

COREY RAE HARRINGTON MCRAE

University of Colorado Boulder, 1111 Engineering Drive, UCB 425, Boulder, CO 80309

(+1) 720 232 1475 ◊ coreyrae.mcrae@colorado.edu

EDUCATION

Ph.D. Physics (Quantum Information) (2012 - 2018)

Institute for Quantum Computing, University of Waterloo, Waterloo, ON

Thesis title: *Indium thin films in multilayer superconducting quantum circuits*

Advisor: Matteo Mariani

B.Sc. Honours Physics and Astronomy (2008 - 2012)

Department of Physics and Astronomy, University of Western Ontario, London, ON

POSITIONS AND PROFESSIONAL APPOINTMENTS

Nanofabrication Team Lead (2026 - present)

Nord Quantique

Sherbrooke, QC

Research Assistant Professor (2022 - present)

Electrical, Computing, and Energy Engineering Department

University of Colorado, Boulder, CO

Project Leader (2022 - 2025)

Boulder Cryogenic Quantum Testbed

National Institute of Standards and Technology

Advisor: Doug Bennett (2023 - present), Joel Ullom (2022 - 2023)

Lecturer (2025 - present)

Department of Physics

University of Colorado, Boulder, CO

Quantum Applications and Strategy Consultant (2022)

FormFactor Inc.

Contact: Brandon Boiko

Research Associate (2021 - 2025)

University of Colorado, Boulder, CO & National Institute of Standards and Technology

Advisor: William Rippard (2021 - 2022), Joel Ullom (2022 - 2023), Doug Bennett (2023 - present)

Postdoctoral Researcher (2018 - 2021)

National Institute of Standards and Technology & University of Colorado, Boulder, CO

Advisor: David Pappas

GRANTS

Research Grant: Accelerating high mass axion searches using kinetic inductance traveling wave parametric amplifiers (2025 - 2027)

US \$1.8M

Program: QuantISED

Department of Energy. PI: Corey Rae McRae

Held at the University of Colorado Boulder, Boulder, CO

Role on grant: PI

Research Grant: A Government Laboratory Testbed for Superconducting Qubit Materials Loss Measurements (2023 - 2027)

US \$4.7M

Program: Materials characterization and Quantum performance: Correlation and causation

Army Research Office and Air Force Office of Scientific Research. PI: Corey Rae McRae

Held at the National Institute of Standards and Technology, Boulder, CO

Role on grant: PI

Center Grant: Superconducting Quantum Materials and Systems (2020 - 2025)

US \$550,000

Quantum Information Science Research Center, U.S. Department of Energy. PI: Anna Grassellino

Held at the National Institute of Standards and Technology, Boulder, CO

Role on grant: Co-Investigator

Research Grant: Extension of Funds for the Boulder Cryogenic Quantum Testbed (2020-2021)

US \$80,000

Research Sponsorship Grant, Google. PI: David Pappas

Held at the University of Colorado Boulder, Boulder, CO

Role on grant: Co-PI

Research Grant: Boulder Cryogenic Resonator Testbed (2018)

US \$685,000

Focused Research Award, Google. PI: David Pappas

Held at the University of Colorado Boulder, Boulder, CO

Role on grant: Co-PI (wrote proposal)

AWARDS

Outstanding Mentor Award (2023)

College of Engineering and Applied Sciences, University of Colorado Boulder

Faculty Award for Diversity, Equity and Inclusion (2023)

Electrical, Computer and Energy Engineering Department, University of Colorado Boulder

First Place Poster, Physical and Optical Sciences (2018)

Front Range Industry and Postdoctoral Summit (\$250)

IQC David Johnston Award for Scientific Outreach (2014)

Institute for Quantum Computing, University of Waterloo (\$2,500)

Nanofellowship Award (2013)

Waterloo Institute for Nanotechnology, University of Waterloo (\$10,000)

PUBLICATIONS

W.W. Mah, P.G. Lim, T. Guess, D.A. Garcia-Wetten, J. Ramirez, W.-R. Syong, D. Bennett, M. Vissers, R. dos Reis, T. Pham, V.P. Dravid, M.C. Hersam, M.J. Bedzyk, D.P. Goronzy, and **C.R.H. McRae**. Comparison of Nb and Ta Pentoxide Loss Tangents for Superconducting Quantum Devices. Submitted (2025).

W.-R. Syong, A. Miller, E. Davis, J. Ramirez, N. Ortiz, M. Vissers, D. Bennett, and **C.R.H. McRae**. High-Throughput Microwave Package for Precise Superconducting Device Measurement. Submitted (2025).

J. R. Pitten, N. Materise, W.-R. Syong, J. Ramirez, D. Bennett, and **C.R.H. McRae**. An Effective Reflection Mode Measurement for Hanger-Coupled Microwave Resonators. *Phys. Rev. A* **112**, 052618 (2025).

Editor's Pick: A. Vallières, M. E. Russell, X. You, D.A. Garcia-Wetten, D.P. Goronzy, M.J. Walker, M.J. Bedzyk, M.C. Hersam, A. Romanenko, Y. Lu, A. Grassellino, J. Koch and **C.R.H. McRae**. Loss tangent fluctuations due to two-level systems in superconducting microwave resonators. *Appl. Phys. Lett.* **126**, 124001 (2025).

C.R.H. McRae, J. Ramirez, M. Acharya, J. Pitten, T. Lindström and D. Bennett. Superconducting qubit coherence metrics for device engineering. *2024 Conference on Precision Electromagnetic Measurements (CPEM)*, Denver, CO, USA (2024).

C.G. Torres-Castanedo, D.P. Goronzy, T. Pham, A. McFadden, N. Materise, P. Masih Das, M. Cheng, D. Lebedev, S.M. Ribet, M.J. Walker, D.G. Wetten, C.J. Kopas, J. Marshall, E. Lachman, N. Zhelev, J.A. Sauls, J.Y. Mutus, V.P. Dravid, **C.R.H. McRae**, M.J. Bedzyk, M.C. Hersam. Formation and Microwave Losses of Hydrides in Superconducting Niobium Thin Films Resulting from Fluoride Chemical Processing. *Adv. Funct. Mater.* 2401365 (2024).

S.G. Jones, N. Materise, K.W. Leung, J.C. Weber, B. Isakov, X. Chen, A. Gyenis, B. Jaeck, **C.R.H. McRae**. Grain size in low loss superconducting Ta thin films on c axis sapphire. *Journal of Applied Physics* **134**, 144402 (2023).

L. Cardani, I. Colantoni, A. Cruciani, F. De Dominicis, G. D'Imperio, M. Laubenstein, A. Mariani, L. Pagnanini, S. Pirro, C. Tomei, N. Casali, F. Ferroni, D. Frolov, L. Gironi, A. Grassellino, M. Junker, C. Kopas, E. Lachman, **C.R.H. McRae**, J. Mutus, M. Nastasi, D.P. Pappas, R. Pilipenko, M. Sisti, V. Pettinacci, A. Romanenko, D. Van Zanten, M. Vignati, J.D. Withrow, N.Z. Zhelev. Disentangling the sources of ionizing radiation in superconducting qubits. *The European Physical Journal C* **83**, 94 (2023).

Cover article: A. Goswami, A.P. McFadden, T. Zhao, H. Inbar, J.T. Dong, R. Zhao, **C.R.H. McRae**, R.W. Simmonds, C.J. Palmstrom, D.P. Pappas. Towards merged-element transmons using silicon fins: the FinMET. *Applied Physics Letters* **121**, 064001 (2022).

C.J. Kopas, E. Lachman, **C.R.H. McRae**, Y. Mohan, J.Y. Mutus, A. Nersisyan, A. Poudel. Simple coplanar waveguide resonator mask targeting metal-substrate interface. White paper (2022).

M.S. Alam, *et al.* (39 alphabetical authors). Quantum computing hardware for HEP algorithms and sensing. White paper (2022).

X. Lu, D.P. Goronzy, C.G. Torres-Castanedo, P. Masih Das, M. Kazemzadeh-Atoufi, A. McFadden, **C.R.H. McRae**, P.W. Voorhees, V.P. Dravid, M.J. Bedzyk, M.C. Hersam, J.M. Rondinelli. Stability, metallicity, and magnetism in niobium silicide nanofilms. *Physical Review Materials* **6**, 064402 (2022).

A. Asfaw, *et al.* (38 alphabetical authors). (McRae is one of four editors on this paper). Building a Quantum Engineering Undergraduate Program. *IEEE Transactions on Education* **65**, 2 (2022).

Invited review: **C.R.H. McRae**. Measurement Techniques for Superconducting Microwave Resonators Towards Quantum Device Applications. *2022 IEEE/MTT-S International Microwave Symposium - IMS 2022*, Denver, CO, USA, pp. 230-232, doi: 10.1109/IMS37962.2022.9865517 (2022).

Featured article, invited Perspective: **C.R.H. McRae**, G. Stiehl, H. Wang, S.-X. Lin, S.A. Caldwell, D.P. Pappas, J. Mutus, J. Combes. Perspective: Reproducible Coherence Characterization of Superconducting Quantum Devices. *Applied Physics Letters* **119**, 100501 (2021).

H. Wang, S. Singh, **C.R.H. McRae**, J.C. Bardin, S.-X. Lin, N. Messaoudi, A.R. Castelli, Y.J. Rosen, E.T. Holland, D.P. Pappas, J.Y. Mutus. Cryogenic single-port calibration for superconducting microwave resonator measurements. *Quantum Science and Technology* **6**, 035015 (2021).

C.R.H. McRae, A. McFadden, R. Zhao, H. Wang, J. L. Long, T. Zhao, S. Park, M. Bal, C.J. Palmstrom, D.P. Pappas. Cryogenic microwave loss in epitaxial Al/GaAs/Al trilayers for superconducting circuits. *Journal of Applied Physics* **129**, 025109 (2021).

M. Bal, J.L. Long, R. Zhao, H. Wang, S. Park, **C.R.H. McRae**, T. Zhao, R.E. Lake, D. Frolov, R. Pilipenko, S. Zorzetti, A. Romanenko, D.P. Pappas. Overlap junctions for superconducting quantum electronics and amplifiers. *Applied Physics Letters* **118**, 112601 (2021).

Cover article, invited review: **C.R.H. McRae**, H. Wang, J.S. Gao, M.R. Vissers, T. Brecht, A. Dunsworth, D.P. Pappas, J. Mutus. Materials loss measurements using superconducting microwave resonators. *Review of Scientific Instruments* **91**, 091101 (2020).

C.R.H. McRae, R.E. Lake, J.L. Long, M. Bal, X. Wu, B. Jugdersuren, T.H. Metcalf, X. Liu, D.P. Pappas. Dielectric loss extraction for superconducting microwave resonators. *Applied Physics Letters* **116**, 194003 (2020).

R. Zhao, S. Park, T. Zhao, M. Bal, **C.R.H. McRae**, J.L. Long, D.P. Pappas. Merged-element transmon. *Physical Review Applied* **14**, 064006 (2020).

A. McFadden, A. Goswami, M. Seas, **C.R.H. McRae**, R. Zhao, D.P. Pappas, C.J. Palmstrøm. Epitaxial Al/GaAs/Al tri-layers fabricated using a novel wafer-bonding technique. *Journal of Applied Physics* **128**, 115301 (2020).

C.R.H. McRae, J.H. Bejanin, C.T. Earnest, T.G. McConkey, J.R. Rinehart, C. Deimert, J.P. Thomas, Z.R. Wasilewski, M. Mariantoni. Thin film metrology and microwave loss characterization of indium and aluminum/indium superconducting planar resonators. *Journal of Applied Physics* **123**, 205304 (2018).

D.P. Pappas, D.E. David, R.E. Lake, M. Bal, R.B. Goldfarb, D.A. Hite, E. Kim, H.S. Ku, J.L. Long, **C.R.H. McRae**, L.D. Pappas, A. Roshko, J.G. Wen, B.L.T. Plourde, I. Arslan, X. Wu. Enhanced superconducting transition temperature in electroplated rhenium. *Applied Physics Letters* **112**, 182601 (2018).

T.G. McConkey, J.H. Bejanin, C.T. Earnest, **C.R.H. McRae**, Z. Pagel, J.R. Rinehart, M. Mariantoni. Mitigating coherent leakage of superconducting qubits in a large-scale quantum socket. *IOP Quantum Science and Technology* **3**, 3 (2018).

C.R.H. McRae, J.H. Bejanin, Z. Pagel, A.O. Abdallah, T.G. McConkey, C.T. Earnest, J.R. Rinehart, M. Mariantoni. Thermocompression bonding technology for multilayer superconducting quantum circuits. *Applied Physics Letters* **111**, 123501 (2017).

J.H. Bejanin, T.G. McConkey, J.R. Rinehart, C.T. Earnest, **C.R.H. McRae**, D. Shiri, J.D. Bateman, Y. Rohanzadegan, B. Penava, P. Breul, S. Royak, M. Zapatka, A.G. Fowler, and M. Mariantoni. The quantum socket: Three-dimensional wiring for extensible quantum computing. *Physical Review Applied* **6**, 044010 (2016).

INVITED TALKS (SELECT)

Building Longer-Lived Superconducting Qubits (09/2025)

University of Wyoming, Laramie, WY

Improving the Performance of Superconducting Qubits (10/2024)

Louisiana State University, Baton Rouge, LA

Disambiguating Decoherence in Superconducting Qubits and Microwave Resonators (01/2024)
Cornell University, Ithaca, NY

Device Design: Materials Loss Measurements Using Superconducting Microwave Resonators (06/2023)
Build Your Own Superconducting Quantum Device Workshop, Orford, QC

Quantum Materials: From Characterization to Resonator Measurements (06/2023)
Physics Today, virtual

Mechanisms leading to dielectric loss in superconducting quantum circuits (09/2022)
Imec Research and Development, Virtual

QED-C Update: The Boulder Cryogenic Quantum Testbed (06/2022)
Quantum Economic Development Consortium Plenary Meeting, Denver, CO

Measurement Techniques for Superconducting Microwave Resonators Towards Quantum Device Applications (06/2022)
IEEE International Microwave Symposium, Denver, CO

Measurement Techniques for Superconducting Microwave Resonators Towards Scalable Quantum Computing (02/2022)
Center for Quantum Technology, University of Glasgow, Virtual

Reproducible materials measurements for superconducting qubits and resonators (12/2021)
Materials Research Society Fall Meeting

Materials Loss Measurements Using Superconducting Microwave Resonators (10/2021)
American Vacuum Society Symposium, Virtual

Materials Measurements for Superconducting Quantum Computing at the Boulder Cryogenic Quantum Testbed (10/2021)
Institute for Quantum Computing at the University of Waterloo, Virtual

Enabling Scalable Superconducting Quantum Computing using Reproducible Materials Measurements (07/2021)
Cryogenic Engineering Conference and International Cryogenic Materials Conference, Virtual

The Boulder Cryogenic Quantum Testbed (07/2021)
Google AI Quantum, Virtual

Materials loss measurements using superconducting microwave resonators (02/2021)
Arizona State University, Virtual

Interlaboratory comparison for superconducting quantum computing (11/2020)
Superconducting Quantum Materials and Systems Center Kickoff, Virtual

Materials losses in superconducting quantum circuits (11/2020)
Materials Research Society Fall Meeting, Virtual

The Boulder Cryogenic Quantum Testbed (02/2020)
Open Quantum Frontier Institute Workshop, Golden, CO

Microwave dielectric loss in superconducting quantum circuits (05/2019)
IBM T.J. Watson Center, Yorktown Heights, NY

Indium thin films applied to superconducting quantum circuits (09/2017)
Rigetti Computing, Berkeley, CA

Techniques for the fabrication of high quality factor resonators (05/2015)
Student seminar, Institute for Quantum Computing, University of Waterloo, Waterloo, ON

CONFERENCE ACTIVITY (SELECT)

McRae, C.R.H. *et al.* (03/2025) *Two-level System Loss in Amorphous Nb₂O₅ and Ta₂O₅*. Presentation for the American Physical Society March Meeting, Anaheim, CA.

McRae, C.R.H. *et al.* (09/2024) *What Affects Superconducting Qubit Performance?*. Poster for the NQIS Research Principal Investigator PI Meeting, Rockville, DC.

McRae, C.R.H. *et al.* (03/2023) *Experimental Tools for A/B Materials Testing Towards High-Coherence Superconducting Quantum Devices*. Presentation for the American Physical Society March Meeting, Las Vegas, NV.

McRae, C.R.H. (04/2021) *Probing Materials Losses With Planar Superconducting Resonators*. Presentation for the Materials Research Society Spring Meeting, Virtual.

McRae, C.R.H., McFadden, A., Bal, M., Long, J.L., Arslan, I., Palmstrom, C., Pappas, D., Lake, R. (04/2019) *Accurate measurement of microwave dielectric loss in epitaxial trilayers*. Presentation for the Materials Research Society Spring Meeting, Phoenix, AZ.

McRae, C.R.H., McFadden, A., Bal, M., Wu, X., Long, J.L., Ku, H.-S., Wen, J., Wang, J., Arslan, I., Palmstrom, C., Pappas, D., Lake, R. (03/2019) *Low-loss dielectric materials and the merged element transmon*. Presentation for the American Physical Society March Meeting, Boston, MA.

McRae, C.R.H., Wu, X., Bal, M., Long, J.L., Ku, H.S., Pappas, D.P., Lake, R. E. (10/2018) *Metrology of dielectric loss using lumped-element microwave resonators*. Presentation for the American Vacuum Society Symposium, Long Beach, CA.

McRae, C.R.H., Bal, M., Ku, H.S., Long, J.L., Wu, X., McFadden, A., Palmstrom, C., Pappas, D.P., Lake, R.E. (10/2018) *Investigation of dielectric loss using lumped-element microwave resonators*. Poster for the Front Range Industry and Postdoctoral Summit, Boulder, CO. **Awarded first place for physical and optical sciences.**

McRae, C.R.H., Bejanin, J.H., Earnest, C.T., Abdallah, A.O., McConkey, T.G., Rinehart, J.R., Deimert, C., Thomas, J.P., Wasilewski, Z.R., Mariantoni, M. (03/2018) *Physical and microwave characterization of superconducting indium and aluminium/indium thin films*. Presentation at APS March Meeting, Y39.00004, Los Angeles, CA.

McRae, C.R.H., Abdallah, A.O., Bejanin, J.H., Earnest, C.T., McConkey, T.G., Pagel, Z., Mariantoni, M. (03/2017) *Quantum devices bonded beneath a superconducting shield*. Presentation at APS March Meeting, H46.00010, New Orleans, LA.

PROFESSIONAL AND DEPARTMENTAL SERVICE (SELECT)

Comprehensive Exam Committee Member, Physics Department (2023 - 2025)

University of Colorado Boulder

Sat on comprehensive exam committees for students including Eva Gurra (2025), Peter Riley (2024), and Alec Emser (2023)

Member At Large, Forum on Industrial and Applied Physics (2025 - present)

American Physical Society

Contributed to running the organization, including serving on the APS abstract sorting committee.

Symposium Co-organizer, Materials for Quantum Information Science (2024 - 2025)

Materials Research Society Fall Meeting, Boston, MA

Engagement and Community Committee Member, Electrical, Computer, and Energy Engineering Department (2024 - 2025)

University of Colorado Boulder, Boulder, CO

Open Faculty Search Committee Member, Electrical, Computer, and Energy Engineering Department (2024)

University of Colorado Boulder, Boulder, CO

Photonic and Quantum Engineering Preliminary Exam Committee, Electrical, Computer, and Energy Engineering Department (2024 - 2025)

University of Colorado Boulder, Boulder, CO

Advisory Committee Member, Quantum Engineering Initiative (2022 - present)

University of Colorado Boulder, Boulder, CO

Diversity, Equity and Inclusion Committee Co-Chair, Electrical, Computer, and Energy Engineering Department (2022 - 2024)

University of Colorado Boulder, Boulder, CO

Program Committee Member, Quantum Information Science Focus Topic (2022 - 2024)

Pittsburg, PA

American Vacuum Society 68th and 69th International Symposium & Exhibition

Session Chair, American Physical Society March Meeting (2023)

Las Vegas, NV

Chaired the session "Superconducting Qubit Material Loss and Characterization".

Invited Panelist, Inside Quantum Technology (2021)

New York, NY

Spoke as one of two invited panelists on the Emerging Materials for Quantum Technology panel.

Conference Organizer and Introductory Speaker, Open Questions in Materials for Quantum 2.0 Devices (2021)

Virtual Workshop

Focused workshop topic, chose and invited speakers, and made introductory presentation.

Hardware Champion, Quantum BC Roadmapping Workshop (2021)

Virtual Workshop

Led a breakout group of industry scientists as well as graduate and undergraduate students to brainstorm a roadmap for quantum computing research and innovation in British Columbia.

Session Chair, American Physical Society March Meeting (2021)

Virtual Conference

Chaired the session "Materials and Fabrication in Superconducting Qubits II - Materials".

Conference Organizer and Session Chair, QED-C Qubit Materials Workshop (2020)

University of California Santa Barbara, Goleta, CA

Identified focus topics and speakers, and chaired a session, for invitational workshop for leaders in superconducting qubit loss and metrology research.

Conference Chair, Cryogenic Resonator Workshop (2019)

University of Colorado Boulder, Boulder, CO

Created and developed a technical conference for leading researchers in superconducting microwave resonator fabrication and metrology.

Event Organizer, Entrepreneurship on Campus (2014)

Institute for Quantum Computing, University of Waterloo, Waterloo, ON

Organized an event to connect students in entrepreneurship and business programs with those in science and technology programs. Event included speakers from local incubators and academic institutions.

Founder, Lecture Series on Quantum Industry (2014 - 2015)

Institute for Quantum Computing, University of Waterloo, Waterloo, ON

Founded and organized a lecture series in which professionals in the quantum industry shared their research, day-to-day job experience, and transition from academia to industry.

President, Graduate Student Association (2014 - 2015)

Institute for Quantum Computing, University of Waterloo, Waterloo, ON

Led a group of elected officers in the organization of academic and social activities for institute members.

Acted as a spokesperson and advocate for the multidisciplinary student body.

Invited Conference Panelist (2015)

Université de Laval, Quebec City, QC

Sat on a graduate student panel at the Canadian Conference for Undergraduate Women in Physics.

Organizer, Physics Undergraduate Student Conference (2011)

University of Western Ontario, London, ON

Elected Member, Physics and Astronomy Students' Association (2009-2012)

University of Western Ontario, London, ON

EDITING AND REFEREE SERVICE (SELECT)

Guest Editor (2023 - 2024)

IOP Materials for Quantum Technologies

Guest edited a special issue titled "Focus issue on advancing low-loss materials for superconducting quantum devices"

Ad Hoc Article Reviewer (2017 - present)

Peer-reviewed scientific articles for Nature Physics, npj Quantum Information, Physical Review Applied, Physical Review Research, Physical Review Materials, Applied Physics Letters, IOP Quantum Science and Technology, Langmuir, and Scientific Reports, among other journals.

Grant Reviewer (2018 - present)

Reviewed applications for programs such as the DOE Early Career Research Program (2025), SBIR/STTR (2024), seed fund support proposals for the Regional Innovation Strategies program from the U.S. Economic Development Agency, as well as student and faculty team grant applications for the University of Colorado Boulder's Undergraduate Research Opportunities Program.

STUDENT AND POSTDOCTORAL MENTORSHIP

PhD Student Advising (2024 - present)

Nhi Nguyen, University of Colorado Boulder

Modeling two level system loss in superconducting resonators

PhD Student Advising (2024 - present)

Wei-Ren Syong, University of Colorado Boulder

Accurate performance metrics for superconducting qubits and resonators

PhD Student Advising (2021 - present)

John Pitten, University of Colorado Boulder

Pound-Drever-Hall locking for rapid superconducting microwave resonator characterization; and effective reflection measurements

Masters Student Advising (2024 - 2025)

Jorge Ramirez, University of Colorado Boulder

Qubit two-level-system spectroscopy

Undergraduate Student Mentorship (2025)

Ariana Taylor, University of Texas at San Antonio

2D capacitance participation simulations for superconducting quantum devices

Undergraduate Student Mentorship (2024)

Emma Davis, University of Colorado Boulder
Superconducting microwave ring resonators

Undergraduate Student Mentorship (2024)

Allie Miller, University of Colorado Boulder
A superconducting 3D cavity as a high performance microwave device package

Undergraduate Student Mentorship (2024)

Zach Miles, Perdue University
Data visualization tools for open-source analysis software for superconducting microwave resonators

PhD Student Advising (2023 - 2024)

Tommy Guess, University of Colorado Boulder
Optimizing superconducting microwave resonator measurement

PhD Student Mentorship (2021 - 2024)

Nicholas Materise, Colorado School of Mines
High throughput measurement of cryogenic dielectric loss using a superconducting 3D cavity

Undergraduate Student Mentorship (2022 - 2024)

Scott Hardman, University of Colorado Boulder
Refactoring open-source analysis software for superconducting microwave resonators

Community College Student Mentorship (2023)

Dylan Blevins, Arapahoe Community College
An open-source database for cryogenic dielectric loss tangents

Undergraduate Student Mentorship (2022)

Svetlana Doroshevich, Columbia University
Kyle Thompson, Colorado Mesa University
Nicholas Price, University of Colorado Boulder

PhD Student Mentorship (2020 - 2022)

Sheng-Xiang Lin, University of Colorado Boulder

Undergraduate Student Mentorship (2019 - 2021)

Keegan Mullins, University of Colorado Boulder

Postdoctoral Mentorship (2019 - 2021)

Haozhi Wang, NIST / University of Colorado Boulder

TEACHING EXPERIENCE (SELECT)

Nanofabrication Workshop Developer and Instructor (2016 - 2017)

Institute for Quantum Computing, University of Waterloo, Waterloo, ON
Developed the curriculum and led a hands-on introductory cleanroom workshop on superconducting quantum circuit fabrication for undergraduate students as part of the University of Waterloo's Undergraduate School for Experimental Quantum Information Processing (USEQIP).

Mentor, Quantum Cryptography School for Young Students (2016)

Institute for Quantum Computing, University of Waterloo, Waterloo, ON
Spoke with enthusiastic high school students about their visions of their future careers in science and shared personal experiences of physics academia.

Program Developer and Instructor (2016 - 2017)

University of Bristol and University of Waterloo, Waterloo, ON

Established, developed and led hands-on nanofabrication workshops for graduate students. Workshops included an introduction to photolithography and reactive ion etching.

COMMUNITY OUTREACH AND VOLUNTEERISM

Archivist, Board of Directors (2020-2024)

Commerce Children's Center non-profit

Sat on board as an elected member to assist in the operation of the childcare center.

Article Author, "Is Your Qubit Better Than My Qubit?" (2021)

NIST Taking Measure Blog

Wrote a popular science blog post about my research at the Boulder Cryogenic Quantum Testbed.

Mentor, Girls in Science, Technology, Art/Design and Mathematics (2017)

Institute for Quantum Computing, University of Waterloo, Waterloo, ON

Workshop Organizer, Canadian Association for Girls in Science (2014 - 2015)

Institute for Quantum Computing, University of Waterloo, Waterloo, ON

Volunteer, Girls in Science Fair (2013)

Wilfred Laurier University, Waterloo, ON

Volunteer, Science Open House (2012-2016)

Institute for Quantum Computing, University of Waterloo, Waterloo, ON

PROFESSIONAL SKILLS AND DEVELOPMENT

Course Completion, Indigenous Canada (2020)

University of Alberta, Virtual

Participant, Science Policy Workshop (2018)

Science Outside the Lab North, Ottawa, ON and Montreal, QC

Participated in a week-long immersive science policy workshop in Ottawa and Montreal. Gained knowledge about the science policy landscape in Canada and Quebec.