Eli Levenson-Falk

CURRICULUM VITAE

Department of Physics & Astronomy
University of Southern California
Los Angeles, CA 90089
elevenso@usc.edu
(213) 740-0163
Office: SSC #222
Research Group Site
Google Scholar Page

Updated October 24, 2025

RESEACH INTERESTS

My experimental research group develops and uses superconducting electronics for quantum computing, quantum simulation, ultra-low-noise amplification, precision measurements, and basic quantum physics research. I am particularly interested in experiments that develop practical quantum technologies that can also be used to study foundational physics questions such as the quantum measurement problem: how does *deterministic* interaction with a quantum *superposition* result in our classical reality of a *single, stochastic* measurement outcome?

APPOINTMENTS

Associate Professor (PI of Levenson-Falk Lab) (2017 –)
Dept. of Physics & Astronomy
Ming Hsieh Dept. of Electrical & Computer Engineering (2023 –)
University of Southern California, Los Angeles, CA
Research topics: Quantum computing, simulation, and sensing technologies. Superconducting qubits and artificial atoms. Microwave resonators and resonant circuits. Ultra-sensitive detectors and continuous sensors. Quantum-limited amplification, weak measurement, and quantum feedback. Open quantum systems for quantum foundations and quantum sensing.

Postdoctoral Scholar (2013 – 2017)
Department of Physics and Geballe Lab for Advanced Materials
Stanford University, Stanford, CA
Research topics: Gravitation at sub-millimeter length scales. Ultra-sensitive metrology for axion detection. Optical Kerr effect studies of time reversal symmetry breaking in unconventional superconductors. Thermal transport measurements of strange metals.

EDUCATION

University of California Berkeley, Ph.D. in Physics (2013)
Dissertation*: Static and Microwave Transport Properties of Aluminum Nanobridge Josephson Junctions*
University of California Berkeley, M.A. in Physics (2010)
Harvard University, A.B. *magna cum laude* in Physics (2008)

HONORS and FELLOWSHIPS

ONR Young Investigator (2021)
Cottrell Scholar (2021)
AFOSR Young Investigator (2019)
Lawrence Postdoctoral Fellowship, Lawrence Livermore National Lab (*declined*) (2017)
NSF Graduate Research Fellow (2009 – 2013)
ASEE National Defense Science and Engineering Graduate Fellow (2009 – 2012)

PUBLICATIONS

Submitted, under review

33. "A unified picture for quantum Zeno and anti-Zeno effects"
S. Greenfield, A. Kamal, J. Dressel, **E. M. Levenson-Falk**, arXiv:2506.12679, *under review at Quantum*

Published or in press

32. "Possible unconventional surface superconductivity in the half-Heusler YPtBi"
E. Persky, A. Fang, X. Zhang, C. Adamo, **E. M. Levenson-Falk**, C. Shekhar, C. Felser, B. Yan, A. Kapitulnik, *Phys. Rev. B* **111**, 245417 (2025) (*Editor's suggestion*)

31. "Design concerns in superconducting quantum circuits" *(invited review article)*
E. M. Levenson-Falk, S. Shanto, *Mater. Quantum. Technol.* **5** 022003 (2025)

30. "Virtual *Z* gates and symmetric gate compilation"
A. Vezvaee, V. Tripathi, D. Kowsari, **E. M. Levenson-Falk,** D. A. Lidar, *PRX Quantum* **6**, 020348 (2025)

29. "Beating the Ramsey limit on sensing with deterministic qubit control"
M. O. Hecht, K. Saurav, E. Vlachos, D. A. Lidar, **E. M. Levenson-Falk**, *Nat Commun* **16**, 3754 (2025)

28. "Benchmarking quantum gates and cirucits" (*invited review article*)
V. Tripathi, D. Kowsari, K. Saurav, H. Zhang, **E. M. Levenson-Falk,** D. A. Lidar, *Chemical Reviews* special issue (2025)
Note: VT and DK share co-lead authorship, EMLF and DAL share co-corresponding authorship.

27. "SQuADDS: A validated design database and simulation workflow for superconducting qubit design"
S. Shanto, A. Kuo, C. Miyamoto, H. Zhang, V. Maurya, E. Vlachos, M. Hecht, **E. M. Levenson-Falk**, *Quantum* **8**, 1465 (2024)

26. "Entanglement assisted probe of the non-Markovian to Markovian transition in open quantum system dynamics"
C. Gaikwad, D. Kowsari, C. Brame, X. Song, H. Zhang, M. Esposito, A. Ranadive, G. Capelli, N. Roch, **E. M. Levenson-Falk**, K. W. Murch, *Phys. Rev. Lett.* **132**, 200401 (2024)

25. "On-demand driven dissipation for cavity reset and cooling"
V. Maurya, H. Zhang, A. Kuo, D. Kowsari, D. M. Hartsell, C. Miyamoto, J. Liu, S. Shanto, E. Vlachos, A. Zarassi, K. W. Murch, **E. M. Levenson-Falk**, *PRX Quantum* **5,** 020321 (2024)
Note: VM and HZ share co-lead authorship

24. "Stabilizing two-qubit entanglement with dynamically decoupled active feedback"
S. Greenfield, L. Martin, F. Motzoi, K. B. Whaley, J. Dressel, **E. M. Levenson-Falk**, *Phys. Rev. Appl.* **24,** 024022 (2024)

23. "Modeling low- and high-frequency noise in transmon qubits with resource-efficient measurement"
V. Tripathi, H. Chen, **E. M. Levenson-Falk,** D. A. Lidar, *PRX Quantum* **5,** 010320 (2024)

22. "Quasiparticle dynamics in epitaxial Al-InAs planar Josephson junctions"

B. H. Elfeky, W. M. Strickland, J. Lee, J. T. Farmer, S. Shanto, A. Zarassi, D. Langone, M. G. Vavilov, **E. M. Levenson-Falk**, J. Shabani, *PRX Quantum* **4**, 030339 (2023)

21. "Electron-phonon interactions in the Andreev Bound States of aluminum nanobridge Josephson junctions"
J. T. Farmer, A. Zarassi, S. Shanto, D. M. Hartsell, **E. M. Levenson-Falk,** *Phys. Rev. B* **107**, L140506 (2023)
20. "Master equation emulation and coherence preservation with classical control of a superconducting qubit"
E. Vlachos, H. Zhang, J. M. Marshall, V. Maurya, J. T. Farmer, T. Albash, **E. M. Levenson-Falk,** *Phys. Rev. A* **106**, 062620 (2022)
19. "Suppression of crosstalk in superconducting circuits using dynamical decoupling"
V. Tripathi, H. Chen, M. Khezri, K. W. Yip, **E. M. Levenson-Falk**, D. A. Lidar, *Phys. Rev. Appl.* **18**, 024068 (2022)
18. "Predicting non-Markovian superconducting-qubit dynamics from tomographic reconstruction"
H. Zhang, B. Pokharel, **E. M. Levenson-Falk**, D. A. Lidar, *Phys. Rev. Appl.* **17**, 054018 (2022)
17. "Continuous real-time detection of quasiparticle trapping in aluminum nanobridge Josephson junctions"
J. T. Farmer, A. Zarassi, D. M. Hartsell, E. Vlachos, H. Zhang, **E. M. Levenson-Falk**, *Appl. Phys. Lett.* **119** (12), 122601 (2021)
16. "A method for controlling the magnetic field near a superconducting boundary in the ARIADNE axion experiment"
H. Fosbinder-Elkins, Y. Kim, J. Dargert, M. Harkness, A. Geraci, **E. Levenson-Falk**, S. Mumford, A. Fang, A. Kapitulnik, A. N. Matlashov, D. Kim, Y. Shin, Y. K. Semertzidis, Y.-H. Lee, N. Aggarwal, C. Lohmeyer, A. Reid, J. Shortino, I. Lee, J. Long, C.-Y. Liu, W. Snow, *Quantum Sci. and Tech.* **7,** 014002 (2021)
15. "Thermal diffusivity above the Mott-Ioffe-Regel limit"
J.-C. Zhang, E. D. Kountz, **E. M. Levenson-Falk,** R. L. Greene, A. Kapitulnik, *Phys. Rev. B* ***100*** *(24), 241114 (2019)*
14. "High-efficiency measurement of an artificial atom inside a parametric amplifier"
A. Eddins, J. M. Kreikebaum, D. M. Toyli, **E. M. Levenson-Falk**, A. Dove, W. Livingston, B. A. Levitan, L. C. G. Govia, A. A. Clerk, I. Siddiqi, *Phys. Rev. X* **9,** 1 011004 (2019)
13. "Polar Kerr effect from time-reversal symmetry breaking in the heavy-fermion superconductor $PrOs_4Sb_{12}$"
E. M. Levenson-Falk, E. R. Schemm, M. B. Maple, Y. Aoki, A. Kapitulnik, *Phys. Rev. Lett.* **120**, 187004 (2018)
12. "Polar Kerr effect studies of time reversal symmetry breaking states in heavy fermion superconductors"
E. R. Schemm, **E. M. Levenson-Falk**, A. Kapitulnik, *Physica C* **535**, 13-19 (2017)
11. "Anomalous thermal diffusivity in underdoped $YBa_2Cu_3O_{6+x}$"
J.-C. Zhang, **E. M. Levenson-Falk**, B. J. Ramshaw, D. A. Bonn, R. Liang, W. N. Hardy, S. A. Hartnoll, A. Kapitulnik, *PNAS* **114,** (21) 5378 (2017)
10. "Dispersive NanoSQUID Magnetometry" *(invited peer-reviewed review article)*

E. M. Levenson-Falk, N. Antler, I. Siddiqi, *Supercond. Sci. Technol.* **29**, 113003 (2016)

9. "Single quasiparticle trapping in aluminum nanobridge Josephson junctions"
E. M. Levenson-Falk, F. Kos, R. Vijay, L. Glazman, I. Siddiqi, *Phys. Rev. Lett.* **112**, 047002 (2014)

8. "A dispersive nanoSQUID magnetometer for ultra-low noise, high bandwidth flux detection"
E. M. Levenson-Falk, R. Vijay, N. Antler, I. Siddiqi, *Supercond Sci. Technol.* **26**, 055015 (2013)

7. "In-plane magnetic field tolerance of a dispersive aluminum nanobridge SQUID magnetometer"
N. Antler, **E. M. Levenson-Falk**, R. Naik, Y.-D. Sun, R. Vijay, I. Siddiqi, *Appl. Phys. Lett.* **102**, 232602 (2013)

6. "1/f noise of Josephson-junction-embedded microwave resonators at single photon energies and millikelvin temperatures"
K. W. Murch, S. J. Weber, **E. M. Levenson-Falk**, R. Vijay, I. Siddiqi, *Appl. Phys. Lett.* **100**, 142601 (2012)

5. "Nonlinear microwave response of aluminum weak-link Josephson oscillators"
E. M. Levenson-Falk, R. Vijay, I. Siddiqi, *Appl. Phys. Lett.* **98**, 123115 (2011)

4. "Approaching ideal weak link behavior with three dimensional aluminum nanobridges"
R. Vijay, **E. M. Levenson-Falk**, D. H. Slichter, I. Siddiqi, *Appl. Phys. Lett.* **96**, 223112 (2010)

3. "Edge state velocity and coherence in a quantum Hall Fabry-Perot interferometer"
D. T. McClure, Yiming Zhang, B. Rosenow, **E. M. Levenson-Falk**, C. M. Marcus, L. N. Pfeiffer, K. W. West, *Phys. Rev. Lett.* **103**, 206806 (2009)

2. "Distinct signatures for coulomb blockade and Aharaonov-Bohm interference in electronic Fabry-Perot interferometers"
Yiming Zhang, D. T. McClure, **E. M. Levenson-Falk**, C. M. Marcus, L. N. Pfeiffer, K. W. West, *Phys. Rev. B (RC)* **79**, 241304 (2009)

1. "Fractional quantum Hall effect in a quantum point contact at filling fraction 5/2"
J. B. Miller, I. P. Radu, D. M. Zumbühl, **E. M. Levenson-Falk**, M. A. Kastner, C. M. Marcus, L. N. Pfeiffer, K. W. West, *Nat. Phys.* **3**, 561-565 (2007)

FUNDED GRANTS

Code: W911NF-25-1-0255	*Dates:* 2025 – 2028	*Amount:* $1.8M
Title: "Developing open-source superconducting qubit design, simulation, analysis, and education tools"		
Agency: Army Research Office (ARO)	*Type:* Laboratory for Physical Sciences (LPS) Qubit Collaboratory grant	

Code:	*Dates:*	*Amount:*
HR0011-24-9-0362	2023 – 2025	$1M
Title: “MeasQUIT: Generation and Stabilization of Comb-Driven Dissipative Bosonic Qubits”		
Agency: Defense Advanced Research Projects Agency (DARPA)	*Type:* Measurement-based Quantum Information and Transduction (MeasQUIT) grant	

Code:	*Dates:*	*Amount:*
FA9550-23-1-0431	2023 – 2026	$683k for equipment
Title: “A Cryogen-Free Helium Dilution Refrigerator for Quantum Information Science”		
Agency: Air Force Office of Scientific Research (AFOSR)	*Type:* Defense University Research Instrumentation Program (DURIP) grant	

Code:	*Dates:*	*Amount:*
FA9550-23-1-0165	2023 – 2026	$511k
Title: “Suppressing Quasiparticle Generation and Transport in Superconducting Circuits”		
Agency: Air Force Office of Scientific Research (AFOSR)	*Type:* Quantum Information Science (QIS) program grant	

Code:	*Dates:*	*Amount:*
N00014-21-1-2688	2021 – 2025	$510k
Title: “Creating an Open Quantum Systems Engineering Toolkit with Superconducting Qubits”		
Agency: Office of Naval Research (ONR)	*Type:* Young Investigator Program (YIP) grant	

Code:	*Dates:*	*Amount:*
FA9550-21-1-0132	2021 – 2022	$248k for equipment
Title: “A Superconducting Qubit Measurement, Control, and Feedback System”		
Agency: Air Force Office of Scientific Research (AFOSR)	*Type:* Defense University Research Instrumentation Program (DURIP) grant	

Code: 27550	*Dates:* 2021 – 2025	*Amount:* $100k
Title: "Creating Custom Quantum Environments with Superconducting Circuits (for Beginners)"		
Foundation: Research Corp. for Scientific Advancement (RCSA)	*Type:* Cottrell Scholar grant	

Code: OMA-1936388	*Dates:* 2020 – 2024	*Amount:* $2.08M
Title: "Suppressing and Correcting Errors in Hybrid Quantum Circuits"		
Agency: National Science Foundation (NSF)	*Type:* Quantum Idea Incubator – Transformative Advances in Quantum Systems (QII-TAQS) program grant	

Code: DMR-1900135	*Dates:* 2019 – 2023	*Amount:* $450k
Title: "Reducing Quasiparticle Decoherence in Superconducting Quantum Circuits"		
Agency: National Science Foundation (NSF)	*Type:* Condensed Matter Physics (CMP) program grant	

Code: FA9550-19-1-0060	*Dates:* 2018 – 2023	*Amount:* $950k
Title: "Quasiparticles in Superconducting Quantum Circuits"		
Agency: Air Force Office of Scientific Research (AFOSR)	*Type:* Young Investigator Program (YIP) grant	

Code: FA9550-19-1-0060	*Dates:* 02/2019 – 10/2019	*Amount:* $60k
Title: "Adding Noise to Preserve Quantum Process Fidelity"		
Agency: Army Research Office (ARO)	*Type:* Short Term Innovative Research (STIR) grant	

INVITED TALKS

"Beating the Ramsey limit on sensing with Hamiltonian control"
1st ACM International Workshop on Exploring Sensing, Computing, and Communication Systems with Quantum, 2025, Anaheim, CA

"Teaching Design: what works, what doesn't, and what we need"
Quantum Device Design Workshop, 2025, Los Angeles, CA

"From Hamiltonian to gds file and back again with modular superconducting circuit designs"
American Physical Society Global Summit, 2025, Anaheim, CA

"Drawing Your Hamiltonian: Design Considerations in Superconducting Qubits"
IBM Qiskit Fall Fest, 2024, online

"Rapid gate tuneup with environmental tailoring"
Adaptive Quantum Circuits conference, 2024, Brewster, MA

"Beating the Ramsey limit on sensing with Hamiltonian control"
QIS Seminar, 2024, Massachusetts Institute of Technology, Cambridge, MA

"SQuADDS: a Superconducting Qubit And Device Design and Simulation database"
SQUILL Foundry Symposium, 2024, MIT Lincoln Laboratory, Lexington, MA

"Using dissipation to preserve superconducting qubit coherence"
Physics Department Colloquium, 2024, Univ. of Wisconsin Madison, Madison, WI

"Detecting, studying, and eliminating quasiparticles in superconducting circuits"
RG Herb Condensed Matter Seminar, 2024, Univ. of Wisconsin Madison, Madison, WI

"Quantum refrigeration to suppress decoherence in superconducting qubits"
Condensed Matter Physics Seminar, 2024, Northwestern University, Chicago, IL

"On-demand loss in a superconducting quantum circuit"
Quantum Information Seminar, 2024, UC Los Angeles, Los Angeles, CA

"On-demand loss in a superconducting quantum circuit"
Physics Department Seminar, 2024, Caltech, Pasadena, CA

"Creating on-demand dissipation with superconducting quantum circuits"
Quantum-Classical Circuits and Algorithms Workshop, 2023, Caltech, Pasadena, CA

"Creating on-demand dissipation with superconducting quantum circuits"
Quantum Sensing Seminar, 2023, Princeton University, Princeton, NJ

"Exploring Quantum Measurement and Dissipation with Superconducting Circuits"
Quantum Information Seminar, 2023, Washington University, St Louis, MO

"Using loss to preserve coherence in superconducting qubits"
National Quantum Technology Forum, 2023, Clemson, SC

"Open quantum systems engineering with superconducting circuits"
Dept. of Physics Colloquium, 2022, Cal State University Long Beach, Long Beach, CA

"Open quantum systems engineering with superconducting circuits"
Quantum Information Science and Engineering (iQuISE) Seminar, 2022, Massachusetts Institute of Technology (remote)

"Andreev trapping measurements of quasiparticles in superconducting quantum circuits"
Quantum Information Seminar, 2022, Syracuse University, Syracuse, NY

"Quasiparticles, phonons, and photons in superconducting quantum circuits"
South Carolina Quantum Technology Forum, 2022, Clemson University, Clemson, SC

"Real-time single-shot detection of quasiparticle trapping"
Condensed Matter Seminar, 2022, University of California Berkeley, Berkeley, CA

"Continuous single-shot detection of quasiparticle trapping"
Condensed Matter Seminar, 2021, University of Pittsburgh, Pittsburgh, PA

"How supernovae break your quantum computer: quasiparticles in superconducting circuits"
Dept. of Physics & Astronomy Colloquium, 2021, Washington University, St. Louis, MO

"Harnessing noise in superconducting quantum circuits"
Condensed Matter Seminar, 2019, CNRS Grenoble, Grenoble, France

"Quasiparticles in quantum circuits"
Quantum Measurement Group Seminar, 2019, Jet Propulsion Laboratory, Pasadena, CA

"Probing quasiparticle properties in superconducting quantum circuits"
Special Seminar, 2019, MIT-Lincoln Laboratory, Lexington, MA

"Decoherence in superconducting quantum circuits"
Department of Physics Colloquium, 2018, Cal State Univ. Los Angeles, Los Angeles, CA

"Fleas on Schrödinger's cat: eliminating quasiparticles from superconducting quantum circuits"
Department of Physics Colloquium, 2018, Chapman University, Orange, CA

"Quasiparticles in superconducting quantum circuits"
Department of Physics Condensed Matter Seminar, 2017, UC Irvine, Irvine, CA

"Quasiparticles in qubits"
The 20th Workshop on Superconductor Electronics: Devices, Circuits, and Systems, 2017, Santa Cruz, CA

"Superconducting quantum electronics"
CAPP Special Seminar, 2017, KAIST, Daejeon, Korea

"Resonant detection of short-range gravitational forces"
New Ideas in Low Energy Tests of Fundamental Physics Conference, 2014, Perimeter Institute, Waterloo, ON

"Characterization and application of aluminum nanobridge Josephson junctions"
Department of Physics Condensed Matter Seminar, 2014, UC Berkeley, Berkeley, CA

CONTRIBUTED TALKS (**denotes talk on my group's research presented by my advisee*)

"SQuADDS: A validated design database and simulation workflow for superconducting qubit design"*
Presenter: Sadman Shanto
American Physical Society Global Summit 2025, Anaheim, CA

"Rapid tune-up of quantum gates using dynamical decoupling"*

Presenter: Dr. Daria Kowsari
American Physical Society Global Summit 2025, Anaheim, CA

"A unified picture for quantum Zeno and anti-Zeno effects"*
Presenter: Sacha Greenfield
American Physical Society Global Summit 2025, Anaheim, CA

"A cryogenic testbed for infrared low-Pass filters"*
Presenter: Anshu
American Physical Society Global Summit 2025, Anaheim, CA

"A compact planar multi-modal device for efficient error-suppression encoding"*
Presenter: Vivek Maurya
American Physical Society Global Summit 2025, Anaheim, CA

"Beating the Ramsey limit on sensing with continuous, deterministic qubit control"* (*2-part talk*)
Presenters: Malida Hecht and Kumar Saurav (*advised by Daniel Lidar*)
American Physical Society Global Summit 2025, Anaheim, CA

"Beating the Ramsey limit on sensing with deterministic qubit control"*
Presenter: Malida Hecht
Southwest Quantum Information and Technology Workshop 2024, Boulder, CO

"Stabilizing coherence and arbitrary target properties with Hamiltonian control"*
Presenter: Malida Hecht
American Physical Society March Meeting 2024, Minneapolis, MN

"On-demand driven dissipation for cavity reset and cooling on a superconducting chip"*
Presenter: Vivek Maurya
American Physical Society March Meeting 2024, Minneapolis, MN

"Globally stabilizing two-qubit entanglement with dynamically decoupled active feedback"*
Presenter: Sacha Greenfield
American Physical Society March Meeting 2024, Minneapolis, MN

"Going from Hamiltonian to GDS file: an open source package for generating qubit designs"*
Presenter: Sadman Shanto
American Physical Society March Meeting 2024, Minneapolis, MN

"Active, on-demand dissipation for qubit reset and coherence preservation"
Superconducting Qubits and Algorithms Conference, 2023, Munich, Germany

"Quasiparticle dynamics in Andreev bound states" (*2-part talk*)*
Presenters: James Farmer and Sadman Shanto
American Physical Society March Meeting 2023, Las Vegas, NV

"Noise suppression in superconducting qubits through on-demand cavity cooling and optimal control"*
Presenter: Haimeng Zhang
American Physical Society March Meeting 2023, Las Vegas, NV

"Weak measurement feedback and Zeno pinning for remote entanglement generation and stabilization in superconducting qubits"*

Presenter: Sacha Greenfield
American Physical Society March Meeting 2023, Las Vegas, NV

"Master equation emulation and coherence preservation with classical control of a superconducting qubit"*
Presenter: Evangelos Vlachos
American Physical Society March Meeting 2023, Las Vegas, NV

"Engineering and harnessing noisy environments to preserve quantum process fidelity in superconducting qubits"
Superconducting Qubits and Algorithms Conference, 2022, Helsinki, Finland

"On-demand cavity cooling and reset with a modular dissipator"*
Presenter: Darian Hartsell
American Physical Society March Meeting 2022, Chicago, IL

"Non-Markovian noise as a resource for suppressing Markovian errors in superconducting qubits"*
Presenter: Evangelos Vlachos
American Physical Society March Meeting 2022, Chicago, IL

"Continuous Real-Time Detection of Quasiparticle Trapping" (*two-part talk*)*
Presenters: James Farmer and Dr. Azarin Zarassi
American Physical Society March Meeting 2022, Chicago, IL

"Tomographic construction and prediction of superconducting qubit dynamics using the post-Markovian master equation"*
Presenter: Haimeng Zhang
American Physical Society March Meeting 2022, Chicago, IL

"Continuous measurement of quasiparticle trapping in aluminum nanobridge Josephson junctions"*
Presenter: James Farmer
American Physical Society March Meeting 2021, virtual conference

"Generalized Markovian noise as a resource for suppressing Markovian errors in superconducting qubits" (*two-part talk*)*
Presenters: Evangelos Vlachos and Haimeng Zhang
American Physical Society March Meeting 2021, virtual conference

"Probing non-equilibrium quasiparticle populations in superconducting quantum circuits"*
Presenter: James Farmer
American Physical Society March Meeting 2020, Denver, CO (cancelled, talk given remotely)

"Engineering quantum process fidelity via generalized Markovian noise"*
Presenter: Evangelos Vlachos
American Physical Society March Meeting 2020, Denver, CO (cancelled, talk given remotely)

"Time reversal symmetry of A and B phases of $PrOs_4Sb_{12}$"
American Physical Society March Meeting 2017, New Orleans, LA

"Hot soup: thermal transport without quasiparticles in underdoped YBCO"
Moore EPiQS Postdoctoral Symposium 2017, Aspen, CO

"Optical Kerr measurements of $PrOs_4Sb_{12}$"
American Physical Society March Meeting 2016, Baltimore, MD

"Kerr effect measurements of time-reversal symmetry breaking in heavy fermion superconductors"
American Physical Society March Meeting 2015, San Antonio, TX

"Quasiparticle trapping and dynamics in superconducting nanobridges"
American Physical Society March Meeting 2014, Denver, CO

"Quasiparticle noise in aluminum nanobridge Josephson junctions"
American Physical Society March Meeting 2013, Baltimore, MD

"Microwave frequency loss in aluminum nanobridge Josephson junctions"
American Physical Society March Meeting 2012, Boston, MA

"Microwave response of superconducting resonant circuits based on 3D aluminum nanobridge Josephson junctions"
American Physical Society March Meeting 2011, Dallas, TX

"Aluminum nanobridge Josephson junctions for molecular magnetometry"
Applied Superconductivity Conference 2010, Washington, DC

TEACHING

Physics 151: Mechanics and Thermodynamics (F2017, S2019, F2019, S2020)
Physics 438a: Introduction to Quantum Mechanics and its Applications A (S2021, S2022, S2024)
Physics 438b: Introduction to Quantum Mechanics and its Applications B (F2020, F2022, F2025)
Physics 559: Quantum Devices (F2021, F2023, F2024, F2025)

RESEARCH GROUP ALUMNI

Postdoctoral advisor *(2 postdocs)*

Dr. Shirin Jamali 2018 – 2019
Next position: Postdoctoral Scholar at University of San Francisco

Dr. Azarin Zarassi 2020 – 2022
Next position: Applied Physicist at Resonant, Inc.

PhD advisor *(also qual and thesis committees chair/co-chair; 2 students)*

James Farmer
PhD Physics Spring 2023
Dissertation: "Bogoliubov quasiparticles in Andreev bound states of aluminum nanobridge Josephson junctions"
Next position: Quantitative Analyst at Wells Fargo

Haimeng Zhang
PhD Electrical Engineering Summer 2023
Note: co-advised with Daniel Lidar
Dissertation: "Modeling and Engineering Noise in Superconducting Qubits"
Next position: Research Scientist at IBM Quantum

Evangelos Vlachos

PhD Physics Spring 2025
Dissertation: "Harnessing classical control for generating arbitrary quantum dynamics in superconducting qubits"
Next position: Quantum Software Engineer at IQM

Secondary PhD advisor *(2 students)*

Daria Kowsari
PhD Physics (Washington University) Spring 2023
Dissertation: "Studying Quantum Memory Effects of the Environment with Superconducting Circuits"
Primary advisor: Kater Murch (Washington University)
Next position: Postdoctoral Scholar in Levenson-Falk Lab

Vinay Tripathi
PhD Physics (USC) Summer 2024
Dissertation: "Characterization and Suppression of Noise in Superconducting Quantum Systems"
Next position: Research Scientist at IBM Quantum

Master's research advisor *(3 students)*

Revanth Kondaveti
MS Electrical Engineering Spring 2021
Next position: Application Engineer at KLA

Darian Hartsell
MA Physics Spring 2022
Next position: Research Scientist at Georgia Tech Research Institute

Onkar Vivek Apte
MS Quantum Information Science Spring 2024
Next position: PhD student in Electrical Engineering at USC

Undergraduate research advisor *(9 students)*

William Sager
BS Electrical Engineering Spring 2019
Next position: Digital Engineer at Northrop Grumman

Amara Anderson
BS Physics Spring 2021

Stephen Shum
BS Physics Spring 2022
Next position: PhD student in Physics at University of Pittsburgh

Clark Miyamoto
BS Physics Spring 2023
Next position: PhD student in Physics at New York University

Richard Dong
BS Physics Spring 2023

Jocelyn Liu
BS Electrical Engineering Spring 2023

Next position: PhD student in Electrical Engineering at Princeton University
Honors: NSF Graduate Research Fellowship; Ming Hsieh Institute Undergraduate Scholar, APS March Meeting Poster Award

Matthew Ai
BS Electrical Engineering — Spring 2024
Next position: PhD student in Electrical Engineering at Princeton University

Margo Collins
BS Physics — Spring 2024
Next position: PhD student in Physics at University of Colorado Boulder

Andre Kuo
BS Physics — Spring 2024
Next position: Nanofabrication engineer at HRL Labs

Undergraduate research project supervisor *(9 students)*

Josie Alvarez
BS Physics – Computer Science — Spring 2021
Next position: Software Development Engineer at Amazon

Marisa Class
BS Physics – Computer Science — Spring 2021
Next position: IT Analyst at East Hotel

Angel Flores
BS Physics – Computer Science — Spring 2021
Next position: Software Engineer at Oracle

Aitor Amatriain Martinez
BS Physics – Computer Science — Spring 2021
Next position: Associate at Goldman Sachs

Rahel Yimenu
BS Physics – Computer Science — Spring 2021
Next position: Product Manager at Electronic Arts

Allison Ohara
BS Physics – Computer Science — Spring 2022
Next position: Software Engineer at Microsoft

Kojo Boakye-Nimako
BS Physics – Computer Science — Spring 2023
Next position: Backend Software Engineer at Bsystems Ghana Limited

Jenny Huang
BS Physics – Computer Science — Spring 2024

Anne Whelan
BS Physics – Computer Science — Spring 2024
Next position: Officer in US Navy

CURRENT ADVISEES

Postdoctoral advisor *(1 postdoc)*

Dr. Daria Kowsari

PhD advisor ***(also qual and thesis committees chair/co-chair; 6 students)***

Sacha Greenfield	Passed qual 2022, PhD Physics expected Spring 2025
Honors: Graduate Fellowship for STEM Diversity	
Vivek Maurya	Passed qual 2024, PhD Physics expected Spring 2026
Sadman Shanto	Passed qual 2024, PhD Physics expected Spring 2026
Malida Hecht	Passed screening 2023, PhD Physics expected Spring 2027
Anshu	Passed screening 2024, PhD Physics expected Spring 2028
Saikat Das	PhD Physics expected Spring 2029

Undergraduate research advisor ***(2 students)***

Ethan Zheng	BS Physics Expected Spring 2026
Elizabeth Kunz	BS Physics Expected Spring 2027

SERVICE

Dissertation committees ***(not including primary advisees; physics unless listed; 15 students)***

Yi-Hsiang Chen	Advisor: Todd Brun (ECE)	2020
Patrick Edwards	Advisor: Vitaly Kresin	2021
Gautam Rai	Advisor: Stephan Haas	2021
Zhihao Jiang	Advisor: Stephan Haas	2021
Aaron Wirthwein	Advisor: Stephan Haas	2022
Bibek Pokharel	Advisor: Daniel Lidar (ECE)	2022
Jacob (Jack) Lashner	Advisor: Amber Miller	2023
John Niman	Advisor: Vitaly Kresin	2023
Daria Kowsari (Wash. U)	Advisor: Kater Murch (Wash. U)	2023
Max Lien (Elec. Eng.)	Advisor: Michelle Povinelli (ECE)	2023
Michael Coumans (Chemistry)	Advisor: Susumu Takahashi (Chemistry)	2024
Prithviraj Prabhu (Elec. Eng.)	Advisor: Ben Reichardt (ECE)	2024
Bingzhi Zhang	Advisor: Quntao Zhuang (ECE)	2024
Vinay Tripathi	Advisor: Daniel Lidar (ECE)	2024
Bruno Avritzer	Advisor: Todd Brun (ECE)	2024
Bo Shrewsbury	Advisor: Michelle Povinelli (ECE)	2024
Abdelrahman Haridy	Advisor: Vitaly Kresin	2025
Qi Huang (Mat. Sci.)	Advisor: Anupam Madhukar (MSE)	2025
Haley Weinstein (Elec. Eng.)	Advisor: Jonathan Habif (ECE)	2025
Nicholas Ezzell	Advisor: Daniel Lidar (ECE)	2025

Qual committees ***(not including primary advisees; physics unless listed; 26 students)***

Patrick Edwards	Advisor: Vitaly Kresin	2018

Zhihao Jiang	Advisor: Stephan Haas	2018
Huo Chen (Elec. Eng.)	Advisor: Daniel Lidar (ECE)	2019
Gautam Rai	Advisor: Stephan Haas	2019
Jack Lashner	Advisor: Amber Miller	2019
Yi-Hsiang Chen	Advisor: Todd Brun (ECE)	2019
John Niman	Advisor: Vitaly Kresin	2020
Bibek Pokharel	Advisor: Daniel Lidar (ECE)	2020
Aaron Wirthwein	Advisor: Stephan Haas	2021
Michael Coumans (Chemistry)	Advisor: Susumu Takahashi (Chem)	2022
Sourav Kundu (Elec. Eng.)	Advisor: Ben Reichardt (ECE)	2022
Prithviraj Prabhu (Elec. Eng.)	Advisor: Ben Reichardt (ECE)	2023
Vinay Tripathi	Advisor: Daniel Lidar (ECE)	2023
Nicholas Ezzell	Advisor: Daniel Lidar (ECE)	2023
Bo Shrewsbury	Advisor: Michelle Povinelli (ECE)	2023
Abelrahman O. Haridy	Advisor: Vitaly Kresin	2023
Bingzhi Zhang	Advisor: Quntao Zhuang (ECE)	2023
Haowei Shi (Elec. Eng.)	Advisor: Quntao Zhuang (ECE)	2023
Bruno Avritzer	Advisor: Todd Brun (ECE)	2023
Remington Garras	Advisor: Amber Miller	2023
Haley Weinstein (Elec. Eng.)	Advisor: Jonathan Habif (ECE)	2024
Yuhang Ren	Advisor: Susumu Takahashi (Chem)	2024
Phattharaporn Singkanipa	Advisor: Daniel Lidar (ECE)	2025
Juan Garcia Nila (Elec. Eng.)	Advisor: Todd Brun (ECE)	2024
Silvia Guadagnini	Advisor: Michelle Povinelli (ECE)	2025
Amy Brown	Advisor: Daniel Lidar (ECE)	2025
Anirudh Lanka	Advisor: Todd Brun (ECE)	2025

Service to the Profession

Faculty Organizer/Advisor, Quantum Device Design Workshop 2025 –
Scientific Organizing Board, Adaptive Quantum Circuits Conference 2024
Founding Editor, QuBytes.org 2020 –
Editor, Materials Science and Engineering B 2018 – 2021
Peer reviewer: *Nature, Nature Communications, npj Quantum Information*, *npj Quantum Materials, Physical Review Research, Physical Review Applied, Quantum Science and Technology, Applied Physics Letters, Journal of Superconductivity and Novel Magnetism*
Grant/fellowship reviewer: *ARO QIS program, AFOSR QIS program, NSF DMR program, NSF MPS program, NRC Postdoctoral Fellowship, NDSEG Fellowship, NSF GRF, US-Israel BSF (international), King Fahd University (international)*

Service to the University

Lead organizer, "How to prepare for, get into, and succeed at physics grad school" 2021 –
Cleanroom Advisory Board 2021 –
Photonics Packaging Lab Design Committee 2021 –
Joint Electrical & Computer Engineering / Physics & Astronomy Faculty Search Committee 2024 –

Service to the School

MS in Quantum Information Science Curriculum Committee 2019 – 2020
Dornsife Faculty Council Diversity Caucus 2018 – 2019

Service to the Department

Physics & Astronomy Undergraduate Curriculum Committee 2024 –
Physics & Astronomy Graduate Admissions Committee 2024 –
Physics & Astronomy Faculty Search Committee 2023 – 2024
Physics & Astronomy Climate Committee 2020 –
Experimental Quantum Information Science Seminar Committee (ECE Dept.) 2023 –
Physics & Astronomy Colloquium Committee 2017 – 19, 2023 – 2025
Physics & Astronomy Graduate Affairs Committee 2020 – 2023
Physics & Astronomy Faculty Search Committee 2022
Physics & Astronomy Faculty Search Committee (Diversity Liaison) 2020 – 2021
Physics & Astronomy Faculty Search Committee 2018 – 2019

Press & Media

"Nobel Prize in physics awarded for ultracold electronics research that launched a quantum technology," *The Conversation* (author) 2025

"Quantum sensitivity breakthrough with Eli Levenson-Falk," *The New Quantum Era podcast* 2025

"Is Microsoft's quantum computing breakthrough the real deal? Experts weigh in," *The Indian Express* 2025

"USC Protocol Pushes Qubit Sensitivity Beyond Ramsey Limits: New Method for Quantum Sensing," *The Quantum Insider* 2024

Nature "Daily Briefing" 2022

"A Brighter Tomorrow," *USC Dornsife Magazine* 2020

Scientific consultant on untitled Illumination Entertainment project 2018

Scientific consultant on Lauren Kleeman album "Stardust" 2018