

James Avery Sauls

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May 14, 2023
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Education:

Colorado School of Mines, Golden, Colorado Physics, B.S. 1975
State University of New York, Stony Brook, New York Physics, Ph.D. 1980
Princeton University, Princeton, New Jersey Physics, Post Doc 1980-82

Appointments:

Professor and Hearne Chair of Theoretical Physics, Louisiana State University, 2022 — date
Co-Director of the Hearne Institute of Theoretical Physics, Louisiana State University, 2022 — date
Chief Theorist, DOE NQI Center for Superconducting Materials and Systems, Fermilab - 2022– date
Professor of Physics (Adjunct), Northwestern University, 2022 — date
Sarah Rebecca Roland Professor of Physics, Northwestern University, 2021-2022
Professor of Physics, Northwestern University, 1991 — 2020
Deputy Director, DOE NQI Center for Superconducting Materials and Systems, Fermilab - 2020– 2022
Co-Director, Center for Applied Physics and Superconducting Technology - 2017– 2022
Co-Director, Graduate Program in Applied Physics, Northwestern - 2015– 2021
Secretary-Treasurer of DCMF of the American Physical Society - 2019-2023
Specialty Chief Editor for Condensed Matter Physics, *Frontiers in Physics*, 2018 - date.
Distinguished Visiting Scientist, Los Alamos National Laboratory - 2015
Distinguished Lecturer, University of St. Andrews & University of Edinburgh - 2014
Executive Committee of DCMF of the American Physical Society - 2011-2014
Erasmus Mundus Lecturer on Nanoscience, Chalmers University (Sweden) - 2009
Visiting Professor, Joseph Fourier University (Grenoble), 2003
Visiting Director of Research, CNRS (Grenoble), 2003
Visiting Professor, NORDITA & University of Copenhagen, 1992 - 1993
Associate Professor of Physics, Northwestern University, 1987 - 1991
Assistant Professor of Physics, Princeton University, 1983 - 1987
Visiting Fellow, NORDITA/Helsinki University of Technology, 1983 – 1984
Instructor of Physics, Princeton University, 1982 - 1983
Post-doctoral Fellow, Princeton University, 1980 - 1982
Visiting Scientist, Nordic Institute for Theoretical Physics (NORDITA, Copenhagen), 1980

Professional Societies and Awards:

Fritz London Memorial Prize in Low Temperature Physics, 2017
John Bardeen Prize for Theoretical Research on Superconductivity, 2012
Max-Planck Research Prize in Theoretical Physics, 1994
Fellow of the American Physical Society, 1998
Member of the Alexander von Humboldt Society
Member of the Aspen Center for Physics

Research Interests:

Quantum Fluids & Superconductivity
Quantum Processes, Transport Theory & Nonequilibrium Superconductivity
Quantum Field Theory, Quantum Information, Sensing & Computing
Theory of Dense Nuclear Matter & Degenerate Stars

Undergraduate, Graduate & Post-Doctoral Training & Mentoring:

Supervised 12 Undergraduate research projects or Theses
Supervised 14 PhDs in Theoretical Physics
Supervised 18 Post-Doctoral Fellows in Theoretical Physics
Director of Graduate Studies, Department of Physics & Astronomy, Northwestern, 2009-2012
Graduate Lectures on *Quantum Mechanics*, *Statistical Mechanics*, *Quantum Field Theory*

Selected Recent Publications:

1. J. A. Sauls, Theory of Disordered Superconductors with Applications to Nonlinear Current Response, *Progress of Theoretical & Experimental Physics*, 2022, 3, 033103 (2022), doi:10.1093/ptep/ptac034.
2. J. A. Sauls, On the Excitations of a Balian–Werthamer Superconductor, *Journal of Low Temperature Physics* 208, 87–118 (2022), doi:10.1007/s10909-022-02748-2.
3. R. C. Regan, J. J. Wiman, and J. A. Sauls, Half-quantum vortices in nematic and chiral phases of ^3He , *Physical Review B*, 104:024513, 2021, doi:10.1103/PhysRevB.104.024513.
4. V. Ngampruetikorn and J. A. Sauls. Impurity-induced Anomalous Thermal Hall Effect in Chiral Superconductors. *Physical Review Letters*, 124:157002, 2020. doi:10.1103/PhysRevLett.124.157002.