Michael Hatridge

Contact Information

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26 (see Google Scholar https://tinyurl.com/MJHatridge)

Education

University of California, Berkeley, Berkeley, CA — **June 2004 – June 2010**
Doctor of Philosophy - Physics

Texas A&M University, College Station, TX — **September 1999 – May 2004**
Bachelor of Science - Physics, Summa Cum Laude

Appointments

Associate Professor of Physics and Astronomy — **September 2022 –**
University of Pittsburgh, Department of Physics and Astronomy — Pittsburgh, PA

Assistant Professor of Physics and Astronomy — **September 2015 – August 2022**
University of Pittsburgh, Department of Physics and Astronomy — Pittsburgh, PA

Postdoctoral Associate — **August 2010 – August 2015**
Yale University, Applied Physics — New Haven, CT

Research Training

Postdoctoral work
Supervisor: Professor Michel Devoret, Yale University, Applied Physics
Parametric amplifier design and construction for quantum measurement and quantum information

Doctoral thesis
Supervisor: Professor John Clarke, Physics, UC Berkeley, Physics
SQUID-based ultra-low field MRI of the human body and SQUID magnetometry for the study of nano-scale magnetism

Honors

- 2021 Chancellor's Distinguished Research Award (Junior Scholar), U. Pittsburgh
- 2020 Sloan Research Fellowship
- 2019 NSF CAREER Award
- 2015 Michelson Postdoctoral Prize Lectureship, Case Western University
- 2009 UC Berkeley Nanoscience Graduate Student Researcher Fellowship
- 2002 TAMU Phi Kappa Phi Outstanding Junior, Department of Physics
- 2001 TAMU Gathright Scholar, Oustanding Sophomore, College of Science
- 1999 National Merit Scholar

Journal Publications and arXiv Preprints

1. **Parallel Driving for Fast Quantum Computing Under Speed Limits** E. McKinney, C. Zhou, M. Xia, M. Hatridge, A. K. Jones. *arXiv*:2302.01252 (2023).
2. **Architectures for Multinode Superconducting Quantum Computers** J. Ang, G. Carini, Y. Chen, I. L. Chuang, M. A. DeMarco, S. E. Economou, A. Eickbusch, A. Faraon, K.-M. Fu, S. M. Girvin, M. Hatridge, A. A. Houck, P. Hilaire, K. Krsulich, Ang Li, C. Liu, Y. Liu, M. Martonosi, D. C. McKay, J. Misewich, M. Ritter, R. J. Schoelkopf, S. A. Stein, S. Sussman, H. X. Tang, Wei Tang, T. Tomesh, N. M. Tubman, C. Wang, N. Wiebe, Y.-X. Yao, D. C. Yost, Y. Zhou. *arXiv*:2212.06167 (2022).
3. **Quantum-limited amplification without instability** A. Metelmann, O. Lanes, T.-C. Chien, A. McDonald, M. Hatridge, A. A. Clerk. *arXiv*:2208.00024 (2022).
4. **Co-Designed Architectures for Modular Superconducting Computers** E. McKinney, M. Xia, C. Zhou, P. Lu, M. Hatridge, A. Jones. To Appear in *IEEE Symposium on High Performance Computer Architecture (HPCA)* (2023). Available at *arXiv*:2205.04387.
5. **A modular quantum computer based on a quantum state router** C. Zhou, P. Lu, M. Praquin, T.-C. Chien, R. Kaufman, X. Cao, M. Xia, R. Mong, W. Pfaff, D. Pekker, M. Hatridge. *arXiv*:2109.06848 (2021).
6. **Proposal for a continuous wave laser with linewidth well below the standard quantum limit** C. Liu, M. Mucci, X. Cao, M. Gurudev, M. Hatridge, D. Pekker. *Nature Comm.* **12**, 5620 (2021).

   Featured as 'Physicists are reinventing the laser' at Gizmodo.
7. **Noise Reduction in Qubit Readout with a Two-Mode Squeezed Interferometer** G. Liu, X. Cao, T.-C. Chien, C. Zhou, P. Lu, M. Hatridge. *Phys. Rev. Appl.* **18**, 064092(2022).
8. **Nearly quantum-limited Josephson-junction frequency comb synthesizer** P. Lu, S. Khan, T.-C. Chien, X. Cao, O. Lanes, C. Zhou, H. Tureci, M. Hatridge. *Phys. Rev. Appl.* **15**, 044031 (2021).
9. **Superconducting Edge Contact and Quantum Interference Between Two-Dimensional van der Waals and Three-Dimensional Conventional Superconductors** M. Sinko, S. de la Barrera, O. Lanes, K. Watanabe, T. Taniguchi, D. Pekker, M. Hatridge, B. M. Hunt. *Phys. Rev. Materials* **5**, 014001 (2021).
10. **Multiparameteric amplification and qubit measurement with a Kerr-free Josephson Ring Modulator** T.-C. Chien, O. Lanes, C. Liu, X. Cao, P. Lu, S. Motz, G. Liu, D. Pekker, M. Hatridge. *Phys. Rev. A* **101**, 042336 (2020).

11. **Optimizing Josephson-Ring-Modulator-based Josephson Parametric Amplifiers via full Hamiltonian control** C. Liu, T.-C. Chien, M. Hatridge, D. Pekker. *Phys. Rev. A* **101**, 042323 (2020).
12. **Braiding quantum circuit based on the 4π Josephson effect** J. Stenger, M. Hatridge, S. M. Frolov, D. Pekker. *Phys. Rev. B* **99**, 035307 (2019).
13. **Generation of discord through a remote joint continuous variable measurement** E. Zalys-Gellar, A. Narla, S. Shankar, M. Hatridge, M. P. Silveri, K. Sliwa, Z. Leghtas, M. H. Devoret. *arXiv:*1803.01275 (2018).
14. **Josephson parametric converter saturation and higher order effects** G. Liu, T.-C. Chien, X. Cao, O. Lanes, E. Alpern, D. Pekker, M. Hatridge. *Appl. Phys. Lett.* **11**, 202603 (2017).
15. **Simultaneous monitoring of fluxonium qubits in a waveguide** A. Kou, W. C. Smith, U. Vool, I. M. Pop, K. M. Sliwa, M. Hatridge, L. Frunzio, M. H. Devoret. *Phys. Rev. Appl.* **9**, 064022 (2017).
16. **Robust Concurrent Remote Entanglement Between Two Superconducting Qubits** A. Narla, S. Shankar, M. Hatridge, Z. Leghtas, K. M. Sliwa, E. Zalys-Gellar, S. O. Mundhada, W. Pfaff, L. Frunzio. R. J. Schoelkopf, M. H. Devoret. *Phys. Rev. X* **6**, 031036 (2016).
17. **Theory of remote entanglement via quantum-limited phase-preserving amplification** M. Silveri, E. Zalys-Gellar, M. Hatridge, Z. Leghtas, M. H. Devoret, S. M. Girvin. *Phys. Rev. A* **93**, 062310 (2016).
18. **Quantum memory with millisecond coherence in QED** M. Reagor, W. Pfaff, C. Axline, R. W. Heeres, N. Ofek, K. M. Sliwa, E. Holland, C. Wang, J. Blumoff, K. Chou, M. Hatridge, L. Frunzio, M. H. Devoret, L. Jiang, R. Schoelkopf. *Phys. Rev. B* **94**, 014506 (2016).
19. **Planar Multilayer Circuit Quantum Electrodynamics** Z. K. Minev, K. Serniak, I. M. Pop, Z. Leghtas, K. M. Sliwa, M. Hatridge, L. Frunzio, R. J. Shoelkopf, M. H. Devoret. *Phys. Rev. Applied* **5**, 044021 (2016).
20. **Comparing and Combining Measurement-Based and Driven-Dissipative Entanglement Stabilization** Y. Liu, S. Shankar, N. Ofek, M. Hatridge, A. Narla, K. M. Sliwa, L. Frunzio, R. J. Shoelkopf, M. H. Devoret. *Phys. Rev. X* **6**, 011022 (2016).
21. **The Reconfigurable Josephson Circulator/Directional Amplifier** K. M. Sliwa, M. Hatridge, A. Narla, S. Shankar, L. Frunzio, R. J. Schoelkopf, M. H. Devoret. *Phys. Rev. X* **5**, 041020 (2015).
22. **Confining the state of light to a quantum manifold by engineered two-photon loss** Z. Leghtas, S. Touzard, I. M. Pop A. Kou, B. Vlastakis, A. Patrenko, K. M. Sliwa, A. Narla, S. Shankar, M. Hatridge, M. Reagor, L. Frunzio, R. J. Schoelkopf, M. Mirrahimi, M. H. Devoret. *Science* **347**, 853 (2015).
23. **Characterizing entanglement of an artificial atom and a cavity cat state with Bell's inequality** B. Vlastakis, A. Petrenko, N. Ofek, L. Sun, Z. Leghtas, K. M. Sliwa, Y. Liu, M. Hatridge, J. Blumoff, L. Frunzio, M. Mirrahimi, L. Jiang, M. H. Devoret, R. J. Schoelkopf. *Nature Communications* **6**, 8970 (2015).
24. **Non-Poissonian Quantum Jumps of a Fluxonium Qubit due to Quasiparticle Excitations** U. Vool, I. M. Pop, K. M. Sliwa, B. Abdo, C. Wang, T. Brecht, Y. Gao, S. Shankar, M. Hatridge, G. Catelani, M. Mirrahimi, L. Frunzio, R. J. Schoelkopf, L. I. Glazman, M. H. Devoret. *Phys. Rev. Lett.* **113**, 247001 (2014).
25. **Conductive shield for ultra-low-field magnetic resonance imaging: Theory and measurement of eddy currents** K. Zevenhoven, S. Busch, M. Hatridge, F. Öisjöen, R. Ilmoniemi, J. Clarke. *J. Appl. Phys.* **115**, 103902 (2014).
26. **Wireless Josephson Amplifier** A. Narla, K. M. Sliwa, M. Hatridge, S. Shankar, L. Frunzio, M. H. Devoret. *Appl. Phys. Lett.* **104**, 232605 (2014).

27. **Josephson Directional Amplifier for Quantum Measurement of Superconducting Circuits** B. Abdo, K. M. Sliwa, S. Shankar, M. Hatridge, L. Frunzio, R. J. Schoelkopf, M. H. Devoret. *Phys. Rev. Lett.* **112**, 167701 (2014).
28. **Tracking Photon Jumps with Repeated Quantum Non-Demolition Parity Measurements** L. Sun, A. Patrenko, Z. Leghtas, B. Vlastakis, G. Kirchmair, K. M. Sliwa, A. Narla, M. Hatridge, S. Shankar, J. Blumoff, L. Frunzio, M. Mirrahimi, M. H. Devoret, R. J. Schoelkopf, *Nature* **511**, 444 (2014).
29. **Autonomously stabilized entanglement between two superconducting qubits** S. Shankar, M. Hatridge, Z. Leghtas, K. M. Sliwa, A. Narla, U. Vool, S. M. Girvin, L. Frunzio, M. Mirrahimi, M. H. Devoret, *Nature* **504**, 419 (2013).
30. **Stabilizing a Bell state of two superconducting qubits by dissipation engineering** Z. Leghtas, U. Vool, S. Shankar, M. Hatridge, S. M. Girvin, M. H. Devoret, M. Mirrahimi. *Phys. Rev. A* **88**, 023849 (2013).
31. **Three-wave mixing with three incoming waves: Signal-Idler Coherent Cancellation and Gain Enhancement in a Parametric Amplifier** F. Schackert, A. Roy, M. Hatridge, A. D. Stone, M. H. Devoret. *Phys. Rev. Lett.* **111**, 073903 (2013).
32. **Full coherent frequency conversion between two microwave propagating modes** B. Abdo, K. M. Sliwa, F. Schackert, N. Bergeal, M. Hatridge, L. Frunzio, A. D. Stone, M. H. Devoret. *Phys. Rev. Lett.* **110**, 173902 (2013).
33. **Quantum Back-Action of an Individual Variable-Strength Measurement** M. Hatridge and S. Shankar, M. Mirrahimi, F. Schackert, K. Geerlings, T. Brecht, K. Sliwa, B. Abdo, L. Frunzio, S. M. Girvin, R. J. Schoelkopf, M. H. Devoret, *Science* **339**, 178 (2013).
34. **Measurements of T_1-relaxation in ex vivo prostate tissue at 132 μT** S. Busch, M. Hatridge, M. Mößle, W. R. Myers, T. Wong, M. Mück, K. Chew, K. Kuchinsky, J. Simko, John Clarke. *Mag. Res. Med.* **67**, 1138-1145 (2012).
35. **Josephson amplifier for qubit readout** B. Abdo, F. Schackert, M. Hatridge, C. Rigetti, M. H. Devoret. *Appl. Phys. Lett.* **99**, 162506 (2011).
36. **Dispersive magnetometry with a quantum limited SQUID parametric amplifier** M. Hatridge, R. Vijay, D. H. Slichter, John Clarke, I. Siddiqi. *Phys. Rev. B.* **83**, 134501 (2011).

    Editor's Suggestion and subject of Viewpoint article (https://physics.aps.org/articles/v4/29)
37. **Calculated signal-to-noise ratio of MRI detected with SQUIDs and Faraday detectors in fields from 10 μT to 1.5 T** W. R. Myers, D. H. Slichter, M. Hatridge, S. Busch, M. Mößle, R. McDermott, A. Trabesinger, John Clarke. *J. Mag. Res.* **186**, 182–192 (2007).
38. **SQUID-Detected Magnetic Resonance Imaging in Microtesla Fields** John Clarke, M. Hatridge, M. Mößle. *Ann. Rev. of Biomed. Eng.* **9**, 389 (2007).
39. **SQUID-detected microtesla MRI in the presence of metal** M. Mößle, S. I. Han, W. R. Myers, S.-K. Lee, N. Kelso, M. Hatridge, A. Pines, John Clarke. *J. Mag. Res.* **179**, 146-151 (2007).
40. **Removal of supermicron particles from precursor powders for PIT fabrication of Nb 3 Sn and Bi-2212 multifilament conductors** P. M. McIntyre, X. Fu, M. Hatridge, K. Kihm, T. K. Kim, D. J. Phares, S. Shastri, D. Smith. *IEEE Trans. Appl. Supercond.* **15**, 3510 (2005).
41. **SQUID-detected in vivo MRI at microtesla magnetic fields** M. Mößle, W. R. Myers S.-K. Lee, N. Kelso, M. Hatridge, A. Pines, John Clarke. *IEEE Trans. Appl. Supercond.* **15**, 757 (2005).

U.S. Patents and Applications

1. **Parametrically-driven coherent signal router for quantum computing and related methods** M. Hatridge, D. Pekker, R. Mong, **Application # 62/900,101** (2020).

2. **Wireless Josephson parametric converter** K. Sliwa, M. Hatridge, A. Narla, S. Shankar, L. Frunzio, R. Schoelkopf, M. H. Devoret. **# 10,693,566** (2020).
3. **Josephson junction-based circulators and related systems and methods**, K. Sliwa, M. Hatridge, A. Narla, S. Shankar, L. Frunzio, M. Hatridge, R. Schoelkopf, M. Devoret. **# 10,461,385** (2019).
4. **Techniques for producing quantum amplifiers and related systems and methods** L. Szocs, A. Narla, M. Hatridge, K. Sliwa, S. Shankar, L. Frunzio, M. Devoret **# 10,404,214** (2019)
5. **Wireless Josephson bifurcation amplifier** A. Narla, K. Sliwa, M. Hatridge, S. Shankar, L. Frunzio, R. Schoelkopf, M. Devoret. **# 9,948,254** (2018).
6. **Functional magnetic resonance imaging apparatus and methods**, B. Inglis, M. Moessle, M. Hatridge, S. Busch, S. Conolly, J. Clarke, **20,130,144,153** (2013).

Advisees

Post Doctoral Researchers

1. Gangqiang Liu (2015 – 2018, currently at Quantum Circuits, Inc.)
2. Jake Repicky (2022 –)

Graduate Students

1. Tzu-Chiao Chien (PhD Summer 2020, currently at Quantum Circuits, Inc.)
2. Olivia Lanes (PhD Summer 2020, currently at IBM Quantum)
3. Xi Cao (PhD Spring 2021, currently a postdoc at UIUC)
4. Pinlei Lu (PhD Summer 2022, currently at Quantum Circuits, Inc.)
5. Chao Zhou
6. Maria Mucci
7. Ryan Kaufman
8. Mingkang Xia
9. Param Patel
10. Israa Yusuf
11. Boris Mesits
12. Evan McKinney
13. Maria Nowicki
14. Girish Kumbhar

Undergraduate Students

1. Edan Alpern (2016 – 2019) "Saturation and higher-order effects in parametric amplifiers"'
2. Michael Prijatelj (CMU, 2016) "Bias coil design for cryogenic experiments"
3. Alex Rowden (2016 – 2018) "Control software for qubits and parametric amplifiers"
4. Eric Brindock (2016 – 2018) "Control software for quantum experiments"
5. Sarah Motz (2016 – 2019) "Qubit fabrication and coherence"
6. Boyuan Wang (2022 –)

Courses Taught

1. Spring 2016: Phys 3770 Special Topics in Quantum Physics (Quantum Computing) (13 students)
2. Spring 2017: Phys 1375 Foundations of Nanoscience (11 students)
3. Spring 2018: Phys 1375 Foundations of Nanoscience (11 students)
4. Fall 2018: Phys 0174 Basic Physics for Scientists and Engineers 1 (238 students)
5. Spring 2019: Phys 0174 Basic Physics for Scientists and Engineers 1 (196 students)

6. Fall 2019: Phys 1370 Introduction to Quantum Mechanics 1 (28 students)
7. Spring 2021: Phys 1375 Fundamentals of Nanoscience (9 students)
8. Spring 2021: Phys 3770 Special Topics in Quantum Physics (Quantum Computing) (24 students)
9. Fall 2021: Phys 0174 Basic Physics for Scientists and Engineers 1 (209 students)
10. Spring 2022: Phys 0525 Analog and Digital Electronics Laboratory (16 students)
11. Fall 2022: Phys 0330 Physics and Quantum Computing Seminar (8 students)
12. Spring 2023: Phys 3770 Special Topics in Quantum Physics (Quantum Computing) (17 students)

External Research Funding

Complete

1. Army Research Office: DURIP: Ultrahigh Vacuum Electron Beam Evaporation System for Fabrication of Nanoscale Electronic Devices (2016-2017) PI: Sergey Frolov(Pitt), Co-PI: Hatridge ($360,750)
2. Army Research Office: DURIP: Integrated High Field Magnet and Ultra-Low Noise Microwave Measurement Apparatus for Hybrid Quantum Devices (2018-2020) PI: Michael Hatridge ($224,811)
3. Charles E. Kaufman Foundation: Protecting Quantum Wires for Quantum Computing (2017-2021) PI: Michael Hatridge ($300,000)
4. Air Force Office of Strategic Research: MURI Extension for Wiring Quantum Networks with Mechanical Transducers (2019-2022) PI: Konrad Lehnert (U. Colorado, Boulder) co-PI: Michael Hatridge (Hatridge subcontract: $736,710)
5. Alfred P. Sloan Foundation: Sloan Research Fellowship (2020-2022) PI: Michael Hatridge ($75,000)
6. Army Research Office: DURIP: Microwave instrumentation for cryogenic, quantum-limited measurement and feedback (2020-2022) PI: Michael Hatridge ($257,212)

Active

1. Army Research Office: QC-S5 (Fastcars): Practical, pump-efficient, and embedded cavity-based parametric amplifiers (2023-2027) PI: Michael Hatridge ($3,025,000 Contract Pending)
2. Army Research Office: QC-S5 (ModQ): Modular superconducting processors via parametric couplings and lossy links (2023-2027) PI: Michael Hatridge ($2,665,000, Contract Pending)
3. Charles E. Kaufman Foundation: Quantum bit and Architecture Co-Design for High-fidelity Quantum Computing (2023-2025) PI: Alex Jones, co-PI: Michael Hatridge ($300,000 contract pending)
4. Air Force Office of Strategic Research: MURI: Superconducting Reservoir Computers for Quantum Memory and Information Processing (2022-2025) PI: Hakan Tureci (Princeton), Co-PI: Michael Hatridge (Hatridge subcontract: $519,693)
5. Air Force Office of Strategic Research: DURIP: Cryogenic platform and controls for quantum state routers and reservoir computation (2022-2024) PI: Michael Hatridge ($481,695)
6. Army Research Office: Next NEQST: Voltage-Controlled Superconducting Qubits Based on Hybrid Nanowires (2022-2024) PI: Sergey Frolov (Pitt), Co-PI: Hatridge ($1,050,000)
7. Air Force Office of Strategic Research: Extension of Reservoir Computing as a General Framework for a Comparative Study of Classical and Quantum Information Processing. (2022-2023) PI: Hakan Tureci (Princeton), Co-PI: Hatridge (Hatridge subcontract $118,908).
8. Department of Energy National Quantum Information Science Research Center: Co-design Center for Quantum Advantage (C2QA) (2020-2025) PI: Andrew Houck (BNL and Princeton), co-PI: Michael Hatridge ($ 115,000,000 Hatridge subcontract: $1,682,139)
9. National Science Foundation: CAREER: Josephson Quantum Optics with Coherent Microwave Light (2019-2024) PI: Michael Hatridge ($556,359)

10. Army Research Office: Next Generation Quantum-Limited Multi-Mode Lumped Parametric Amplifiers (2018-2023) PI: Michael Hatridge ($1,600,000)
11. National Science Foundation: PIRE HYBRID: Hybrid Materials for Quantum Science and Engineering (2017-2023) PI: Sergey Frolov(Pitt), co-PI: Michael Hatridge ($4,799,768, Hatridge component ∼$500,000)
12. Army Research Office: Engineering Exotic States of Light with Superconducting Circuits (extended) (2015-2023) PI: Andrew Houck(Princeton), co-PI: Michael Hatridge (Hatridge subcontract: $1,474,136)

Service

1. Director of newly created Physics and Quantum Computing B.S. program (2022 –)
2. Physics Artists in Residency Program 2016-present (Director 2017 –)
3. Physics and Quantum Computing major development (2017 – 2022)
4. Petersen Institute of NanoScience and Engineering (PINSE) Executive Committee (2019 –)
5. Physics Faculty Hiring Committee (2020-2021)
6. Physics Dept. Shops Committee (2015-2016)
7. Reviewer for Nature Physics, Nature Communication, npj: Quantum Information, PRX, PRL, PRB, etc.

Presentations

Invited Presentations

1. APS March Meeting 2023
2. Aspen Winter Program (Quantum Simulation with Quantum Hardware), Feb. 2023
3. Northwestern, Jan. 2023
4. QICK Workshop, Fermilab, Jan. 2023
5. Applied Superconductivity Conference, Oct. 2022
6. Yale University, Sep. 2022
7. ENS Lyon, July 2022
8. CNRS Grenoble, June 2022
9. Univeristy of Illinois, Urbana-Champaign, May 2022
10. NIST Boulder, Mar. 2022
11. IBM Qiskit Seminar (remote), Nov. 2021
12. Co-design Center for Quantum Advantage Quantum Thursdays (remote), Sep. 2021
13. University of Southern California (remote), Oct. 2020
14. Oxford Instruments Nanoscience Virtual Event, June 2020
15. University of Rochester, Dec. 2019
16. Yale Quantum Institute, Nov. 2019
17. American Society of Precision Engineers Meeting, Pittsburgh, Oct. 2019
18. SQ20th (20th Anniversary of Superconducting Qubits), Tsukuba Japan, May 2019
19. APS March Meeting 2019
20. The Ohio State University, Jan. 2019
21. Ecole Normale Superior, Dec. 2018
22. ECE Graduate Seminar, U. Pittsburgh, Oct. 2018
23. University of Chicago Oct. 2018
24. NIST Boulder, Sep. 2018
25. Laboratory for Physical Sciences, Apr. 2017
26. APS March Meeting 2017
27. Rochester, Apr. 2015
28. Washington University, Saint Louis, Feb. 2015
29. New York City College of Technology, The City University of New York, Oct. 2014
30. Syracuse University, Oct. 2014
31. APS March Meeting 2013
32. University of Innsbruck, Fall 2013

Tutorials

1. Pittsburgh Quantum Institute Industry Tutorial, Sep. 2022
2. Co-design Center for Quantum Advantage (C2QA) Summer School, July 2022
3. Materials Science and Quantum Information, Materials Research Society Meeting, Nov. 2017
4. Materials Science and Quantum Information, Materials Research Society Meeting, Nov. 2016

Contributed oral presentations

1. Pittsburgh Quantum Institute 2014, 2015, 2017, 2018, 2019, 2022
2. Quantum Noise and Measurement in Engineered Electronic Systems, Dresden, Germany 2012
3. APS March Meeting 2006, 2008-2012, 2014, 2015
4. Applied Superconductivity Conference 2006

Poster presentations

1. Quantum Cavities, Jovence, Quebec, May 2022
2. CIFAR Quantum Cavities Workshop, Montreal, Canada 2013
3. Applied Superconductivity Conference 2008
4. Experimental NMR Conference 2008

Schools/Trainings attended

1. Alan Alda Workshop on Communicating Science, 2019
2. AAPT New Faculty Workshop, 2015
3. Quantum Machines: Measurement and Control of Engineered Quantum Systems, Les Houches, France 2011