Kasra Sardashti, Ph.D.

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EDUCATION

- **Ph.D. in Materials Science & Engineering** **2016**
  University of California – San Diego, USA
- **M.S. in Advanced Materials & Processes** **2012**
  Friedrich Alexander University of Erlangen – Nuremberg (FAU), Germany
- **B.S. in Materials Engineering** **2010**
  Amirkabir University of Technology (Tehran Polytechnic), Iran

PROFESSIONAL EXPERIENCE

- **Principal Investigator** **03/2024 – *present***
  Laboratory for Physical Sciences, College Park, MD
- **Assistant Research Professor** **03/2024 – *present***
  Department of Physics, University of Maryland, College Park, MD
- **Assistant Professor (Tenure-track)** **01/2021 – 2/2024**
  Department of Physics & Astronomy, Clemson University, Clemson, SC
- **Research Scientist** **01/2019 – 01/2021**
  Center for Quantum Phenomena, New York University, New York, NY
- **Assistant Professor of Materials Science (Tenure-track)** **08/2018 – 01/2019**
  Fashion Institute of Technology, State University of New York, New York, NY
- **Research Scientist** **04/2018 – 08/2018**
  Center for Quantum Phenomena, New York University, New York, NY
- **Postdoctoral Associate** **01/2017 – 12/2017**
  Department of Mechanical Engineering &Materials Science, Duke University

HONORS AND AWARDS

- AFRL Summer Faculty Fellow, RITQ Branch, Rome, NY (2023).
- College of Engineering Collaboration Award, Clemson University (2023).
- Rising Star in Discovery Award, College of Science, Clemson University (2023).
- ORAU Powe Junior Faculty Enhancement Award (2022).
- Dorothy and Earl Hoffman Scholarship, American Vacuum Society (2016).
- Graduate Student Silver Award, Materials Research Society (2016).
- Materials Science Graduate Fellowship, UC San Diego (2013-14).
- Master Thesis Scholarship, University of Erlangen-Nürnberg (2012).
- MAP Graduate Fellowship, University of Erlangen-Nürnberg (2010-11).

PROFESSIONAL ACTIVITIES

- Founder and Chair, National Quantum Technology Forum (2022-).

- Director of the Summer Quantum Engineering Internship Program (SQEIP) hosted by UMD and LPS (2023-).
- Proposal reviewer for the NDSEG, DOE STTR/SBIR, DOE ASCR, and NSF PHYS programs (2022-).
- Co-chair, AVS-64 Presidential Young Professionals Council, American Vacuum Society (2017).
- Reviewer for Vacuum, Advanced Materials, Applied Surface Science, Vacuum, IEEE Electron Device Letters, Journal of Applied Physics, Thin Solid Films, Crystals, and Frontiers in Quantum Materials (2015-).

PUBLICATIONS

Refereed Journal Publications

1. Marte, M.; Lang, J.; Evancho, K.; Sapkota, Sardashti, K.* "Gifford-McMahon Cryocoolers for Rapid Feedback Systems in Quantum Materials and Device Research," *Journal of the South Carolina Academy of Science* 21 (2), 7 (2023).
2. Shalabny, A.; Buonocore, F.; Celino, M.; Zhang, L.; Sardashti, K.; Härth, M.; Schubert, D.W.; Bashouti, M.Y. "Enhancing the Electronic Properties of VLS-Grown Silicon Nanowires by Surface Charge Transfer", *Applied Surface Science* 599, 153957 (2022).
3. Zhu, T.; Dartiailh, M.C.; Sardashti, K.; Han, J. E.; Matos-Abiague, A.; Shabani, J.; Zútic, I. "Fusion of Majorana Bound States with Mini Gate Control in Two-Dimensional Systems", *Nature Communications* 13, 1738 (2022).
4. Elfeky, B.; Lotfizadeh, N.; Schiela, W.; Strickland, W.; Dartiailh, M.; Sardashti, K.; Hatefipour, M.; Yu, P.; Pankratova, N.; Lee, H.; Manucharyan, V.; Shabani, J. "Local control of supercurrent density in epitaxial planar Josephson junctions", *Nano Letters* 21, 19, 8274–8280 (2021).
5. Yuan, J.; Wickramasinghe, K.; Strickland, W.; Dartiailh, M.; Sardashti, K.; Barati, F.; Hatefipour, M.; Shabani, J. "Epitaxial Superconductor-Semiconductor Structures for Tunable Quantum Circuits", *Journal of Vacuum Science & Technology A* 39, 033407 (2021).
6. Sardashti, K.; Nguyen, D.T.; Hatefipour, M.; Sarney, W. L.; Yuan, J.; Mayer, W.; Kisslinger, K.; Shabani, J. "Tailoring Superconducting Phases Observed in Hyperdoped Si:Ga for Cryogenic Circuit Applications", *Applied Physics Letters* 118, 073102 (2021).
7. Sardashti, K.; Nguyen, D.T.; Sarney, W.L.; Leff, A.C.; Hatefipour, M.; Dartiailh, M.C.; Yuan, J.; Mayer, W.; Shabani, J. "Tuning Superconductivity in Ge:Ga via Ga+ Implantation Energy", *Physical Review Materials* 5, 064802 (2021).
8. Barati, F.; Thompson, J.P.; Dartiailh, M.C.; Sardashti, K.; Mayer, W.; Wickramasinghe, K.; Taniguchi, T.; Watanabe, K.; Churchill, H.; Shabani, J. "Tuning supercurrent in Josephson junctions using hBN as the gate dielectric", *Nano Letters* 21, 1915–1920 (2021).
9. Sardashti, K.; Dartiailh, M.C.; Yuan, Joseph.; Hart, Sean.; Gumann, P.; Shabani, J. "Voltage Voltage-tunable superconducting resonators: a platform for random access quantum memory", *IEEE Transactions on Quantum Engineering* 1, 1-7 (2020).
10. Cuniberto, E.; Alharbi, A.; Wu, T.; Huang, Z.; Sardashti, K.; You. K. D.; Kisslinger, K.; Taniguchi, T.; Watanabe, K.; Kiani, R.; Shahrjerdi, D. "Design and fabrication of miniaturized electrochemical sensors using nano-graphitic carbon", *Scientific Reports* 10, 9444 (2020).
11. Yuan, J.; Hatefipour, M.; Mayer, W.; Dartiailh, M.C.; Sardashti, K.; Wickramasinghe, K.S.; Lu, T.M.; Magill, B.A.; Khodaparast, G.A.; Matsuda, Y.H.; Kohama, Y.; Yang, Z.; Thapa, S.; Stanton, C.J.; Shabani, J. "Experimental Measurements and Modeling of Electron Effective Mass and Effective g-Factor in Near Surface InAs Quantum Wells", *Physical Review B* 101, 20 (2020).

12. Khazaee M.; Sardashti, K.; Chung, C; Sun, JP; Zhou, H; Bergmann, E; Dunlap-Shohl, W.A.; Han, Q; Hill, I.G.; Jones, J.L; Lupascu, D.C.; Mitzi, D.B. "Dual-Source Evaporation of Silver Bismuth Iodide Films for Planar Junction Solar Cells", *Journal of Materials Chemistry A* 7 (2019).
13. Iljo, K; Sardashti, K; Clemons, M.S.; Ueda, S.T.; Fruhberger, B.; Oktyabrsky, S; Kummel, A.C. "HfO_2/Al_2O_3 Nanolaminate on $Si_{0.7}Ge_{0.3}$(100) Surface by Thermal Atomic Layer Deposition", *ECS Transactions* 86, 7, (2018).
14. Khazaee, M.; Sardashti, K.; Sun, J.P.; Clegg, C.; Zhou, H.; Hill, I.G.; Jones, J.L.; Lupascu, D.C.; Mitzi, D.B. "A Versatile Thin-Film Deposition Method for Multidimensional Semiconducting Bismuth Halides", *Chemistry of Materials 30 (2018)*.
15. Wolf S.; Edmonds M.; Sardashti, K.; Clemons M.S.; Park J.H.; Yoshida N.; Dong L.; Nemani S.; Yieh E.; Holmes R.; Alvarez D.; Kummel A.C. "Low-Temperature Amorphous Boron Nitride on $Si_{0.7}Ge_{0.3}$(001), Cu, and HOPG from Sequential Exposures of N_2H_4 and BCl_3", *Applied Surface Science 439 (2018)*.
16. Sardashti, K.; Chagarov E.; Antunez, P.; Gershon, T.; Ueda, S.T.; Gokmen, T.; Bishop, D.; Haight R.; Kummel A.C. "Potential Control Layers for Engineering the Backside Surfaces of Thin-Film Solar Cells", *ACS Applied Materials & Interfaces* 9 *(2017)*.
17. Gershon, T.*; Sardashti, K.*; Lee, Y.S.; Gunawan, O.; Singh, S.; Bishop, D.; Kummel A.C.; Haight R. "Compositional effects in Ag2ZnSnSe4 thin films and photovoltaic device", *Acta Materialia* 126 *(2017).* (* equal contribution).
18. Edmonds M.; Sardashti, K.; Wolf S.; Chagarov E.; Clemons M.S.; Kent T.; Park J.; Tang K.; McIntyre P.C.; Yoshida N.; Dong L.; Tsai W.; Luan H.; Fang Z.; Holmes R.; Alvarez D.; Kummel A.C. "Low Temperature Thermal ALD of a SiNx Interfacial Diffusion Barrier and Interface Passivation Layer on Si_xGe_{1-x}(001) and Si_xGe_{1-x} (110)", *Journal of Chemical Physics* 146 (2017).
19. Haight, R.; Gershon, T.; Gunawan, O.; Antunez, P.; Bishop, D.; Lee, Y.S.; Gokmen, T.; Sardashti, K.; Chagarov E.; Kummel A.C. "Industrial perspectives on earth abundant, multinary thin film photovoltaics", *Semiconductor Science and Technology* 32 *(2017)*.
20. Sardashti, K.; Paul, D.; Hitzman, C.; Hammond, J.; Haight R.; Kummel A.C. "Nano-scale Compositional Analysis of Surfaces and Interfaces in Earth-abundant Kesterite Solar Cells", *Journal of Materials Research (invited feature paper)* 31 (2016).
21. Sardashti, K.; Haight R.; Anderson R.; Contreras M.; Fruhberger B.; Kummel A.C. "Grazing Incidence Cross-sectioning of Thin-Film Solar Cells via Cryogenic Focused Ion Beam: A case study on CIGSe", *ACS Applied Materials & Interfaces* 8 (2016).
22. Sardashti K.; Hu, K.T.; Tang, K.; Madisetti S.; McIntyre, P.C.; Oktyabrsky, S; Siddiqui, S.; Sahu, B.; Yoshida, N.; Kachian, J.; Kummel A.C. "Silicon-nitride passivation of the interface between SiGe and high-k dielectrics", *Applied Physics Letters* 108 (2016).
23. Sardashti K.; Hu, K.T.; Park, S.; Kim, H.; Tang, K.; Madisetti S.; McIntyre, P.C.; Oktyabrsky, S; Siddiqui, S.; Sahu, B.; Yoshida, N.; Kachian, J.; Kummel A.C. "Sulfur passivation for formation of Si-terminated Al_2O_3/SiGe(001) Interfaces", *Applied Surface Science* 366 (2016).
24. Chagarov E.*; Sardashti K.*; Lee, Y.; Haight R.A.; Kummel A.C.; Gershon, T. "$Ag_2ZnSn(S,Se)_4$: A highly-promising absorber for thin film photovoltaics", *Journal of Chemical Physics* 144 (2016), (* equal contribution).
25. Gershon, T.; Sardashti K.; Lee, Y.S.; Haight R.; Kummel A.C. "First demonstration of working AZTSe devices with 5.2% efficiency", *Advanced Energy Materials 6 (2016).*
26. Chagarov E.; Sardashti K.; Haight R.; Mitzi D.B.; Kummel A.C. "Density-Functional Theory Computer Simulations of $CZTS_{0.25}Se_{0.75}$ Alloy Phase Diagrams", *Journal of Chemical Physics* 145 (2016).

27. Park J.H.; Fathipour S.; Kwak I.; Sardashti K.; Ahles C.F.; Vishwanath S.; Xing H.G.; Fullerton-Shirey S.K; Seabaugh A.; Kummel A.C. "Atomic Layer Deposition of Al2O3 on WSe2 Functionalized by Titanyl Phthalocyanine", *ACS Nano* 10 (2016).
28. Sardashti, K.; Haight R.; Gokmen T.; Chang L.; Wang W.; Mitzi D.B.; Kummel A.C. "Impact of Nano-scale elemental distribution in high performance of kesterite solar cells", *Advanced Energy Materials* 5 (2015).
29. Chagarov E.; Sardashti K.; Kaufman-Osborn T.; Madisetti S.; Oktyabrsky S.; Sahu B.; Kummel A.C. "Density-functional theory molecular dynamics simulations and experimental characterization of alpha-Al_2O_3/SiGe interfaces", *ACS Applied Materials & Interfaces* 7 (2015).
30. Park J.H.; Movva H; Chagarov E; Sardashti K; Chou H; Kwak I; Hu K.T; Fullerton-Shirey S; Choudhury P; Banerjee S; Kummel A.C. "In-Situ Observation of Sub-nanometer Dielectric Growth with Ultrahigh Nucleation Density on Two-Dimensional Surfaces", *Nano Letters* 15 (2015).
31. Edmonds M.; Kent T.; Chagarov E.; Sardashti K.; Hu K.T.; Kachian J.; Yoshida N.; Kummel A.C. "Si passivation of InGaAs surfaces by Atomic Layer Deposition", *Journal of American Chemical Society* 137 (2015).
32. Bashouti, Y. M.*; Sardashti K.*; Ristein J.; Christiansen S. "Kinetic Study of H-terminated SiNWs Oxidation in Very First Stages", *Journal of Nanoscale Research* 8 (2013) (* equal contribution).
33. Bashouti, Y. M.; Sardashti K.; Schmitt, S. W.; Pietsch M.; Ristein J.; Haick H.; Christiansen S. "Oxide-free Hybrid Silicon Nanowires: From Fundamentals to Applied Nanotechnology", *Progress in Surface Science* 88 (2013).
34. Bashouti, Y. M.; Sardashti K.; Ristein J.; Christiansen S. "Early stages of oxide growth in H-terminated silicon nanowires: determination of kinetic behavior and activation energy" *Physical Chemistry Chemical Physics* 14 (2012).

Conference Proceedings (Reviewed)

1. Chagarov E.; Sardashti, K.; Kwak, I.; Ueda, S.; Yakimov, M.; Kummel A.C. "Density functional theory molecular dynamics simulations and experimental measurements of a-HfO2/a-SiO/SiGe(001) and a-HfO2/a-SiO2/SiGe(001) interfaces", *2017 International Symposium on VLSI Technology, Systems and Application (VLSI-TSA)* pp. 1-2 (2017).
2. Chagarov E.; Sardashti, K.; Clemons M.S.; Edmonds M.; Kummel A.C. "Density Functional Theory Simulations and Experimental Measurements of a-HfO_2/a-Si_3N_4/SiGe, a-HfO_2/$SiO_{0.8}N_{0.8}$/SiGe and a-HfO_2/a-SiO/SiGe interfaces", *2016 IEEE International Electron Devices Meeting (IEDM)* pp. 36.4.1-36.4.4 (2016).

Book Chapters

1. Muhammad Y. Bashouti, Matthias Pietsch, Kasra Sardashti, Jüergen Ristein, Hossam Haick, Silke Christiansen *"Hybrid Silicon Nanowire: From Basic Science to Applied Nanotechnology"*, *Nanowires - Recent Advances,* INTECH OPEN, ISBN 980-953-307-525-4.

PRESENTATIONS

Invited Talks

1. Kasra Sardashti, "Engineering Hybrid Materials Systems for Quantum Networking Applications", AFRL RITQ, Rome, NY (Aug 2023).
2. Kasra Sardashti, "Materials for Hybrid Microwave-Acoustic Quantum Circuits", Quantum Interconnect Challenge Workshop, Alexandria, VA (May 2023).

3. Kasra Sardashti, "Hybrid Superconductor-Semiconductor Materials Systems for Quantum Computing Applications," LQC, Laboratory for Physical Sciences, College Park, MD (May 2023).
4. Kasra Sardashti, "Hybrid Materials Systems for Scalable Quantum Technology Platforms," Physics Colloquium, University of Arkansas, Fayetteville, AR (Jan 2023).
5. Kasra Sardashti, "The Role of Materials Research in the Development of Emerging Quantum Technologies," PHYSIC TODAY Webinar (Dec 2022).
6. Kasra Sardashti, "Hybrid Materials Systems for Quantum Computing and Networking Applications," QuanTRASE Seminar Series, University of Tennessee at Knoxville, online (Nov 2022).
7. Kasra Sardashti, "Hybrid Normal-Superconductor Materials Systems for Quantum Technology Applications," MSE Colloquium Series, University of Texas at Dallas, Richardson, TX (Oct 2022).
8. Kasra Sardashti, "Engineering Interfaces in Hybrid Superconductor–Semiconductor Systems: A Key to Highly Scalable Quantum Devices," Mork Family Department Colloquium, University of Southern California, Los Angeles, CA (March 2020).
9. Kasra Sardashti, "Hybrid Superconductor–Semiconductor Material Platforms for Quantum Information Processing," Department of Physics Colloquium, Clemson University, Clemson, SC (January 2020).

Contributed Talks & Posters ***(**** *Student/postdoc presentation)*

1. Bernardo Langa, Jr.*, Kasra Sardashti, "A Single-event Analysis System for Studying the Interaction Between Multiply-Charged Ions and Superconducting Devices," IISC 2024 Meeting, Charleston, SC (Sep 2023).
2. Maggie Marte*, Deepak Sapkota, Kasra Sardashti, "Rapid Cryogenic Characterization of Thin-Film Materials For Quantum Computing Applications," South Carolina Academy of Sciences Annual Meeting, Charleston, SC (March 2023) – ***best presentation award in session 5 (ENG)***.
3. Deepak Sapkota*, Kasra Sardashti, "Epitaxially-grown Barium-Titanate-Silicon Heterostructures for Piezo-acoustic Quantum Devices", APS March Meeting, Las Vegas, NV (Mar 2023).
4. Bernardo Langa, Jr.*, Kasra Sardashti, "Evaluating Niobium-Germanium Heterostructures for Voltage-Tunable Superconducting Quantum Devices", APS March Meeting, Las Vegas, NV (Mar 2023).
5. Ryan Perrin*, Kasra Sardashti, "Teaching Introductory Quantum Engineering to Science and Engineering Students with Diverse Educational Backgrounds", APS March Meeting, Las Vegas, NV (Mar 2023).
6. Bernardo Langa, Jr.*, Kasra Sardashti, "Engineering Niobium-Germanium Interfaces for Voltage-Tunable Quantum Devices", APS SESAPS Annual Meeting, Oxford, MS (Nov 2022).
7. Kathryn Evancho*, Margaret Marte*, Kasra Sardashti, "Rapid Electrical Measurement of Superconducting Thin Films Using Gifford-McMahon Cryocoolers", APS SESAPS Annual Meeting, Oxford, MS (Nov 2022).
8. Kathryn Evancho*, Margaret Marte*, Kasra Sardashti, "Rapid Electrical Measurement of Superconducting Thin Films Using Gifford-McMahon Cryocoolers", CU Physics & Astronomy SIRPA meeting, Clemson, SC (Aug 2022) – ***best poster award winner***.
9. Kathryn Evancho*, Margaret Marte*, Kasra Sardashti, "Rapid Electrical Measurement of Superconducting Thin Films Using Gifford-McMahon Cryocoolers", Clemson Summer Undergrad Research Symposium, Clemson, SC (July 2022).
10. Kasra Sardashti, "Quantum Technology Research at Clemson University", The First South Carolina Quantum Technology Forum, Clemson, SC (April 2022).
11. Kasra Sardashti, "Integrated Hybrid Microwave-Acoustic-Optical System for Distributed Quantum Computing", SC EPSCoR Annual Meeting, Columbia, SC (April 2022).

12. Bernardo Langa, Jr.*, Kasra Sardashti, "Engineering Niobium-Germanium Interfaces for Voltage-Tunable Quantum Devices", South Carolina Academy of Sciences Annual Meeting, Aiken, SC (April 2022) – ***runner-up for the best poster award***.
13. Bernardo Langa, Jr.*, Kasra Sardashti, "Engineering Niobium-Germanium Interfaces for Voltage-Tunable Quantum Devices", APS March Meeting, Chicago, IL (March 2022).
14. Kasra Sardashti, "An Investigation into the Characteristics of the Superconductive Phase in Heavily P-doped Germanium", APS March Meeting, Online (March 2021).
15. Kasra Sardashti, "Realization of Hybrid Superconductor–Semiconductor Systems by Homoepitaxial Growth of Non-equilibrium p-doped Si", MRS spring meeting, Phoenix, AZ (April 2019).
16. Kasra Sardashti, "Realization of Hybrid Superconductor-Semiconductor Systems by Homoepitaxial Growth of Non-equilibrium P-doped Si (111)", APS march meeting, Boston, MA (March 2019).
17. Kasra Sardashti, "Nanoscale Characterization of Surfaces and Interfaces in Thin Film Kesterite Solar Cells", Duke Energy Seminar Series, Duke University, Durham, NC (November 2016).
18. Kasra Sardashti, "Passivation of Interfaces Between High-k Oxides and SiGe: Ex Situ Wet Clean vs. In Situ Nitridation", 63rd AVS meeting, Nashville, TN (November 2016).
19. Kasra Sardashti, "Characterization of Grain Boundaries and Back Contacts in Polycrystalline Thin Film Solar Cells", MRS spring meeting, Phoenix AZ (April 2016).
20. Kasra Sardashti, "Characterization of Grain Boundaries in Cu2ZnSn(S,Se)4, Cu(In,Ga)Se2 and Ag2ZnSnSe4 by NanoAuger and Kelvin Probe Force Microscopy", MRS fall meeting, Boston, MA (December 2015).
21. Kasra Sardashti, "Ex-situ S-passivation of Al2O3/SiGe (001) interfaces", 62nd AVS meeting, San Jose, CA (October 2015).
22. Kasra Sardashti, "Chemical and Electrical Characterization of Polycrystalline CZTSSe and CIGSe Grain Boundaries by NanoAuger and Kelvin Probe Force Microscopy (KPFM)", 62nd AVS meeting, San Jose, CA (October 2015).
23. Kasra Sardashti, "Atomic Layer Deposition of Al2O3 on SiGe (001)", SRC TECHCON, Austin, TX (September 2015).
24. Kasra Sardashti, "Chemical and Electrical Characterization of $Cu_2ZnSn(S_X,Se_{1-X})_4$ Grain Boundaries", MRS Spring Meeting, San Francisco, CA (April 2015).
25. Kasra Sardashti, "Chemical and Electrical Characterization of CZTSSe Grain Boundaries", 61st AVS Meeting, Baltimore, MD (November 2014).
26. Kasra Sardashti, "Fast gateless C-V characterization of gate oxides using ultra-high precision capacitance bridge and atomic force microscope", MRS Spring Meeting, San Francisco, CA (April 2014).
27. Kasra Sardashti, "Fast Gateless C-V measurements via Capacitance Force Microscopy", 60th AVS meeting, Long Beach, CA (October 2013).

PATENTS

1. "Systems and Methods for Qubit Fabrication", U.S. Patent 11552238B2 (2023), with Shabani, J.
2. "Nanolaminate structure, semiconductor device and method of forming nanolaminate structure", U.S. Patent 10840350 (2020), with Fang, Z.W., Luan H. Fa., Tsai W., Clemons, M., Ueda, S.T., Kavrik, M.S., Kwak, I., and Kummel A.C.
3. "Nanolaminate Dielectrics and ALD Deposition on 2D Substrates and 3D Materials", U.S. Provisional Application No. 62/429,938 (2017), with Kwak, I., and Kummel A.C.
4. "Low-Temperature Atomic Layer Deposition of Al_2O_3 and HfO_2 on Silicon-Germanium", U.S. Patent 10134585. (2016), with Kaufman-Osborn, T., Kent, T., and Kummel A.C.

SPONSORED RESEARCH

Current Awards

1. "Training a Diverse Quantum Workforce in Carolinas through Establishing the Winston-Salem Quantum Education Collaboratory (WS-QEC)," DOE ASCR-RENEW, co-PI (led by Winston-Salem State University), $2,400,00 ($1,079,997), (Mar 2023 – Feb 2026).
2. "ExpandQISE: Track 2: Expanding Quantum Research and Education at Winston-Salem State University with Research on Hybrid Microwave-Optical Quantum Devices," NSF ExpandQISE Track 2, co-PI (led by Winston-Salem State University), $5,000,00 ($500,000), (Aug 2023 – Jul 2028).

Past Awards

1. "QuIC-TAQS: Voltage-Tunable Hybrid Microwave-Acoustic Interconnects for Multi-modal Quantum Memories," National Science Foundation, PI, $2,499,992, (Aug 2021- Jul 2025).
2. "A Single-event Analysis System for Studying the Fundamental Physics of the Interactions between Multiply-Charged Ions and Solid Surfaces," AFOSR DURIP, PI, $449,448, (Jul 2023 – Jun 2024).
3. "CU-MRI: KelvinoxJT Cryogenic Electro-Optical Characterization System," Clemson Research Initiative, PI, $205,935, (May 2022 - Dec 2023).
4. "Phononic Traveling Wave Parametric Amplification using Heterostructures of Highly Nonlinear Materials," DARPA SynQuaNon, co-PI (led by VirginiaTech), $850,000 ($240,000), (Oct 2023- Apr 2025).
5. "CU-SUCCEEDS: Micron-scale Active Microwave Couplers for Miniaturized Superconducting Quantum Circuits," PI, $9,999, (Feb 2022 – Jan 2023).
6. "Enhancing Proximity-induced Superconductivity in Germanium for Scalable Quantum Electronics," ORAU Powe Junior Faculty Enhancement Award, PI, $10,000, (Jul 2022 – Jun 2023).
7. "Design and fabrication of a cryogenic test platform for superconducting particle detectors," NASA SC Space Grant Consortium – Minorities in STEM, PI, $7,500, (May 2022 – Aug 2022).
8. "Quantum Sensing of Solar Flares using Superconducting Detectors," NASA SC Space Grant Consortium – Palmetto Academy Host Site, PI, $47,000, (May 2023 – Aug 2023).

TEACHING

Clemson University

- **Experimental Methods in Quantum Engineering,** PHYS 6750 (Spring 2023).
- **Intro to Quantum Engineering**, PHYS 4750/6750 (Fall 2022).
- **Mechanics I**, PHYS 3210/6210 (Fall 2022, Fall 2023).
- **Mechanics II**, PHYS 3220/6220 (Spring 2023).
- **Physics with Calculus II,** PHYS 2210 (Spring 2022).
- **Methods of Spectroscopy**, PHYS 8510 (Spring 2021).
- **Physics Research**, PHYS 2900 (Spring 2021, Fall 2022, Spring 2022, Fall 2022).