

# Kevin Davenport, Ph.D.

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## EDUCATION

- Ph.D. – Physics, University of Utah 2019  
*Dissertation: Study of Charge Transport Processes in Organic and Inorganic Semiconductor Devices using Noise and Immittance Spectroscopy*  
*Committee: Christoph Boehme, Tugudal S. LeBohec, Eugene Mishchenko, Dmitry Bedrov, Andrey Rogachev (chair, advisor)*
- M.S. – Physics, University of Utah 2015
- B.S. – Physics (Mathematics Minor), University of Utah 2012
- B.A.S. – Industrial Design, ITT Technical Institute 2001
- B.A.S. – Electronics Engineering, ITT Technical Institute 1999

## ACADEMIC/TEACHING EXPERIENCE

- Assistant Lecture Professor, Department of Physics and Astronomy, College of Science, University of Utah July 2022-Present
- Assistant Instructor, Department of Physics and Astronomy, College of Science, University of Utah 2020-July 2022  
**Courses as instructor of record include:**  
PHYS2210 – Physics for Scientists and Engineers I (Introductory Mechanics)  
PHYS2220 – Physics for Scientists and Engineers II (Introductory E&M)  
PHYS2015 – General Physics Lab I (with Life Science Focus)  
PHYS2025 – General Physics Lab II (with Life Science Focus)  
**Duties included:** Complete development of course material (e.g., syllabus, course content, lecture slides, course website via Canvas), management of teaching staff including undergraduate/graduate teaching assistants and undergraduate learning assistants, facilitating research-driven active learning. Both PHYS 2210 and 2220 are taught at the AMES public charter school to co-enrolled high school students in addition to the traditional lecture format.
- Instructor, Center for Science & Mathematics Education, College of Science, University of Utah 2017-Present  
**Courses as instructor of record include:**  
SCI2010 – The Nature of Scientific Inquiry  
**Duties included:** Complete development of course material (e.g., syllabus, course content, lecture slides, course website via Canvas), grading of student deliverables, design, and implementation of in-class scientific explorations.
- Graduate Teaching Assistant, University of Utah 2012-2017  
**Courses include:** *PHYS2210/2215* (Intro Mechanics for Scientists and Engineers with corresponding lab), *PHYS2225* (Intro E&M for Scientists and Engineers lab), *PHYS3210* (Honors Mechanics for Scientists), *PHYS3410* (Foundations of Modern Optics), *PHYS5450* (Introduction to Quantum Mechanics), *PHYS5460* (Quantum and Statistical Mechanics), *PHYS5510* (Solid-State Physics I), *PHYS6770/6775* (Optical Measurement Techniques and Instrumentation with corresponding lab)  
**Duties included:** Delivery of supplementary lectures, instructor-led problem-solving sessions, instructor-facilitated group problem-solving sessions, grading of student deliverables, working closely with course instructor of record to develop course content.

- Undergraduate Lab Assistant, University of Utah

**Courses include:** *PHYS2215* (Intro Mechanics for Scientists and Engineers lab), *PHYS2225* (Intro E&M for Scientists and Engineers lab)

**Duties included:** Delivery of laboratory lectures, facilitation of complex laboratory exercises and data interpretation, grading of student deliverables, assist instructor of record with developing laboratory materials, served as lab curator (responsible for testing/setting up all laboratory activities for all student sections).

2011-2012
  
- Instructor, ITT Technical Institute, School of Drafting and Design

**Courses as instructor of record include:** 3-D Modeling, Broadcast Graphics, Animation I, Animation II, Audio/Video Techniques, Visual Design Capstone, Computer-Aided Industrial Design, Model Making for Industrial Design, Architectural Visualization, Managing Game Development, Game Level Design, Physics of Animation, Game Design Capstone, Mathematics I (equivalent to MATH1010), Mathematics II (equivalent to MATH1050), DC Electronics, AC Electronics

**Duties included:** Implementing curricular framework provided by the college, augmenting curricula as needed to emphasize best practices in changing technical fields, design of course materials, grading of student deliverables, closely interfacing with other faculty to ensure horizontal transport of skills across classes

2001-2011
  
- Lab Assistant, ITT Technical Institute

1997-2001

## ACADEMIC HONORS AND AWARDS

- Outstanding Educator Award, College of Science, University of Utah

*Awarded to faculty who have gone above and beyond to foster community, provide engaged learning opportunities, or otherwise substantially enrich learning experiences*

2023
  
- UPSTEM HHMI Faculty Fellow

*HHMI-funded program designed to build and support a community of change agents committed to inclusion and equity in STEM at the University of Utah and Salt Lake Community College*

2021
  
- American Association for the Advancement of Science (AAAS) Mass Media Science and Engineering Fellow

*Reported on science and technology for the Idaho Statesmen in Boise, ID*

2018
  
- Outstanding Teaching Assistant, Department of Physics & Astronomy, University of Utah

2017
  
- STEM Scientist, STEM Ambassador Program (STEMAP)

*NSF-funded multi-institution group dedicated to bringing STEM subjects to science-inattentive groups*

2016
  
- Outstanding Graduate Student, Department of Physics & Astronomy, University of Utah

2015
  
- Science Communication Fellow, Natural History Museum of Utah

*Included a short course in effective communication and educational techniques coupled with several public engagements including “Scientist in the Spotlight” activities at the museum and a public talk*

2015
  
- Undergraduate Research Scholar, University of Utah

2012
  
- Sigma Pi Sigma Physics Honors Society

2011
  
- Faculty Member of the Year, ITT Technical Institute

2004
  
- Graduated Valedictorian, Highest Honors (B.A.S. I.D.), ITT Technical Institute

2001
  
- Graduated Salutatorian, Highest Honors (B.A.S. E.E.), ITT Technical Institute

1999

## RESEARCH EXPERIENCE

- Postdoctoral Researcher, Department of Physics and Astronomy, University of Utah 2019-2020  
**Advisor:** Andrey Rogachev  
**Project:** Study of superconducting nanowires/films. Duties include experimental work, manuscript writing, experimental apparatus design and fabrication, assisting graduate students, and nanowire/film fabrication using magnetron sputtering and electron beam lithography.  
**Project:** Optical noise and opto-impedance spectroscopy of light-emitting diodes. Duties include experimental work, software development using LabView suite, experimental apparatus design and fabrication, assisting/managing undergraduate researchers.
- Instructor/Participant, University of Utah 2017-2020  
“Building Coherence in STEM Learning Opportunities for Pre-Service Elementary Teachers across Disciplinary Boundaries”, National Science Foundation (DUE-IUSE, #1712493), Lauren Barth-Cohen (PI), Aaron J. Bertram (Co-PI), Jordan M. Gerton (Co-PI), José Gutierrez (Co-PI), \$299,976 (08/17-07/20)
- Graduate Research Assistant, University of Utah 2012-2019  
**Advisor:** Andrey Rogachev  
**Project:** Current and optical noise study of organic devices (organic light-emitting diodes, photovoltaic cells, hybrid perovskite devices)  
**Project:** Thin-film deposition for STM and transport measurements on superconducting molybdenum/germanium films  
**Project:** Admittance spectroscopic study of high-efficiency organic light-emitting diodes
- Undergraduate Research Assistant, University of Utah 2011-2012  
**Advisor:** Andrey Rogachev  
**Project:** Admittance spectroscopic study of single-crystal rubrene organic field-effect transistors

## DEPARTMENTAL/UNIVERSITY SERVICE

- Public Outreach and Education Committee, Department of Physics and Astronomy, University of Utah 2023-Present  
2023-2024 (Chair)  
*Department-level committee tasked with organizing and directing the department’s public outreach mission, organizing events, and interfacing with the public*  
**Duties include:** Soliciting outreach events from the public, helping to field and arrange outreach events requested by the public, work with other committees in our department’s high school recruitment efforts, build and maintain the department’s web presence in the outreach space
- Physics Circle, Department of Physics and Astronomy, University of Utah 2023-Present  
*An extra-curricular club for high school students from grades 9-12 to explore physics problem solving techniques with working physicists*  
**Duties include:** Planning monthly meeting curriculum, organizing events with high school students, preparation for and proctoring of physics Olympiad exams

- Teaching Assistant Orientation Committee, Department of Physics and Astronomy, University of Utah

*Department-level committee tasked with training and supporting our department's undergraduate, graduate, and post-baccalaureate teaching assistants*

**Duties include:** Planning and implementing our graduate student TA orientation week, supporting the TA population as well as the mentor TA, planning and implementing TA training workshops and events throughout the semester, helping to put together the TA roster for each semester's classes

2022-Present
- Teaching Excellence Committee, Department of Physics and Astronomy, University of Utah

*Department-level committee tasked with supporting our department's teaching faculty, helping to implement the best research-based practices, helping to review teaching performance and assist in course content creation.*

**Duties include:** Developing a teaching review form to be used to evaluate in-class performance of instructors for both informal and formal review; assistance with setting up online courseware via Canvas, Gradescope, or other platforms as needed; general support for teaching faculty in navigating the ropes of running a large-format course.

2022-Present
- Bennion Scholar Advisory Committee, Bennion Center, University of Utah

*University-level committee tasked with advising, supporting, and review Bennion scholar's independent service projects*

**Duties include:** Review, support, and advising of Bennion Scholar students, their faculty advisors, and their community partners on an annual basis; review of proposed capstone projects; planning and execution of Issues & Action Luncheons and Bennion-Hinckly Forums through the Bennion Center.

2022-Present
- Hiring/Interview Search Committee for Crocker Science Center Educational Lab Manager, College of Science, University of Utah

*College-level committee tasked with finding, interviewing, and hiring the new CSC Educational Lab Manager after David Thomas's promotion to COS Director of Safety*

**Duties include:** Fielding candidates for the Lab Manager position via application review and interview, scheduling and performing candidate interviews and follow-ups, facilitating lab tours and Q&A session for candidates, ultimately recommending ideal hire to HR and the COS

Oct- Nov 2022
- Graduate Council, Graduate School, University of Utah

*University-level committee concerned with the development and improvement of the graduate school as a whole*

**Duties included:** Served as one of two representatives for the entire graduate student body, advocated for graduate student issues to college representatives, voting member in reference to changes to college structure and departmental review.

2016-2018
- Graduate Student Advisory Committee, Department of Physics and Astronomy, University of Utah

*Department-level committee concerned with faculty retention, promotion, and tenure (RPT). Served as committee Chair, 2014-2015*

**Duties included:** Interviewing faculty and graduate students as the first step in the RPT process; filing official reports for use at the department, college, and university level; facilitating graduate student visitation; arranging and facilitating graduate student social activities to build departmental cohesion.

2013-2018

- Committee on Admission Standards and Degree Programs, College of Science, University of Utah 2014-2015

*College-level committee devoted to evaluating and awarding grants/scholarships to incoming high-school students, as well as first-year freshman*

**Duties included:** Evaluating student applications, participating in robust discussion with other committee members (all faculty) about applicant merit, ultimately deciding how internal scholarship/grant funds will be awarded.
- Science Day at the U Committee, Department of Physics and Astronomy, University of Utah 2014-2015

*College-level committee established to help plan and facilitate Science Day, the university's largest student recruitment event.*

**Duties included:** Planning events, running event tables, helping students and visitors navigate the event

## PROFESSIONAL MEMBERSHIPS

- AAAS – American Association for the Advancement of Science, Member
- APS – American Physical Society, Member
- AAPT – American Association of Physics Teachers, Member
- IEEE – Institute of Electrical and Electronics Engineers, Member

## ACADEMIC PUBLICATIONS

- L. Barth-Cohen, **K. Davenport**, J. Gerton, K. Hahn, J. May, “Promoting Student Sensemaking in Introductory Physics Labs”, *The Physics Teacher*, under review
- A. Rogachev & **K. Davenport**, “Microscopic scale of pair-breaking quantum phase transitions in superconducting films, nanowires and  $\text{La}_{1.92}\text{Sr}_{0.08}\text{CuO}_4$ ”, *arXiv*, <https://doi.org/10.48550/arXiv.2309.00747>
- **K. Davenport**, M. Hayward, C.T. Trinh, K. Lips, A. Rogachev, “Relaxation processes in silicon heterojunction solar cells probed via noise spectroscopy”, *Scientific Reports*, 11:13238 (2021)
- **K. Davenport**, F. Zhang, M. Hayward, L. Draper, K. Zhu, A. Rogachev, “An analysis of carrier dynamics in methylammonium lead triiodide perovskite solar cells using cross correlation noise spectroscopy”, *Applied Physics Letters* **116**, 253902 (2020)
- **K. Davenport**, M. Hayward, A. Rogachev, “Detection of Shot Noise in Solar Cells and LEDs Using Cross-Correlation Current Noise Spectroscopy”, *Proceedings of the 25<sup>th</sup> International Conference on Noise and Fluctuations 2-6* (2019)
- B. Sacépé, J Seideman, F. Gay, **K. Davenport**, A. Rogachev, M. Ovadia, K. Michaeli, M.V. Feigel’man, “Low-temperature anomaly in disordered superconductors near  $\text{Bc}_2$  as a vortex-glass property”, *Nature Physics* **15**, 48-53 (2019)
- **K. Davenport**, T.K. Djidjou, S. Li, A. Rogachev, “Charge Accumulation on Multiple Interfaces in OLEDs with Electron and Hole Blocking Layers”, *Organic Electronics* **46**, 166-172 (2017)
- **K. Davenport**, A. Rogachev, “AC Characteristics of Single-Crystal Organic Field Effect Transistors”, *University of Utah Undergraduate Research Abstracts*, Volume 12 (2012)

## SELECTED NON-ACADEMIC PUBLICATIONS

- **K. Davenport**, “How can we get uranium from seawater? One Idaho scientist has an idea: altered yarn”, *Idaho Statesman*, (2018, September)
- **K. Davenport**, “No end in sight for smoke issues in Idaho as fires, climate change worsen”, *Idaho Statesman (in conjunction with Climate Central)*, (2018, August)
- **K. Davenport**, “Yellowstone’s magma chamber is more powerful than we knew. Here’s why studying it matters”. *Idaho Statesman*, (2018, July)
- **K. Davenport**, “Plague killed a cat in S.W. Idaho, sickened a child. What is the plague? Why is it here?”, *Idaho Statesman*, (2018, July)
- “Kevin Davenport Brings STEM Journalism to *Idaho Statesman*”, *Idaho Matters*, Boise State Public Radio, (aired 2018, July 24th)
- **K. Davenport**, “Symphony of the salmon: Scientists learn by putting fish migration to music”, *Idaho Statesman*, (2018, July)
- **K. Davenport**, “How a 20-minute fire in the fatal 1-84 crash ruined a concrete overpass”, *Idaho Statesman*, (2018, June)
- **K. Davenport**, “Poachers send Idaho’s curlew numbers spiraling”, *Idaho Statesman*, (2018, June)

## CONFERENCE/PUBLIC PRESENTATIONS

- **K. Davenport**, M. Hayward, A. Rogachev, “Detection of Shot Noise in Solar Cells and LEDs Using Cross-Correlation Current Noise Spectroscopy”, 25<sup>th</sup> International Conference on Noise and Fluctuations, Neuchâtel, Switzerland, (2019, June)
- **K. Davenport**, M. Hayward, L. Draper, A. Rogachev, “Detection of shot noise in perovskite solar cells and related devices”, American Physical Society March Meeting, Boston, MA, (2019, March)
- **K. Davenport**, “Organic Electronics”, Scientist in the Spotlight, Natural History Museum of Utah, Salt Lake City, UT (2019, February)
- **K. Davenport**, T.K. Djidjou, A. Rogachev, “Cross-Correlated Current Noise Spectroscopy and Detection of Shot Noise in Organic Light-Emitting Diodes”, American Physical Society March Meeting, Los Angeles, CA, (2018, March)
- **K. Davenport**, “Scale and Experience: A Quick Guide To Understanding How We See The World Around Us”, University of Utah INSPIRE Program, Utah State Prison, Draper UT (2016, September)
- **K. Davenport**, “Organic Electronics”, Scientist in the Spotlight, Natural History Museum of Utah, Salt Lake City, UT (2015, July, May)
- **K. Davenport**, “Semiconductors and Noise”, Science Café Program, Natural History Museum of Utah, Salt Lake City, UT (2015, February)

