

CURRICULUM VITAE: Robert Rosner

Institutional Addresses:

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Education:

Brandeis University, B.A. (summa), Physics (1969)
Harvard University, Ph.D., Physics (1976)

Positions Held:

1977-78 Instructor, Astronomy Department, Harvard University
1978-83 Assistant Professor of Astronomy, Harvard University
1983 Visiting Professor, Dept. of Astronomy, UC Berkeley (Spring)
1983-86 Associate Professor of Astronomy, Harvard University
1986-87 Lecturer in Astronomy, Harvard University
1986-90 Astrophysicist, Smithsonian Astrophysical Observatory
1987-present Professor, Dept. of Astronomy & Astrophysics, Enrico Fermi Institute, and the College, The University of Chicago
1991-97 Chairman, Dept. of Astronomy & Astrophysics, The University of Chicago
1997-02 Director, Center for Astrophysical Thermonuclear Flashes, The University of Chicago
1998-present William E. Wrather Distinguished Service Professor, The University of Chicago
1999-2016 Senior Fellow, Computations Institute, The University of Chicago
2000-present Professor, Dept. of Physics, The University of Chicago
2002-05 Chief Scientist, Argonne National Laboratory
2002-05 Associate Laboratory Director for Physical, Biological, & Computing Sciences, Argonne National Laboratory
2004 Rothschild Visiting Professor, Newton Institute for Mathematical Sciences, University of Cambridge, UK (Autumn)
2004 Visiting Fellow, Clare Hall, Cambridge University, UK (Autumn)
2005-present Life Member, Clare Hall, Cambridge University, UK
2005-09 Director, Argonne National Laboratory
2006-09 President, UChicago/Argonne LLC
2007-09 (Founding) Chairman, U.S. DOE National Laboratory Directors' Council
2009-10 Visiting Professor, Stanford University
2011-14 Co-Director, Energy Policy Institute at Chicago (EPIC), The Univ. of Chicago
2016-19 Visiting Professor, Centre for the Analysis of Time Series (CATS), London School of Economics

Professional Societies: American Physical Society (APS), American Astronomical Society (AAS), American Geophysical Union (AGU), American Nuclear Society (ANS), Economic Club of Chicago, International Astronomical Union (IAU), Society for Industrial and Applied Mathematics (SIAM).

Awards and Honors: Woodrow Wilson Fellow (1969); Fellow, American Physical Society (1988); Parker Lecturer (AAS/Solar Physics Division, Spring 1995); Rosseland Lecturer (Univ. of Oslo,

1998); Gordon Bell Prize (Supercomputing 2000); Thompson Lecturer (National Center for Atmospheric Research, 2001); Fellow, American Academy of Arts & Sciences (elected 2001); ISI “Highly Cited Researcher” (2002); Foreign Member, Norwegian Academy of Science and Letters (elected 2004); Rothschild Visiting Professor (Newton Institute for Mathematical Sciences, Univ. of Cambridge, 2004); Honorary Doctorate, Illinois Institute of Technology (2006); Honorary Doctorate, Northern Illinois University (2007).

Synergistic activities: Member, National Academy of Sciences (NAS)/National Research Council (NRC) Subcommittee on Space & Astrophysical Plasmas (1983-4); member, National Center for Atmospheric Research (NCAR)/High Altitude Observatory (HAO) Visiting Committee; *Geophys. Ap. Monographs* Editorial Board; member, AAS/High Energy Astrophysics Division (HEAD) Executive Committee (1986-88); member, Associated Universities for Research in Astronomy (AURA) Visiting Committee (1986-8); member, Space Science Board/CSSP (1986-90); *Solar Physics* Editorial Board (1987-2002); chair, NAS/NRC Committee on Solar Physics (1987-89); member, NAS Committee on Plasma Science (1989-1991); chair, NAS/Astronomy Survey Committee Solar Physics Panel (1989-1991); member, AAS/Solar Physics Division (SPD) Executive Committee (1989-1992); member, UCAR/NCAR Scientific Programs Evaluation Committee [SPEC] (1990-91); member, APS/Astrophysics Division Executive Committee (1990-1992); member, USRA/ Astrophysics Science Panel (1992-1995); member, NCAR Director’s Advisory Council (1993); member, Visiting Committee, Harvard-Smithsonian CfA (1993-1998); chair, Visiting Committee, Harvard-Smithsonian CfA (1995); trustee, *Adler Planetarium* (1990-1998); member-at-large, AURA Board (1994-97); member, NASA Information Systems and Science Operations Working Group (1996-8); member, AURA Board of Directors (1997-9); member, NAS/ BPA/Committee on Astronomy & Astrophysics “McCray” Panel (1994); chair, Nominating Committee, Astrophysics Division, APS (1994-5); member, NAS Committee on Astronomy & Astrophysics (1996-8); member, NAS “Solar Physics from Ground” (“Parker”) Committee (1997-8); member, NAS/NRC Committee on Computational Physics (1997-8); Steering Group member of NAS/NRC Fusion Science Assessment Committee [FuSAC] (1999-2000); member, NAS/NRC Committee on Plasma Sciences (1999-2000); member and co-chair, HAO/NCAR Scientific Advisory Committee (1999-2009); member, Evaluation Committee, Astrophysikalisches Institut Potsdam, German Research Council (1999); member, Univ. of Arizona (Tucson) Physics Dept. Visiting Committee (May 2000); member, NSF Atmospheric Sciences (ATM)/UCAR/NCAR (ULAFOS) Section Committee of Visitors (August 2000); member, Princeton Plasma Physics Laboratory Plasma Science and Technology Program Advisory Committee (Sept. 2000); member, NAS Committee on Solar and Space Physics (2000-2); member, Fachbeirat, Astrophysikalisches Institut Potsdam, Potsdam, Germany (2001-2009); member, Scientific & Technical Advisory Committee (STAC), Argonne National Laboratory (2001-2); member, NAS Committee on High Energy Density Physics (2001-2); member, Space Studies Board (2001-2002); member, Fachbeirat, Max Plank Institut für Sonnensystemforschung, Lindau, Germany (2001-2011); member, External Advisory Committee, National Ignition Facility, Lawrence Livermore National Laboratory (2003-2009); member, Steering Committee of National Task Force on High Energy Density Physics (2004); chair, ESSL/National Center for Atmospheric Research (NCAR) Scientific Advisory Committee (2005-2008); member, Economic Club of Chicago (2006-present); chair, Capability Review of Nuclear Physics, Astrophysics and Cosmology, and Particle Physics, Los Alamos National Laboratory (2007); member, NAS/NRC Committee on Evaluation of Quantification of Margins and Uncertainties (QMU) Methodology Applied to the Certification of the Nation’s Nuclear Weapons Stockpile (2007-8); member, International Advisory Board of Karlsruhe Institute of Technology (2007-2008); chair, Nuclear Physics, Astrophysics, Cosmology, and Particle Physics (NACP) External Review Committee for Los Alamos National Security (LANS) LLC (2007); member, National Ignition Facility, Physical Sciences, and Weapon & Complex Integration Directorate Review Committees (DRCs) for Lawrence Livermore National Laboratory (2008-2009); [elected] member of Helmholtz Gemeinschaft Senate (2008-2014); member, Steering

Committee of Energy Security, Innovation & Sustainability Initiative of the Council on Competitiveness (2008-2009); member, S&T Committee for LANS and LLNS (2009-2012); member, APS Physics Policy Committee (2009-2011); member, Visiting Committee for Sponsored Research, MIT (2009-13); member and chair, Strategic Research Advisory Board, Austrian Institute of Technology (2009-2013); member of Council of American Academy of Arts & Sciences (2010-2019); chair, Science on NIF Committee, Lawrence Livermore National Laboratory (2010-2013); member, Dept. of Energy Fusion Science Advisory Committee [FESAC] (2012-14); member, FESAC Subcommittee on the Priorities of the Magnetic Fusion Energy Science Program (2011-12); member (2011-2114), vice chair (2011), chair-elect (2012) and chair (2013), American Physical Society Panel on Public Affairs; member, Technical Advisory Committee, Laboratory for Laser Energetics (LLE), Univ. of Rochester (2013-present); board member, Fermi Research Alliance (FRA), LLC (2013-2015); member, DOE Office of Science Safeguards & Advisory Committee (2013-present); member, NIF Advisory Committee, Lawrence Livermore National Security LLC (2010-2013); member, NIF Management Advisory Committee (MAC), Lawrence Livermore National Security LLC (2013-present); chair, Science and Security Board, Bulletin of the Atomic Scientists (2016-present); chair, National Academies Committee on Nuclear Forensics (2019-20).

Major University of Chicago Activities: Chairman, Provost's Working Group on High-Performance Computing (1988); chairman, Provost's Committee on University-Argonne National Laboratory Relations (1992-3); chairman, Division of Physical Science Committee on Computational Science at The University of Chicago (1993-4); chairman, Committee on the University Calendar (1997); elected member, College Council (1997-9); member, Computations Institute executive committee (1999-2005); member, Science Council (2003-9); member, Physical Sciences Division Visiting Committee (2006-present); member, Biological Sciences Division Faculty Science Committee (2009-2010); member and then chair, Committee on Honorary Degrees (2010-2); co-director, Energy Policy Institute at Chicago (EPIC, 2011-4); chair, Dept. of Computer Science chair search committee (2015); member, Committee to Review the College and Divisional Structure (CDS, 2016-7); chair, Faculty Advisory Committee on the Commemoration of CP-1 (2016-7); member, Faculty Committee on Data Sciences (2017-8); elected member, Dean's search committee, Physical Sciences Division (2017-8); elected member, Council of the Faculty Senate (2017-present); elected member, Committee of the Council (2017-present); chair, Committee on Environmental and Energy Sciences (2018-9).

General Fields of Research: My research has been mostly in the areas of plasma astrophysics and astrophysical fluid dynamics and magnetohydrodynamics (including especially solar and stellar magnetic fields); high energy density physics; boundary mixing instabilities; combustion modeling; applications of stochastic differential equations and optimization problems; and uncertainty quantification. I have had continued research interest overlap with the DOE/ASCI Flash Center at Chicago (which I led for its first five years); this Center has been a pioneer in the development of computational astrophysics codes with broad applicability to other disciplines; and I was closely involved in that Center's research activities in flame modeling and interfacial mixing. I have also been involved with a Wisconsin/Chicago/Princeton NSF-supported Physics Frontier Center focusing on problems lying at the boundary of astrophysics and laboratory plasma physics, mostly in areas related to magnetohydrodynamic instabilities in low Prandtl number fluids (such as liquid metals, or stellar interiors). I was the founding director of the Center for Exascale Simulation of Advanced Reactors (CESAR), an Argonne National Laboratory-based and DOE-funded computational physics center focused on developing computational techniques for the 'next generation' of massively parallel computers in the context of computational design tools for advanced nuclear power reactors. My current physics research is mostly focused on the nonlinear development of interface instabilities; and well as a growing interest and work on uncertainty quantification in computational modeling, especially in the realms of climate and seasonal modeling.

In addition, I have over the past 15+ years – through my work at Argonne National Laboratory

– gotten heavily involved in issues related to science and technology policy and management, especially in areas related to energy, climate, and modeling and simulations, national security, as well as (via my chairmanship of the Department of Energy National Laboratory Directors’ Council as well as my work with the Council on Competitiveness) with national policy issues related to STEM workforce development, nuclear and renewable energy technology development, and the role of national laboratories in scientific, technological, and industrial competitiveness, including the relationship between national laboratories, academia, and industry. Most recently, these interests have led me to co-found the Energy Policy Institute at Chicago (EPIC), which joins energy and environmental interests at the Harris School of Public Policy, the Booth School of Business, and the Economics Department at the University; and to join as a member (and currently chair) of the Science and Security Board of the Bulletin of the Atomic Scientists.

PhD Students (graduated): Alexandros Alexakis [2004] (Staff Physicist, Laboratoire de Physique Statistique & CNRS, Ecole Normale Supérieure, Paris, France), Joseph Biello [2001] (Professor [Mathematics], UC Davis), Jay Bookbinder [1986] (Director, Projects and Programs, NASA Ames Research Center), Alvaro Caceres [2006] (formerly Research Scientist, Argonne National Laboratory), L. Jonathan Dursi [2004] (Principal, Dursi Consulting, Canada), Dimitris Giannakis [2009] (Associate Professor [Applied Mathematics], Courant Institute, NYU), Robert Harmon [1999] (Professor & Department Chair [Physics], Ohio Wesleyan University), Elizabeth Hicks [2011] (Postdoctoral Fellow [Applied Mathematics], Northwestern Univ.), Scott Horner [1994] (Project Manager, Spaceflight Projects Office, NASA Ames Research Center), Max Hutchinson [2016] (Scientist, Citrine Informatics), William Jeffrey [1988] (President and CEO of SRI), Vinay Kashyap [1994] (Senior Astrophysicist, Harvard-Smithsonian Center for Astrophysics), Eun-Jin Kim [1996] (Reader [Physics], Univ. of Sheffield, UK), Dawn Lenz [1998] (Software Engineer, NEON, Inc., Colorado), Rebecca Lordan [2017] (Postdoctoral Fellow, Univ. of Basel, Switzerland), Yu-Qing Lou [1984] (Professor [Physics], Tsinghua Univ., Beijing, China), Andrea Mignone [2004] (Associate Professor [Physics], Univ. of Turin, Italy), Giovanni Peres [1980] ([co-advisor] Professor [Physics], Univ. of Palermo, Italy), Bruce Popp [1985] (Principal, Bien Fait Translations), Jürgen Schmitt [1984] (Professor [Astrophysics], Univ. of Hamburg, Germany), Louis Tao [1994] (Professor, Peking Univ., Beijing, China), Joseph Werne [1993] (Senior Research Scientist, CoRA-NorthWest Research Associates, Boulder, CO), Yuan N. Young [2000] (Professor [Applied Mathematics], New Jersey Institute of Technology)