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Summary

Experimental physicist establishes and manages research programs at a top 10 condensed matter physics research institution. Successes impact multiple fields and industries, and include discoveries of new physical phenomena, development of next-generation technologies, and solving enigmatic problems in cutting-edge material systems. Technological limitations are routinely overcome by developing new devices and fabrication techniques, implementing extensive automation, and inventing novel measurement systems replicated by internationally acclaimed laboratories. The main objective is to continue pushing beyond the boundaries of science and technology by utilizing a deep knowledge of condensed matter and materials science, broad engineering and trade skills, and leadership abilities.

Professional Experience

Click for details: [C.V.](#)

<b>Associate Research Scientist</b>	Physics Department, U. of Maryland	2017 – Present
<b>Scientist/Consultant</b>	IREAP (Prof. Dan Lathrop), U. of Maryland	2016
<b>Assistant Research Scientist</b>	Physics Department, U. of Maryland	2011 – 2016
<b>Lecturer</b>	Physics Department, U. of Maryland	2009
<b>Scientist/Consultant</b>	Metallurgy Div. NIST (Dr. William Egelhoff), MD	2009
<b>Postdoctoral Research Assoc.</b>	Physics Dept., Prof. H. D. Drew, U. of MD	2007 – 2011
<b>Professional Jazz Pianist</b>		2004 – 2007
<b>Graduate Research Assistant</b>	Physics Department, Prof. H. D. Drew, U. of MD	1998 – 2003
<b>Consultant</b>	Infinetex Technology, Hyattsville, MD	1997-1998
<b>Graduate Research Assistant</b>	Physics Department, Prof. R. A. Webb, U. of MD	1996 –1997
<b>Scientist/Engineer</b>	Dasibi, R&D Division, Austin, TX	1993 – 1994
<b>Research Assistant</b>	Physics Dept., Prof. Mark Raizen, U. of Texas at Austin	1992
<b>Research Assistant</b>	Applied Research Laboratories, Austin, Texas	1991
U.S. Citizenship, Secret Clearance 1991		

Ph.D. in Physics, University of Maryland at College Park, 2003 • M.Sc. in Physics, University of Maryland at College Park, 1997 • B.S. in Physics, University of Texas at Austin, 1993

Research Highlights (after 2009)

Click for details: [Research](#)

- |   |  |   |
|---|--|---|
| • Discover dynamic (THz) chiral pumping in Weyl materials           | • Design and build multi-lab helium recovery system            | • Invent novel IR Kerr/Faraday angle and dichroism system         |
| • Develop conformal optically translucent gated devices             | • Discover strong plasmaron mode in 3D Dirac material          | • Develop FTIR spectroscopy with concurrent gate modulation       |
| • Invent novel surface-sensitive magneto-optical instruments        | • Discover bulk quantum Hall effect in 3D topological material | • Develop graphene/carbon nanotube THz detectors/emitters         |
| • Discover shift of Dirac point in capped 3D topological insulators | • Build fully automated platforms for lab measurements         | • First spectroscopic measure of 3D topological insulator surface |

Research Products

Click for details: [Bibliography](#)

- |   |  |
|---|--|
| • 10 authored proposals, 5 awarded grants   | • since 2009 – 9 first-author, 2 last-author pubs.                               |
| • 37 contributed and invited talks  | • Co-PI of three research programs, managing two                                 |
| • 32 collaborations with national and international universities and laboratories | • Mentor 8 undergraduate students, 1 graduate student, and 4 research associates |
| • Multiple inventions (systems and components)                                    | • Many discovered new physical phenomena   |

Summary of Skills

Click for details: [Skills, Example](#)

**Engineering skills** optics, lasers, cryogen (cryostats, He-3 and He-4 systems), refrigeration, vacuum, programming, device fabrication/material diagnostics, physical modeling (thermal, mechanical, electrostatics), electronics (filters, amplifiers, active feedback), automation, systems integration

**Trade skills** machining/drafting, hot works, electrical, gas/coolant handling, polishing/grinding optics