

James Avery Sauls

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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 of Physics, Northwestern University, 1991 — present
Co-Director, Center for Applied Physics and Superconductivity - 2017– present
Co-Director, Graduate Program in Applied Physics - 2015– present
Executive Committee of DCMP of the American Physical Society - 2011-2014
Distinguished Lecturer, University of St. Andrews & University of Edinburgh - 2014
Erasmus Mundus Lecturer on Nanoscience, Chalmers University (Sweden) - 2009
Visiting Professor, Joseph Fourier University (Grenoble), 2003
Visiting Director of Research, CNRS (Grenoble), 2003
Group Leader - Theory, NSF-STC for Superconductivity, 1991-2001
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:

Theory of Topological Phases of Condensed Matter, Topological Superfluids & Superconductors,
Nonequilibrium Superconductivity, Quantum Processes in Mesoscopic Systems,
Theory of Dense Matter & Neutron Stars

Undergraduate, Graduate & Post-Doctoral Training & Mentoring:

Supervised 12 Undergraduate research projects or Theses
Supervised 12 PhDs in Theoretical Condensed Matter Physics
Supervised 15 Post-Doctoral Fellows in Theoretical Condensed Matter Physics
Graduate Lectures on *Quantum Mechanics*, *Statistical Mechanics*, *Field Theory*
Director of Graduate Studies, Department of Physics and Astronomy, 2009-2012

Selected Recent Publications:

1. *Andreev Bound States and Their Signatures*, [Phil. Trans. Roy. Soc. A 376, 20180140 (2018)], J. A. Sauls
2. *Spontaneous Helical Order of ^3He Confined in Nano-Scale Channels*, [arXiv:1802.08719], J. J. Wiman & J. A. Sauls
3. *Bosonic Surface States & Acoustic Spectroscopy of Confined $^3\text{He-B}$* , [arXiv:1801.02277] T. Mizushima & J. A. Sauls
4. *On Nambu's Fermion-Boson Relations for Superfluid ^3He* , [Phys. Rev. B 95, 094515 (2017)] J. A. Sauls & T. Mizushima
5. *Half-Quantum Vortices in Superfluid Helium* Physics, 9, 148, (2016), J. A. Sauls
6. *Electron Bubbles & Weyl Fermions in Superfluid $^3\text{He-A}$* Phys. Rev. B 94, 064511 (2016), Oleksii Shevtsov & J. A. Sauls