Universities, Inc. (AUI), Washington, DC, 2000-01.

Member. *External Review Committee of Visitors, Department of Physics and Astronomy*, Vanderbilt University, 2001.

Member. *Board of Trustees, Associated Universities, Inc. (AUI)*, Washington, DC, 2001–. (Member of the Executive Committee, 2002–present; Board Chair Designate, 2006-2007; Board Chair, 2007-2010).

Member. *Planetary Protection Advisory Committee*, National Aeronautics and Space Administration. 2002–2005.

Member. *Jovian Icy Moons Tour Review Board*, National Aeronautics and Space Administration, 2002–2003.

Member. *Space Telescope Science Institute Council*, Associated Universities for Research in Astronomy (AURA), 2003–2009.

Member, *Board of Directors, National Space Biomedical Research Institute*. 2004–2017. (Advisory Committee to the Chair 2007–2008)

Chair, *Planetary Protection Advisory Committee*, National Aeronautics and Space Administration Advisory Council. 2005–2006.

Member, *NASA Advisory Council*, 2005–2006.

Chair. *Board of Trustees, Associated Universities, Inc. (AUI)*, Washington, DC, 2007–2010.

Member. *National Task Force on Teacher Education in Physics*. American Physical Society, American Institute of Physics, American Association of Physics Teachers, Washington, DC. 2008–2012.

Member. *Board of Trustees (previously Board of Advisers)*, Tan Tao University, Hồ Chí Minh City, Vietnam. 2009–now.

Chair, *Planetary Protection Subcommittee*, National Aeronautics and Space Administration Advisory Council. 2010–2015.

Member. *Science Committee of the NASA Advisory Council*, National Aeronautics and Space Administration, 2010–2015.

Member, *Committee on Advancing Research in Science and Engineering (ARISE II)*, American Academy of Arts and Sciences, Cambridge, MA, 2010–2011.

Chair. *Search Committee for Director of National Radio Astronomy Observatory*, Associated Universities, Inc., Washington, DC, 2011–2012.

Member. *Council of the American Association for the Advancement of Science (Astronomy Section Delegate)*, 2013–2016.

Member. *External Review Committee of Visitors, Department of Physics and Astronomy*, Vanderbilt University, 2013.

Chair. *Board of Trustees, Associated Universities, Inc. (AUI)*, Washington, DC, 2013–2015.

Acting President, *Associated Universities, Inc., (AUI)*, Washington, DC, July–August 2014.

Member. *National Radio Astronomy Observatory Director Review/Reappointment Committee*, Associated Universities, Washington, DC, 2016.

Member. *Search Committee for President of Associated Universities (AUI)*, Washington, DC, 2016–2017.

Member. *Committee to Review Planetary Protection Policy Development*, National Academies of Sciences, Washington, DC, 2017–2018.

PUBLICATIONS

ABSTRACTS OF CONTRIBUTED PAPERS AND BOOK REVIEWS ARE NOT LISTED.

1971 “The Dynamics of Hydromagnetic Bubbles and Double Radio Sources”, ***Astrophysical Journal***, **164**, 23–27.

- 1972 “Effectiveness of Cyclonic Turbulence for Producing the Geomagnetic Field”, **Astrophysical Journal**, **171**, 621-633.
- 1972 “Kinematic Reversal Schemes for the Geomagnetic Dipole”, **Astrophysical Journal**, **171**, 635-642.
- 1972 “On the State of the Geomagnetic Field and its Reversals”, **Astrophysical Journal**, **175**, 573-581.
- 1972 “Magnetic Dynamo in the Moon: A Comparison with the Earth”, **Science**, **178**, 52-53.
- 1974 “A Magnetic Dynamo in the Moon?”, **The Moon**, **9**, 49-56.
- 1974 “Dynamical Stability of Stationary Dynamo Magnetic Fields”, **Astrophysical Journal**, **187**, 361-367.
- 1974 “Astrophysical Implications of Cosmic-Ray Antiprotons”, **Physical Review**, **D10**, 1731-1735. (T.K. Gaisser and E.H. Levy)
- 1974 “Production of Magnetic Fields in the Interiors of Stars and Several Effects on Stellar Evolution”, **Astrophysical Journal**, **193**, 419-427. (E.H. Levy and W.K. Rose)
- 1974 “Origin of Neutron-Star Magnetic Fields”, **Nature**, **250**, 40-41. (E.H. Levy and W.K. Rose)
- 1974 “Generation of Magnetic Fields in the Cosmos”, **Proceedings of the Takesi Nagata Conference on Magnetic Fields**, 30-53, University of Pittsburgh.
- 1974 “Possible Acceleration of Charged Particles Through the Reconnection of Magnetic Field Lines in Interplanetary Space”, **Geophysical Research Letters**, **1**, 145-148. (E.H. Levy, F.M. Ipavich and George Gloeckler)
- 1975 “Origin of the Twenty-Year Wave in the Diurnal Variation”, **Proceedings of the 14th International Cosmic-Ray Conference**, **4**, 1215-1221.
- 1975 “A Model for the Acceleration of Particles Trapped Between Converging Shock Waves”, **Proceedings of the 14th International Cosmic-Ray Conference**, **5**, 1823-1829. (E.H. Levy, S.P. Duggal and M.A. Pomerantz)
- 1976 “Acceleration of Relativistic Cosmic Rays by Converging Interplanetary Shock Waves”, **Journal of Geophysical Research**, **81**, 51-59. (E.H. Levy, S.P. Duggal and M.A. Pomerantz)
- 1976 “Generation of Planetary Magnetic Fields”, **Annual Reviews of Earth and Planetary Science**, **4**, 159-185.
- 1976 “Physical Basis of Geomagnetism and Geomagnetic Reversals”, **Proceedings of the 21st Annual Conference on Magnetism and Magnetic Materials**, American Institute of Physics Conference Proceedings, **29**, 10-16.
- 1976 “Theory of the Solar-Magnetic-Cycle Wave in the Diurnal Variation of Energetic Cosmic Rays: Physical Basis of the Anisotropy”, **Journal of Geophysical Research**, **81**, 2082-2088.
- 1976 “The Interplanetary Magnetic Field Structure”, **Nature**, **261**, 394-395.
- 1976 “Penetration of Interstellar Dust into the Solar System”, **Nature**, **264**, 423-424. (E.H. Levy and J.R. Jokipii)
- 1977 “Effects of Particle Drift in Cosmic-Ray Transport. I. General Properties, Application to Solar Modulation”, **Astrophysical Journal**, **213**, 861-868. (J.R. Jokipii, E.H. Levy and W.B. Hubbard)

- 1977 "Effects of Particle Drifts on the Solar Modulation of Galactic Cosmic Rays", **Astrophysical Journal**, **213**, L85-88. (J.R. Jokipii and E.H. Levy)
- 1977 "The Cause of Forbush's 20-Year Wave-Reply", **Nature**, **265**, 664.
- 1978 "Magnetic Field Generation at High Magnetic Reynolds Number", **Astrophysical Journal**, **220**, 325-329.
- 1978 "Global Dynamics of the Interstellar Gas, Magnetic Field, and Cosmic Rays", **Proceedings of the International Astronomical Union Symposium: Structure and Properties of Nearby Galaxies**, **77**, 57-65.
- 1978 "Polar Enhancements of Interplanetary Lyman- α Through Solar-Wind Asymmetries", **Astrophysical Journal Letters**, **219**, L59-62. (P.A. Isenberg and E.H. Levy)
- 1978 "Meteorite Magnetism and Early Solar-System Magnetic Fields", in **Protostars and Planets**, (T. Gehrels, ed.), p. 516-532. (E.H. Levy and C.P. Sonett)
- 1978 "Magnetic Field in the Early Solar System", **Nature**, **276**, 481.
- 1978 "Origin of the Solar-Magnetic-Cycle Dependent Semiannual Variation in Galactic Cosmic-Ray Flux", **Geophysical Research Letters**, **5**, 969-972.
- 1979 "Dynamo Magnetic Field Generation", **Reviews of Geophysics and Space Physics**, (IUGG Quadrennial Report), **17**, 277-281.
- 1979 "Planetary Dynamo Amplification of Ambient Magnetic Fields", **Proceedings of the Tenth Lunar and Planetary Science Conference**, **3**, 2335-2342.
- 1979 "Electric Field Effects on Galactic Cosmic Rays at the Heliosphere Boundary", **Proceedings of the 16th International Cosmic-Ray Conference**, **3**, 52-56. (J.R. Jokipii and E.H. Levy)
- 1979 "Local Effects of the Equatorial Neutral Sheet on Cosmic-Ray Motions in the Heliosphere", **Proceedings of the 16th International Cosmic-Ray Conference**, **3**, 47.
- 1981 "Stationary Dynamo Magnetic Fields Produced By Latitudinally Nonuniform Rotation", **Astrophysical Journal**, **247**, 282-292. (D. Boyer and E.H. Levy)
- 1982 "Oscillating Dynamo in the Presence of a Fossil Magnetic Field. The Solar Cycle", **Astrophysical Journal Letters**, **254**, L19-22. (E.H. Levy and D. Boyer)
- 1984 "Oscillating Dynamo Magnetic Field in the Presence of an External Nondynamo Field. The Influence of a Solar Primordial Field", **Astrophysical Journal**, **277**, 848-861. (D. Boyer and E.H. Levy)
- 1985 "Protostars & Planets: Overview from the Planetary Perspective", **Protostars and Planets, II**, (D.C. Black and M. Matthews, eds.; Univ. of Arizona Press, Tucson), p. 3.
- 1986 "The Generation of Magnetic Fields in Planets", Chapter in **The Solar System**, (M.G. Kivelson, ed.; Prentice-Hall) pp. 289-310.
- 1986 "A Ten-Microarcsecond Astrometric Telescope to be Operated from the Space Station", **Proceedings of the Society of Photo-Optical Instrumentation Engineers Conference: Advanced Technology Optical Telescopes**, **628**, 181. (E.H. Levy, G.D. Gatewood, J. Stein, and R.S. McMillan)
- 1987 "The Astrometric Telescope Facility", **Proceedings of the International Astronomical Union Colloquium, 100: Astrometric Fundamentals**, in press. (E.H. Levy, R.S. McMillan, M.W. Castelaz, G.D. Gatewood, I. Han, J.W. Stein, A. Buffington, D.C. Black, J. Dyer, K. Nishioka and J.D. Scargle)

- 1987 “Conceptual Design Considerations for the Astrometric Telescope Facility”, **Proceedings of the International Astronomical Union Colloquium, 100**: Astrometric Fundamentals, in press. (J.W. Dyer, K. Nishioka, C.K. Sobeck, G.D. Gatewood and E.H. Levy)
- 1987 “Performance Analysis of the Multichannel Astrometric Photometer”, **Proceedings of the Society of Photo-Optical Instrumentation Engineers Conference, 818**, 408. (C. Huang, G.N. Lawrence, E.H. Levy and R.S. McMillan)
- 1988 “Discovery and Study of Planetary Systems Using Astrometry from Space”, **Proceedings of the International Astronomical Union Colloquium, 99**: BioAstronomy-The Next Steps (G. Marx, ed.; D. Reidel: Boston) pp. 131-136. (E.H. Levy, R.S. McMillan, G.D. Gatewood, J.W. Stein, M. Castelaz A. Buffington, K. Nishioka and J. Scargle)
- 1988 “A Prototype Detector for the Astrometric Telescope Facility”, **Mapping the Sky Proceedings of the International Astronomical Union Symposium: Past Heritage and Future Directions**, 133 (S. Debarbat, et al., eds.; Kluwer Academic Publishers: Boston) pp. 421-424. (G.D. Gatewood, M.W. Castelaz, J.W. Stein, E.H. Levy, R.S. McMillan, K. Nishioka and J.D. Scargle)
- 1988 “Generation of Dynamo Magnetic Fields in Protoplanetary and Other Astrophysical Accretion Disks”, **Astrophysical Journal, 331**, 416-434. (T. Stepinski and E.H. Levy)
- 1988 “Design Analysis of the Astrometric Telescope Facility”, **Proceedings of the Society of Photo-Optical Instrumentation Engineers Conference, 965**, 24. (C. Huang, G.N. Lawrence, E.H. Levy and R.S. McMillan)
- 1988 “Energetics of Chondrule Formation”, in Meteorites, (J. Kerridge and M. Matthews, eds.; Univ. of Arizona Press, Tucson), 697-711.
- 1989 “Possible Time Variations in Jupiter's Magnetic Field”, in **Time Variable Phenomena in the Jovian System-Proceedings of the International Jupiter Watch Conference** (M.J.S. Belton, R.A. West and J. Rahe, eds. NASA SP-494), pp. 129-138.
- 1989 “Magnetic Reconnection Flares in the Protoplanetary Nebula and the Possible Origin of Meteorite Chondrules”, **Icarus, 81**, 74-91. (E.H. Levy and S. Araki)
- 1990 “Dynamo-Magnetic-Field-Induced Angular Momentum Transport in Protostellar Nebulae: The “Minimum-Mass Protosolar Nebula”, **Astrophysical Journal, 350**, 819-826. (T.F. Stepinski and E.H. Levy).
- 1990 “Reply to: Comment on Magnetic Reconnection Flares in the Protoplanetary Nebula and the Possible Origin of Meteorite Chondrules”, **Icarus, 87**, 244-246. (E.H. Levy and S. Araki)
- 1990 “Generation of Dynamo Magnetic Fields in Thin Keplerian Disks”, **Astrophysical Journal, 362**, 318-332. (T.F. Stepinski and E.H. Levy)
- 1991 “High Accuracy Image Centroiding with a Moving Ronchi Ruling”, **Optical Engineering, 30**, 598-608. (G.N. Lawrence, C. Huang, E.H. Levy, and R.S. McMillan)
- 1991 “Magnetohydrodynamic Puzzles in the Protoplanetary Nebula”, in **Planetary Sciences: American and Soviet Research** (National Academy of Sciences), pp. 70-81. [Also published in Russian as “Zagadki Magnitnoi Gidrodinamiki Protoplanyetnoi Tumannosti”, in **Nauk o Planyetach** (USSR Academy of Sciences), 1990, pp 223-239.]
- 1991 “Steady-State Toroidal Magnetic Field at Earth's Core-Mantle Boundary”, **Journal of Geophysical Research, 96**, 3935-3942. (E.H. Levy and S.J. Pearce)
- 1991 “Dynamo Magnetic Field Modes in Thin Astrophysical Disks: An Adiabatic Computational Approximation”, **Astrophysical Journal, 379**, 343-355. (T.F. Stepinski and E.H. Levy)

- 1991 “Magnetic History of the Sun”, in **The Sun in Time**, (C.P. Sonett, M.S. Giampapa and M.S. Matthews, eds.; University of Arizona Press, Tucson), pp. 589-632. (E.H. Levy, A.A. Ruzmaikin, and T.V. Ruzmaikina).
- 1991 “Dynamical behavior of strong magnetic fields in the solar convection zone”, **Solar Physics**, **135**, 261-274. (S. Vainshtein and E.H. Levy)
- 1992 “Multiple Periodicities in the Solar Magnetic Field: Possible Origin in a Multiple-Mode Solar Dynamo”, **Astrophysical Journal**, **396**, 340-350. (D.W. Boyer and E.H. Levy)
- 1992 “Assessment of Stellar Dynamo Theory: The Physical Issues”, in **Cool Stars** (M.S. Giampapa and J.A. Bookbinder, eds.) (Astronomical Society of the Pacific Conference Series 26), pp. 223-239.
- 1992 “Dynamo Theory of the Solar Cycle: The Leading Physical Questions”, in **The Solar Cycle** (K.L. Harvey, ed.) (Astronomical Society of the Pacific Conference Series 27), pp. 139-149.
- 1993 “Ordinary Planetary Systems: Architecture and Formation”, in **Planets around Pulsars**, J.A. Phillips, S.E. Thorsett and S.R. Kulkarni, eds. (Astronomical Society of the Pacific Conference Series, 36, San Francisco), pp. 181-197.
- 1993 “Physical Processes and Conditions Associated with the Formation of Protoplanetary Disks”, in **Protostars and Planets III**, (E.H. Levy and J.I. Lunine, eds.; University of Arizona Press, Tucson), pp. 939-978. (G. Morfill, H. Spruit, and E.H. Levy)
- 1993 “Can Magnetic Fields Explain the Rotation Curves of Galaxies?”, **Nature**, **365**, 19. (J.R. Jokipii and E.H. Levy)
- 1994 “The Possibility of Forming an Inhomogeneous Sun and the Solar Neutrino Deficit”, **Astrophysical Journal**, **431**, pp. 881-887. (E.H. Levy and T.V. Ruzmaikina)
- 1994 “The Astrometric Imaging Telescope: detection of planetary systems with imaging and astrometry”, **Astrophysics and Space Science**, **212**, 433-440. (S.H. Pravdo, R.J. Terrile, C. Ftaclas, G.D. Gatewood and E.H. Levy)
- 1994 “The Circumstellar Imager: direct detection of extra-solar planetary systems”, **Astrophysics and Space Science**, **212**, 441-452. (C. Ftaclas, A.L. Nonnenmacher, R.J. Terrile, S.H. Pravdo, G.D. Gatewood and E.H. Levy)
- 1995 “Early Impacts: Earth Emergent from its Cosmic Environment”, in **Hazards Due to Comets and Asteroids**, pp. 3-7. (T. Gehrels, ed.; University of Arizona Press, Tucson).
- 1995 “Chondrule Formation in Lightning Discharges”, **Icarus**, **114**, 174-185. (M. Horanyi, G. Morfill, C.K. Goertz and E.H. Levy)
- 1995 “Planetary Dynamos”, in **Comparative Planetology** (M. Chahine and N. Nickle, eds.), edition of Earth, Moon and Planets, 67, 143-160.
- 1995 “Generation of Lightning in Jupiter’s Water Cloud”, **Nature**, **378**, 592-595. (S. Gibbard, E.H. Levy and J.I. Lunine)
- 1998 “On the Possibility of Precipitation-Induced Lightning in the Protoplanetary Nebula”, **Icarus**, **130**, 517-533. (S.G. Gibbard, E.H. Levy and G.E. Morfill)
- 1998 “Lightning in the Protosolar Nebula”, **Astronomy & Astrophysics**, **331**, 121-146. (W. Pilipp, T.W. Hartquist, G.E. Morfill and E.H. Levy)
- 1999 “Lightning in Neptune’s Atmosphere”, **Icarus**, **139**, 227-234. (S. Gibbard, E.H. Levy and J.I. Lunine)

- 2009 “Science in the Liberal Arts & Sciences” to appear as a chapter in **Science in the Liberal Arts Curriculum**, American Academy of Arts & Sciences. (John G. Hildebrand and Jerrold Meinwald, eds.)

BOOK(S)

Protostars and Planets III, edited by E. H. Levy and J. I. Lunine, volume in *The Space Science Series* (University of Arizona Press: Tucson), 1596 pages, 1993.

Cosmos, Earth & Life [Place-Holder Title], Monograph textbook in preparation. Intended as a textbook for undergraduate general education science.

PUBLISHED ADVISORY REPORTS

- 1978 “Strategy for Exploration of the Inner Planets”, **Report of the Committee on Planetary and Lunar Exploration, Space Science Board**, (National Academy of Sciences, Washington DC). (G.J. Wasserburg, et al.)
- 1980 “Strategy for the Exploration of Primitive Solar-System Bodies-Asteroids, Comets, and Meteoroids: 1980-1990”, **Report of the Committee on Planetary and Lunar Exploration, Space Science Board**, (National Academy of Sciences, Washington DC). (E.H. Levy, et al.)
- 1983 “The Role of Theory in Space Science”, **Report of the Space Science Board**, (National Academy of Sciences, Washington DC). (A.G.W. Cameron, et al.)
- 1983 “Planetary Exploration Through the Year 2000”, **Report of the Solar System Exploration Committee of the NASA Advisory Council**, (NASA, Washington DC). (N. Hinners, et al.)
- 1985 “Planetary Exploration Through the Year 2000: The Augmented Program”, **Report of the Solar System Exploration Committee of the NASA Advisory Council**, (NASA, Washington DC). (G.A. Briggs, et al.)
- 1986 “United States and Western Europe Cooperation in Planetary Exploration”, **Report of the Joint Working Group on Cooperation in Planetary Exploration**, (National Academy of Sciences, Washington DC & European Science Foundation, Strasbourg, France). (E.H. Levy, H. Fechtig, et al.)
- 1986 “The Crisis in Space and Earth Science”, **Report of the Space and Earth Science Advisory Committee of the NASA Advisory Council**, (NASA, Washington DC). (L. Lanzerotti, et al.)
- 1987 “Major Directions in Space Science: 1995-2015”, **Report of the Space Science Board**, (National Academy of Sciences, Washington DC). (T. Donahue, et al.)
- 1987 “Report on the Pacific Rim Nations International Space Year Conference”, (T.B. McCord, editor).
- 1989 “International Cooperation for Mars Exploration & Sample Return”, **Report of the Space Studies Board**, (National Academy of Sciences, Washington DC). (E.H. Levy, et al.)
- 1992 “TOPS: Toward Other Planetary Systems”, **Report of the TOPS Science Working Group**, (National Aeronautics and Space Administration, Washington, DC). (B.F. Burke, et al.)
- 2013 "Advancing Research in Science & Engineering -- ARISE II", Report of the American Academy of Arts and Sciences, Cambridge, Massachusetts. (V. Narayanamurti, K. Yamamoto, et al.). In press.

GENERAL PUBLIC ARTICLES, CHAPTERS, TESTIMONY, & SIMILAR PUBLISHED REPORTS

- 1979 “The Science of Planetary Exploration”, **Current Issues and Studies – The National Research Council in 1978**, (National Academy of Sciences, Washington, DC), p. 117-137. (E.H. Levy and S.C. Solomon)
- 1982 “A Talk with Eugene Levy” (based on an interview), **The Planetary Report** (Publication of the Planetary Society), March.
- 1982 Invited testimony before the Subcommittee on Space Science and Applications of the Committee on Science and Technology, House of Representatives-United States Congress, Washington, DC, **The Congressional Record**.
- 1982 Invited statement to the Subcommittee on HUD-Independent Agencies of the Committee on Appropriations, House of Representatives-United States Congress, Washington, DC, (For the Association of American Universities Space Science Working Group), **The Congressional Record**.
- 1982 “Modern Planetary Science”, **Physics Today**, November, p. 54. (M. J. S. Belton and E. H. Levy). Reprinted (1984) in *Astrophysics Today*, (A.G.W. Cameron, ed.; American Institute of Physics, New York), p. 54.
- 1984 “Are There Worlds Everywhere?”, **The Planetary Report** (Publication of the Planetary Society), IV-5, p. 4.
- 1985 Invited testimony before the Committee on Science and Technology: **National Science Policy Task Force, House of Representatives-United States Congress**, Washington, DC, *The Congressional Record*.
- 1987 Statement to the Subcommittee on Space Science and Applications of the Committee on Science, Technology, and Space, House of Representatives-United States Congress, Washington, DC, (Transmitted by the Association of American Universities Space Science Working Group), **The Congressional Record**.
- 1988 “Solar System Science and Exploration”, **Proceedings of the American Astronautical Society**, in press.
- 1988 “A Profusion of Planets”, **The Sciences** (Published by the New York Academy of Sciences), May/June 1989, pp 31-35. (D.C. Black and E.H. Levy)
- 1989 “Space Station Utilization for the Astrometric Telescope Facility”, **American Institute of Aeronautics and Astronautics: AIAA-89-0510**. (K. Nishioka, D.C. Black, G.D. Gatewood, and E.H. Levy)
- 1990 “Together to Mars — But with Deliberation”, Article syndicated through the National Academy of Sciences Op-Ed Service. (Published in approximately 30 U.S. newspapers.) Reprinted in **Headline News, Science Views**, Edited by David Jarmul (1991, National Academy Press: Washington, DC).
- 1991 “The Solar System”, article in **Encyclopedia of Physics**, VCH Publishers (New York), pp 1137-1139.
- 1991 “NASA in the Twenty-First Century”, **AM Magazine** (Phoenix, Arizona), March.
- 1991 “Conceptual Questions in Discovering Other Planetary Systems”, **International Astronautical Foundation: IAA-91-601**.
- 1992 “Magnetohydrodynamics”, article in **Encyclopedia of Earth System Science**, W.A. Nierenberg, ed. (Academic Press: New York), Volume 3, pp. 65-74.
- 1994 “Link faculty pay, performance to improve University.” **The Arizona Daily Star** (Op-Ed Page Column), February 16, 1994, p 13.

1999 "Tucson may have botched the redevelopment plan." **The Arizona Daily Star** (Op-Ed Page Column), July 18, 1999, p. F-3. (W. Buckingham and E.H. Levy)

INVITED LECTURES, SPEECHES, REVIEWS & FORUMS

PAPERS AND REVIEWS, AS WELL AS PUBLIC LECTURES, FORUMS AND PANELS CONCERNING SCIENCE AND POLICY, BY INVITATION AT MAJOR NATIONAL OR INTERNATIONAL SCIENTIFIC CONFERENCES OR SIMILAR GATHERINGS. [CONTRIBUTED CONFERENCE PAPERS/TALKS, DEPARTMENTAL COLLOQUIA AND SEMINARS ARE NOT LISTED.]

"A Magnetic Dynamo in the Moon?", **Conference on Lunar Science**, December 1972, Houston, Texas.

"Generation of Magnetic Fields in the Cosmos", **Takesi Nagata Conference on Magnetic Fields: Past and Present**, June 1974, Pittsburgh, Pennsylvania.

"Particle Acceleration in Interplanetary Space", **American Geophysical Union Meeting**, June 1975, Washington, DC.

"Physical Basis of Geomagnetism and Geomagnetic Reversals", **21st Annual Conference on Magnetism and Magnetic Materials**, December 1975, Philadelphia, Pennsylvania.

"Large-Scale Drifts and the Modulation of Galactic Cosmic Rays", **Topical Conference on Solar and Interplanetary Physics**, January 1977, Tucson, Arizona.

"Global Dynamics of the Interstellar Gas, Magnetic Field, and Cosmic Rays", **International Astronomical Union Symposium #77**, August 1977, Bonn, Federal Republic of Germany.

"Dynamo Generation of Planetary Magnetic Fields", **Division of Planetary Sciences, American Astronomical Society Meeting**, October 1977, Boston, Massachusetts.

"The Generation of Magnetic Fields: Principles and Outstanding Problems", **American Geophysical Union Meeting**, December 1977, San Francisco, California.

"Early Solar-System Magnetic Fields", **Protostars and Planets Conference**, January 1978, Tucson, Arizona.

"Planetary Dynamos: The Kinematical Theory", **Conference on the Origins of Planetary Magnetism**, November 1978, Houston, Texas.

"Cosmic-Ray Drifts, Gradients, and Anisotropies in the Heliosphere", **American Geophysical Union Meeting**, May 1979, Washington, DC.

"Session Summary: Propagation of Solar Particles", **Twenty-Third COSPAR Meeting**, June 1980, Budapest, Hungary.

"Solar-System Exploration: The Scientific Quest", **Research Conference on Solar-System Exploration**, January 1981, Jet Propulsion Laboratory, Pasadena, California.

"The Continuing Challenge of Solar System Science", **American Astronomical Society Division of Planetary Sciences**, October 1981, Pittsburgh, Pennsylvania.

"A National Policy for Space Science: The Advisory Basis", **American Association for the Advancement of Science**, January 1982, Washington, DC.

"Remarks on the United States' Planetary Program", **Lunar and Planetary Science Conference XIII**, March 1982, Houston, Texas.

"A Hydromagnetic Dynamo in the Protoplanetary Nebula?", **Twenty-Fourth COSPAR Meeting**, May 1982, Ottawa, Canada.

"Physical Basis of the Geomagnetic Reversal Phenomenon", **American Geophysical Union**, June 1983, Baltimore, Maryland.

- “General Overview: Our Understanding of Planetary System Formation”, **Protostars and Planets Conference, II**, January 1984, Tucson, Arizona.
- “The Formation of Planetary Systems”, **American Association of Physics Teachers**, May 1985, Flagstaff, Arizona.
- “Answers to Age-Old Questions in the Space Age”, **United States Congress Space Caucus Symposium**, October 1985, Washington, DC.
- “Searching for Planetary Systems Around Other Stars from the Space Station”, **American Astronautical Society**, November 1985, Los Angeles, California.
- “Searching for Other Planetary Systems with a Space Astrometric Telescope”, **Topical Conference on High Precision Astrometry**, American Astronomical Society Meeting, January 1987, Pasadena, California.
- “Energetics of Chondrule Formation in the Protoplanetary Nebula”, **Meteorites Conference**, January 1987, Tucson, Arizona.
- “The Scientific and Human Imperatives of Mars Exploration”, **American Institute of Aeronautics and Astronautics Meeting**, April 1987, Washington, DC.
- “Astrometric Discovery and Study of Planetary Systems from Space”, **International Astronomical Union Colloquium on BioAstronomy**, June 1987, Balatonfüred, Hungary.
- “Possible Behaviors of Jupiter’s Magnetic Field and their Implications”, **International Jupiter Watch Conference on Time Variability in the Jovian System**, August 1987, Flagstaff, Arizona.
- “Framework for U.S.-Soviet Cooperation in Mars Exploration”, **International Symposium: “Cooperation in Space for Peace on Earth”** remarks on the occasion of the 30th anniversary of the launching of Sputnik. October 1987, Moscow, USSR.
- “Steady State Toroidal Magnetic Field at Earth’s Core-Mantle Boundary”, **American Geophysical Union Meeting**, December 1987, San Francisco, California. (E.H. Levy & S.J. Pearce, read by SJP)
- “Twenty-Five Years of Solar System Exploration: What We Have Learned”, **25th Anniversary of Planetary Exploration Symposium**, December 1987, Washington, DC.
- “Perspectives on Asteroid Research”, **Asteroids Conference II**, March 1988, Tucson, Arizona.
- “The Planetary System: A Quarter Century of Discovery”, **Space Science Board 30th Anniversary Symposium**, National Academy of Sciences, June 1988, Washington, DC.
- “Solar System Science”, **American Astronautical Society**, October 1988, St. Louis, Missouri.
- “Lectures on Magnetic Field Generation in Cosmic Bodies”, Guest of Academy of Sciences of the USSR, O. Yu Schmidt Institute of Physics of the Earth, lecturing in Moscow, Leningrad and Kiev. September 1988.
- “Magnetohydrodynamic Aspects of Accretion Disks”, **US-USSR Workshop on the Planetary Sciences**, January 1989, Moscow, USSR.
- “Mars Exploration: The Scientific and Human Imperatives”, **Fourth Annual University of Central Florida Space Symposium**, February 1989, Orlando, Florida.
- “Magnetohydrodynamic Puzzles in the Protosolar Nebula”, **NASA Origin of the Solar System Conference**, February 1989, Washington, DC.
- “Magnetic History of the Sun”, **The Sun in Time Conference**, March 1989, Tucson, Arizona.

- “Astrometric Discovery of Other Planetary Systems: The Physical Problems”, **Symposium on the Evolution of Planetary Systems, Astronomical Society of the Pacific Centennial Meeting**, June 1989, Berkeley, California.
- “Near-term Discovery and Study of Other Planetary Systems: The Astrometric Imaging Telescope”, **International Astronomical Union Colloquium 123: International Observatories in Earth Orbit and Beyond**, April 1990, Greenbelt, Maryland.
- “Science Goals and Measurement Objectives in the Search for Other Planetary Systems”, **Toward Other Planetary Systems Technology Development Workshop**, April 1991, Houston, Texas.
- “Electrodynamic Activity in Protostellar/Protoplanetary Nebulae”, **Gordon Conference on Origins of Solar Systems**, July 1991, New London, New Hampshire.
- “Invited Discussant: Solar Dynamo Theory”, **Gordon Conference on Solar Plasma and MHD Processes**, August 1991, Plymouth, New Hampshire.
- “Conceptual Problems in Discovering Other Planetary Systems”, **International Astronautical Conference, International Academy of Astronautics SETI Committee**, October 1991, Montreal, Canada.
- “Magnetic Field Generation in Stars: Assessment of the Dynamo Theory”, **Seventh Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun**, October 1991, Tucson, Arizona.
- “Connection of the Solar Cycle to the Sun's Surface Magnetic Fields”, **Conference on the Solar Cycle**, October 1991, Sacramento Peak Solar Observatory, New Mexico.
- “The Formation of Normal Planetary Systems During the Birth of Stars”, **Caltech Symposium on Pulsar Planets**, April 1992, Pasadena, California.
- Caltech/JPL Planetary Science Summer School**, August 1992, Pasadena, California; 3 lectures:
1. “The Central Paradigm of Planetary System Formation”
 2. “Principles of Indirect Detection of Planets: Astrometric & Doppler Approaches”
 3. “Overview of the School, and the Future of Planetary Systems Investigations”
- “Architecture and Formation of Planetary Systems”, **Planetary Systems: Formation, Evolution, and Detection** (First International Conference), December 1992, Pasadena, California.
- “Protostellar/Protoplanetary Nebular Processes, Session Overview”, **Gordon Conference on Origins of Solar Systems**, July 1993, New London, New Hampshire.
- “The Impact Hazard: Long Tail of Planetary Accretion”, **Conference on Hazards Due to Comets and Asteroids**, 1993, Tucson, Arizona.
- “Invited Panelist: Discovery of Other Planetary Systems”, **Planetary Systems: Formation, Evolution, and Detection** (Second International Conference), December 1993, Hawaii.
- “Dynamo Generation of Planetary Magnetic Fields”, **International Conference on Comparative Planetology**, June 1994, Pasadena, California.
- “Formation of Planetary Systems”, **Conference on Searching for Other Planetary Systems**, April, 1995, Pasadena, California.
- “Invited Panelist: The Search for Other Planetary Systems”, **Conference on the Study of Extra-Solar Terrestrial Planets**, May 1995, Boulder, Colorado.
- “Formation of the Solar Nebula: Session Overview”, **Gordon Conference on Origins of Solar Systems**, June 1995, New Hampton, New Hampshire.
- “The Future of Graduate Education in Astronomy”, **American Astronomical Society Meeting** (invited speaker and panelist), January 1996, San Antonio, Texas.

- “Dust-Gas (De)Coupling in Star Formation”, **Max-Planck-Institut für extraterrestrische Physik Workshop on Formation of Stars and Planetary Systems and Dust**, February 1996, Garching bei München, Germany.
- “Prospects for Federal Research Funding: Stimulus and Response”, **Association of American Universities Deans Meeting**, March 1996, Laguna Beach, California.
- “Toward a Roadmap for Solar System Exploration”, **NASA Solar System Exploration Roadmap Development Conference**, March 1996, Pasadena, California.
- “The Changing Environment for Graduate Education and Research”, **American Astronomical Society Workshop on Graduate Education**, November 1996, Tucson, Arizona.
- “Advanced Technology for Space Science”, **NASA Jet Propulsion Laboratory University Day Workshop**, June 1998, Pasadena, California.
- “Lightning in the Protosolar Nebula”, **American Geophysical Union Western Regional Meeting**, July 1998, Taipei, Taiwan.
- “Preparing Science Teachers in a College of Science”, **Council of Colleges of Arts & Sciences Meeting**, November 1998, Minneapolis, Minnesota.
- “Science and Engineering Careers and U.S. Students”, panel of **Committee on Science, Engineering and Public Policy (COSEPUP)**, National Academy of Sciences, July 1999, Washington, DC.
- “Origin of the Sun’s Magnetic Field”, **Bartol Research Institute 75th Anniversary Symposium: Magnetism in the Cosmos**, October 1999, Newark, Delaware.
- “Places to Live: The Formation, Nature and Possible Prevalence of Planetary Systems”, **Beckman Symposium on Molecular Evolution**, City of Hope Beckman Research Institute, November 1999, Duarte, California.
- “Approaching the Outer Solar System”, **NASA Forum on Innovative Approaches to Outer Planet Exploration 2001–2020**, February 2001, Houston, Texas.
- “The Evolving University Library”, **Association of Research Libraries / OCLC Institute Strategic Issues Forum**, February 2002, Las Vegas, Nevada.
- “Developing K-12 Science & Mathematics Teacher Preparation”, **Council of Colleges of Arts & Sciences**, December 2006, Boston, Massachusetts.
- “Solar System Exploration”, **American Astronautical Society Symposium: Celebrating NASA’s Heritage – Fifty Years of Discovery & Achievement; AAS 54th Annual Meeting**, November 2007, Houston, Texas.
- “Looking Back – The Impact of Sputnik”, **Baker Institute for Public Policy Symposium: 50th Anniversary of Sputnik**, November 2007, Houston, Texas.
- “The Architecture of Planetary Systems”, **Kennon Architectural Symposium**, March 2009, Houston, Texas.
- “Implications for the Future in Planetary Science”, **Beyond the Decade: The Future of International Astronomy**, *National Academy of Sciences symposium celebrating the International Year of Astronomy*, October 2009, Washington DC.
- “Innovation & Technology Transfer from Small Research University Perspective: Possible Lessons for East Asia”, **Asia Innovation Conference**, *Korea Advanced Institute of Science and Technology (KAIST)*, November 2009, Seoul, Korea.

- “Research Roots of Innovation”, **Symposium on Transformational Information Engineering and Science**, *Nanyang Technological University*, January 2010, Singapore.
- “Conducting Major Science Projects in Universities”, **de Club Lectores El Mercurio**, *El Mercurio Media Corporation Campus*, October 2010, Santiago, Chile.
- “Science-Teacher Preparation Program in a Research-University College of Science”, **Annual Conference Plenary Lecture**, *Physics Teacher Education Coalition, American Physical Society*, May 2011, Austin, Texas.
- “Places to Live: The Formation and Prevalence of Planetary Systems & Critical Knowledge to Come from the ALMA Project”, **Red de Alta Dirección de Chile [Chilean Senior Management Network]**, October 2011, Santiago de Chile (San Pedro de Atacama).
- "Robots and Humans in Space", **Lost in Space: The Need for a Definitive U.S. Space Policy**, *Baker Institute for Public Policy*, January 2013, Houston, Texas.
- "Robots and Humans in Space II", **Lost in Space II: The Need for a Definitive U.S. Space Policy**, *Baker Institute for Public Policy*, October 2016, Houston, Texas.

MAJOR GRANTS FOR RESEARCH AND EDUCATION

- Generation and Behavior of Solar System Magnetic Fields. [NASA: theoretical research, approximately \$110,000/year over more than two decades.]
- Cosmic Ray Propagation and Modulation in the Solar System. [NSF: theoretical research, approximately \$75,000 per over a 5-6 year period of time in the late 1970s and early 1980s, joint with J.R. Jokipii.]
- Conceptual Development and Design of a Space-Based Astrometric (Imaging) Telescope for the Discovery of Other Planetary Systems. [NASA: telescope/instrument/spacecraft conceptual design, several millions of dollars of funding over a period more than half a dozen years, as leader of a project involving researchers at the University of Arizona, NASA Ames Research Center, Jet Propulsion Laboratory, University of Pittsburgh, the University of California at San Diego, and the (then) Hughes Danbury Optical Corporation.]
- Energetic Processes in the Protoplanetary Nebula. [NASA: theoretical research, approximately \$50,000/year over a decade.]
- Arizona Space Grant College Consortium. [NASA: education — primarily undergraduate education and research opportunities — in the three state universities, approximately \$500,000/year over a decade.]
- Professional Masters Degrees in the Sciences and Mathematics. [Alfred P. Sloan Foundation: development of programs graduate (MS), about \$500,000 over three years.]

SELECTED UNIVERSITY OF ARIZONA COMMITTEES

Member. Search Committee: Director of Flandrau Planetarium.
Member. Search Committee: Head of Physics Department.
Member. University Computing Advisory Committee.
Member. Search Committee: Dean of the Engineering College.
Member. University Academic Computing Advisory Committee.
Member. Search Committee: Associate Vice President for Computing & Information Technology.
Member. University of Arizona Press Editorial Board.
Member. University Regents Professor Selection Committee.
Member. International Affairs Advisory Committee.
Member. Search Committee: University Director of International Affairs.
Faculty Adviser. University of Arizona Students for the Exploration and Development of Space.
Chair. Search Committee: Associate Vice President for Research.
Chair. University Regents Professor Selection Committee.
Co-Founder and Member of the Steering Committee. Faculty Coalition for University Excellence.
Member. University Special Task Force on Undergraduate Education.
Member. Implementation Committee Undergraduate Education Task Force Recommendations.
Member. University of Arizona Faculty Senate — Designated representative of the Deans.
Member. Board of Directors. Women in Science and Engineering.
Convener/Chair. PAC 10+2 Arts and Sciences Deans' Meeting.
Member. Search Committee for Vice President for Research.
Member. University of Arizona President's Advisory Council.
Member. University of Arizona Capital Campaign Committee.
Chair. University of Arizona Search Committee for Vice President for Information Technology.

SELECTED RELATED PUBLIC, COMMUNITY & OTHER ACTIVITIES

Numerous public lectures on science and speeches before civic groups and other organizations on science and national science policy.
Numerous press interviews, television and radio appearances in local, national, and international media on matters of science and national science policy and programs.
Basic Curriculum School Review Committee, Tucson Unified School District, Tucson, Arizona.
Tucson Committee on Foreign Relations of U.S. Foreign Relations Council.
Member. Board of Directors of the Santa Cruz Museum Authority, Tucson, Arizona.
Member. Board of Directors of SciEnTek K-12 (Southern Arizona Regional Science and Engineering Fair).

LOCAL ACTIVITIES DURING APPOINTMENT AT RICE UNIVERSITY

Not tracked explicitly; I served in full or *ex officio* in a wide variety of capacities and roles.