

Philip J. Richerme

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EDUCATION

- 2012 Ph.D., Physics, Harvard University
- 2008 M.A., Physics, Harvard University
- 2006 S.B., Physics (Music minor), Massachusetts Institute of Technology

POSITIONS AND APPOINTMENTS

- 2015- Assistant Professor of Physics, Indiana University, Bloomington IN
- 2014-15 Senior Research Scientist, Joint Quantum Institute, College Park MD
Principal Investigator: Christopher Monroe
- 2012-14 Postdoctoral Fellow, Joint Quantum Institute, College Park MD
Principal Investigator: Christopher Monroe
- 2010-12 Graduate research assistant, CERN, Geneva, Switzerland
Advisor: Gerald Gabrielse
- 2008-9 Teaching Fellow: Quantum Electronics and Modern Optics, Harvard University
Instructor: Markus Greiner
- 2006-12 Graduate research assistant, Harvard University, Cambridge MA
Advisor: Gerald Gabrielse
- 2005-6 Undergraduate research assistant, MIT, Cambridge MA
Advisor: Isaac Chuang
- 2004-5 Undergraduate research assistant, MIT, Cambridge MA
Advisor: Erik Katsavounidis

GRANTS AND AWARDS

- 2018 Indiana University Emerging Areas of Research
"Center for Quantum Science and Engineering"
Co-PI; Award total: \$3,000,000, May 1, 2018-April 30, 2022
- 2016 Indiana University Trustees Teaching Award
- 2016 Indiana University Physics Dept. Outstanding Undergraduate Teaching Award
- 2016 Air Force Office of Scientific Research, Young Investigator Program
"Programmable 2D Arrays of Interacting Quantum Spins Using Trapped Ions"
Award total: \$360,000, Jun. 15, 2016-Jun. 14, 2019
- 2012 Presidential Management Fellow
- 2012 NRC Postdoctoral Fellowship (declined)
- 2009 Harvard Physics Dept. Certificate of Distinction in Teaching
- 2006-8 National Defense Science & Engineering Graduate Fellowship
- 2006 *Phi Beta Kappa*

- 2006 *Sigma Pi Sigma*
- 2006 MIT Philip Morse Memorial Award, awarded to a senior of high academic standing who plans to pursue graduate study in physics
- 2005 MIT Burchard Scholar, awarded for demonstrated excellence in the humanities, arts, or social sciences
- 2004-6 MIT Haebler Scholarship, awarded to an undergraduate of high academic standing
- 2004 Paul E. Gray Endowed Undergraduate Researcher

PUBLICATIONS AND PRESENTATIONS

REFEREED JOURNALS:

27. **Cryogenic Trapped-Ion System for Large Scale Quantum Simulation**
G. Pagano, P. W. Hess, H. B. Kaplan, W. L. Tan, P. Richerme, P. Becker, A. Kyprianidis, J. Zhang, E. Birckelbaw, M. R. Hernandez, Y. Wu, and C. Monroe
[Quantum Sci. Technol. 4, 014004 \(2018\).](#)
26. **Non-thermalization in trapped atomic ion spin chains**
P. W. Hess, P. Becker, H. Kaplan, A. Kyprianidis, A. C. Lee, B. Neyenhuis, G. Pagano, P. Richerme, C. Senko, J. Smith, W. L. Tan, J. Zhang, and C. Monroe
[Phil. Trans. R. Soc. A 375: 20170107 \(2017\).](#)
25. **Observation of Prethermalization in Long-Range Interacting Spin Chains**
B. Neyenhuis, J. Smith, A. C. Lee, J. Zhang, P. Richerme, P. W. Hess, Z.-X. Gong, A. V. Gorshkov, and C. Monroe
[Science Adv. 3, e1700672 \(2017\).](#)
24. **Long-range Heisenberg models in quasi-periodically driven crystals of trapped ions**
A. Bermudez, L. Tagliacozzo, G. Sierra, and P. Richerme
[Phys. Rev. B 95, 024431 \(2017\).](#)
23. **Viewpoint: How to Create a Time Crystal**
P. Richerme
[Physics 10, 5 \(2017\).](#)
22. **Engineering large Stark shifts for control of individual clock state qubits**
A. C. Lee, J. Smith, P. Richerme, B. Neyenhuis, P. W. Hess, J. Zhang, and C. Monroe
[Phys. Rev. A 94, 042308 \(2016\).](#)
21. **Two-dimensional ion crystals in radio-frequency traps for quantum simulation**
P. Richerme
[Phys. Rev. A 94, 032320 \(2016\).](#)
20. **Many-body localization in a quantum simulator with programmable random disorder**
J. Smith, A. Lee, P. Richerme, B. Neyenhuis, P.W. Hess, P. Hauke, M. Heyl, D. Huse, and C. Monroe.
[Nature Physics 12, 907 \(2016\).](#)

19. **String order via Floquet interactions in atomic systems**
T. E. Lee, Y. N. Joglekar, and P. Richerme
[Phys. Rev. A **94**, 023610 \(2016\).](#)
18. **Kaleidoscope of quantum phases in a long-range interacting spin-1 chain**
Z.-X. Gong, M. F. Maghrebi, A. Hu, M. Foss-Feig, P. Richerme, C. Monroe, and A. V. Gorshkov
[Phys. Rev. B **93**, 205115 \(2016\).](#)
17. **Large numbers of cold positronium atoms created in laser-selected Rydberg states using resonant charge exchange**
R. McConnell, G. Gabrielse, W. S. Kolthammer, P. Richerme, A. Müllers, J. Walz, D. Grzonka, M. Zielinski, D. Fitzakerley, M. C. George, E. A. Hessels, C. H. Storry, and M. Weel
[J. Phys. B: At. Mol. Opt. Phys. **49**, 064002 \(2016\).](#)
16. **Simulating the Haldane phase in trapped-ion spins using optical fields**
I Cohen, P. Richerme, Z.-X. Gong, C. Monroe, and A. Retzker
[Phys. Rev. A **92**, 012334 \(2015\).](#)
15. **Realization of a Quantum Integer-Spin Chain with Controllable Interactions**
C. Senko, P. Richerme, J. Smith, A. Lee, I. Cohen, A. Retzker, and C. Monroe.
[Phys. Rev. X **5**, 021026 \(2015\).](#)
14. **Non-local propagation of correlations in quantum systems with long-range interactions**
P. Richerme, Z.-X. Gong, A. Lee, C. Senko, J. Smith, M. Foss-Feig, S. Michalakis, A. V. Gorshkov, and C. Monroe.
[Nature **511**, 198 \(2014\).](#)
13. **Coherent Imaging Spectroscopy of a Quantum Many-Body Spin System**
C. Senko, J. Smith, P. Richerme, A. Lee, W. C. Campbell, and C. Monroe.
[Science **345**, 430 \(2014\).](#)
12. **Quantum Catalysis of Magnetic Phase Transitions in a Quantum Simulator**
P. Richerme, C. Senko, S. Korenblit, J. Smith, A. Lee, R. Islam, W. C. Campbell, and C. Monroe.
[Phys. Rev. Lett. **111**, 100506 \(2013\).](#)
11. **Experimental Performance of a Quantum Simulator: Optimizing Adiabatic Evolution and Identifying Many-Body Ground States**
P. Richerme, C. Senko, J. Smith, A. Lee, and C. Monroe.
[Phys. Rev. A **88**, 012334 \(2013\).](#)
10. **Using electric fields to prevent mirror-trapped antiprotons in antihydrogen studies**
P. Richerme, G. Gabrielse, S. Ettenauer, R. Kalra, E. Tardiff, D.W. Fitzakerley, M.C. George, E.A. Hessels, C.H. Storry, M. Weel, A. Müllers, and J. Walz.
[Phys. Rev. A **87**, 023422 \(2013\).](#)

9. **Trapped Antihydrogen in Its Ground State**
G. Gabrielse, R. Kalra, W.S. Kolthammer, R. McConnell, P. Richerme, D. Grzonka, W. Oelert, T. Seifick, M. Zielinski, D.W. Fitzakerley, M.C. George, E.A. Hessels, C.H. Storry, M. Weel, A. Müllers, and J. Walz.
[Phys. Rev. Lett. **108**, 113002 \(2012\).](#)
8. **A semiconductor laser system for production of antihydrogen**
A. Müllers, S. Böttner, D. Kolbe, T. Diehl, A. Koglbauer, M. Sattler, M. Stappel, R. Steinborn, J. Walz, G. Gabrielse, R. Kalra, W.S. Kolthammer, R. McConnell, P. Richerme, D.W. Fitzakerley, M.C. George, E.A. Hessels, C.H. Storry, M. Weel, D. Grzonka, and W. Oelert.
[New J. Phys. **14**, 055009 \(2012\).](#)
7. **Efficient transfer of positrons from a buffer-gas-cooled accumulator into an orthogonally-oriented superconducting magnet for antihydrogen studies**
D. Comeau, A. Dror, D.W. Fitzakerley, M.C. George, E.A. Hessels, C.H. Storry, M. Weel, D. Grzonka, W. Oelert, G. Gabrielse, R. Kalra, W.S. Kolthammer, R. McConnell, P. Richerme, A. Müllers, and J. Walz.
[New J. Phys. **14**, 045006 \(2012\).](#)
6. **Adiabatic Cooling of Antiprotons**
G. Gabrielse, W.S. Kolthammer, R. McConnell, P. Richerme, R. Kalra, E. Novitski, D. Grzonka, W. Oelert, T. Seifick, M. Zielinski, D. Fitzakerley, M.C. George, E.A. Hessels, C.H. Storry, M. Weel, A. Müllers, and J. Walz.
[Phys. Rev. Lett. **106**, 073002 \(2011\).](#)
5. **Pumped helium system for cooling positron and electron traps to 1.2 K**
J. Wrubel, G. Gabrielse, W.S. Kolthammer, P. Laroche, R. McConnell, P. Richerme, D. Grzonka, W. Oelert, T. Seifick, M. Zielinski, J.S. Borbely, M.C. George, E.A. Hessels, C.H. Storry, M. Weel, A. Müllers, J. Walz, and A. Speck.
[Nuc. Inst. and Meth. A, **640**, 232 \(2011\).](#)
4. **Centrifugal Separation of Antiprotons and Electrons**
G. Gabrielse, W.S. Kolthammer, R. McConnell, P. Richerme, J. Wrubel, R. Kalra, E. Novitski, D. Grzonka, W. Oelert, T. Seifick, M. Zielinski, D. Fitzakerley, M.C. George, E.A. Hessels, C.H. Storry, M. Weel, A. Müllers, J. Walz, and A. Speck.
[Phys. Rev. Lett. **105**, 213002 \(2010\).](#)
3. **Antihydrogen Production Within a Penning-Ioffe Trap**
G. Gabrielse, P. Laroche, D. Le Sage, B. Levitt, W.S. Kolthammer, R. McConnell, P. Richerme, J. Wrubel, A. Speck, M.C. George, D. Grzonka, W. Oelert, T. Seifick, Z. Zhang, A. Carew, D. Comeau, E.A. Hessels, C.H. Storry, M. Weel, and J. Walz.
[Phys. Rev. Lett. **100**, 113001 \(2008\).](#)
2. **Loading and Characterization of a Printed Circuit Board Atomic Ion Trap**
K. R. Brown, R. J. Clark, J. Labaziewicz, P. Richerme, D. R. Leibbrandt, and I. L. Chuang.
[Phys. Rev. A. **75**, 015401 \(2007\).](#)

1. **A Compact, Filtered Diode Laser System for Precision Spectroscopy**
J. Labaziewicz, P. Richerme, K. R. Brown, I. L. Chuang, and K. Hayasaka.
[Optics Lett. 32, 572 \(2007\).](#)

INVITED TALKS:

- 12/2018 Naval Weapons Support Center Crane, Crane, IN
"Making Heads and Tails of Quantum Information"
- 06/2018 Air Force Office of Scientific Research Program Review, Arlington, VA.
"Programmable 2D Arrays of Interacting Quantum Spins Using Trapped Ions"
- 03/2018 UCLA Atomic Physics Seminar, Los Angeles, CA
"Quantum Simulation of Interacting Spin Systems Using Trapped Ions"
- 08/2017 North American Conference on Trapped Ions, NIST, Boulder, CO
"Quantum Simulation of 2D Spin Systems Using Trapped Ions"
- 04/2017 Quantum Information and Measurement IV, Paris, France
"Interacting Many-Body Spin Systems that Fail to Quantum Thermalize"
- 03/2017 APS March Meeting, New Orleans, LA
"Interacting Many-Body Spin Systems that Fail to Quantum Thermalize"
- 10/2016 APS Frontiers in Optics and Laser Science Conference, Rochester, NY
"2D ion crystals in radiofrequency traps for quantum simulation"
- 09/2016 Purdue University AMO Physics Seminar, West Lafayette, IN
"Quantum Simulation of Many-Body Spin Systems with Trapped Atomic Ions"
- 06/2016 Air Force Office of Scientific Research Program Review, Arlington, VA.
"Programmable 2D Arrays of Interacting Quantum Spins Using Trapped Ions"
- 03/2016 Indiana State University Department Colloquium, Terre Haute, IN
"Quantum Simulation of Many-Body Spin Systems with Trapped Atomic Ions"
- 01/2016 Indiana University-Purdue University Department Colloquium, Indianapolis, IN
"Quantum Simulation of Many-Body Spin Systems with Trapped Atomic Ions"
- 11/2015 Condensed Matter Seminar, Indiana University, Bloomington, IN
"Many-Body Localization in a trapped-ion quantum simulator"
- 06/2015 Workshop on Quantum Systems and Technology, Monte Verita, Switzerland
"Simulating Quantum Many-Body Dynamics with Trapped Atomic Ions"
- 03/2015 Workshop on Quantum Information in Ion Traps, Tel Aviv, Israel
"Simulating Quantum Magnetism Beyond the Ising Model"
- 11/2014 Indiana University Physics Department Colloquium, Bloomington, IN
"Simulating Quantum Many-Body Dynamics with Trapped Atomic Ions"

- 11/2014 Atomic Physics Seminar, Lockheed Martin, Littleton, CO
"Simulating Quantum Many-Body Dynamics with Trapped Atomic Ions"
- 10/2014 Quantum Sciences Seminar, Honeywell ACS, Golden Valley, MN
"Simulating Many-Body Quantum Dynamics with Trapped Ions"
- 10/2014 Quantum Innovators Workshop, Inst. for Quantum Computing, Waterloo, Canada
"Simulating quantum many-body states with trapped atomic ions"
- 09/2014 Army Research Laboratory Quantum Science Seminar, Adelphi, MD
"Studying zero-temperature quantum phenomena with laser-cooled atomic ions"
- 08/2014 International Conference on Atomic Physics (ICAP 2014), Washington, D.C.
"Simulating Quantum Many-Body Dynamics with Trapped Atomic Ions"
- 04/2014 Georgetown University Condensed Matter Seminar, Washington, D.C.
"Quantum Simulation of Many-Body Spin Systems: Ground States to Dynamics"
- 03/2014 Georgia Tech Research Institute Quantum Information Seminar, Atlanta, GA.
"Quantum Simulation of Many-Body Spin Systems with Trapped Atomic Ions"
- 03/2014 Quantum Entanglement Detection and Quantification Conference, Bilbao, Spain.
"Simulating Excited-State Many-Body Dynamics with Trapped Ions."
- 01/2014 University of Illinois Urbana-Champaign QI/AMO Seminar, Urbana, IL
"Quantum Simulation of Many-Body Spin Systems with Trapped Atomic Ions"
- 01/2014 Indiana University-Purdue University Department Colloquium, Indianapolis, IN
"Quantum Simulation of Many-Body Spin Systems with Trapped Atomic Ions"
- 12/2013 iQSim Workshop on Quantum Simulations with Trapped Ions, Brighton, UK.
"Quantum Simulators: From Ground to Excited States."
- 09/2013 ITAMP Workshop on Quantum Applications with Trapped Ions, Cambridge MA.
"Quantum Simulations of Spin Models with Trapped Ions."
- 05/2013 DARPA Optical Lattice Emulator Conference, San Francisco CA.
"Ising spin networks with long range interaction in linear and 2D arrays of ions."
- 04/2013 Joint Quantum Institute Seminar, College Park MD.
"Quantum Simulation of a Many-Body Spin System Using Many Trapped Ions."
- 03/2013 Adiabatic Quantum Computing Workshop 2013, London, UK.
"Adiabatic Quantum Simulation of Frustrated Spin Models with Trapped Ions."
- 06/2012 DAMOP 2012 Hot Topics Session, Anaheim, CA.
"Antimatter Advances Include Trapped Antihydrogen in Its Ground State."
- 01/2012 NIST Seminar, Gaithersburg, MD.
"Trapped Antihydrogen in Its Ground State."

01/2012 Joint Quantum Institute Special Seminar, College Park, MD.
"Trapped Antihydrogen in Its Ground State."

CONTRIBUTED TALKS:

- 05/2016 DAMOP 2016, Providence, RI
"Quantum Simulation with 2D Arrays of Trapped Ions"
- 06/2015 DAMOP 2015, Columbus, OH
"Realization of Quantum Integer Spin Chains with Controllable Interactions"
- 06/2013 DAMOP 2013, Quebec City, Canada.
"Optimizing Adiabaticity in a Trapped-Ion Quantum Simulator."
- 02/2013 Southwest Quantum Information & Technology (SQuInT) 2013, Santa Barbara, CA.
"Quantum Simulation of Frustrated Spin Models with Trapped Ions."
- 06/2012 DAMOP 2012, Anaheim, CA.
"Trapped Antihydrogen in Its Ground State."
- 04/2009 Harvard Center for Ultracold Atoms Student Talks, Cambridge, MA.
"An Improved Apparatus for Antihydrogen Trapping."
- 05/2006 Ion Trappers at MIT Meeting, Cambridge, MA.
"Science at 674nm: Probing the $5^2S_{1/2} \rightarrow 4^2D_{5/2}$ Transition in $^{88}\text{Sr}^+$."
- 07/2004 LIGO Scientific Collaboration Meeting, Medford, MA.
"Veto Candidates and Anomalous Triggers in the S3 Playground"

POSTERS AND CONFERENCE PROCEEDINGS:

- 04/2017 "Interacting Many-Body Spin Systems That Fail to Quantum Thermalize."
P. Richerme, P. W. Hess, A. Lee, B. Neyenhuis, J. Smith, J. Zhang, and C. Monroe.
Quantum Information and Measurement (QIM) 2017, OSA Technical Digest, paper QT4.A1 (2017).
- 08/2016 Gordon Research Conference on Quantum Science, Easton MA
"Quantum Simulation with 2D Arrays of Trapped Ions"
- 10/2014 "Quantum Simulation of Spin Models with Trapped Ions."
C. Monroe, W.C. Campbell, E.E. Edwards, R. Islam, D. Kafri, S. Korenblit, A. Lee,
P. Richerme, C. Senko, and J. Smith. *Proc. Int. School Phys. 'Enrico Fermi'*, Course
189, Varenna, Italy, 2013. Edited by M. Knoop, I. Marzoli, and G. Morigi (2014).
- 09/2014 European Conference on Trapped Ions, Mainz, Germany
"Simulating quantum many-body dynamics with trapped atomic ions."
- 07/2014 Gordon Research Conference on Quantum Science, Easton MA
"Quantum Simulators: From Ground to Excited States."

- 02/2014 DARPA Optical Lattice Emulator Conference, Arlington, VA.
"Quantum Simulators: From Ground to Excited States."
- 12/2013 iQSim Workshop on Quantum Simulations with Trapped Ions, Brighton, UK.
"Quantum Simulators: From Ground to Excited States."
- 09/2013 ITAMP Workshop on Quantum Applications with Trapped Ions, Cambridge MA.
"Simulating Quantum Magnetism Using Trapped Ions."
- 06/2013 "Quantum Networks with Atoms and Photons"
C. Monroe, W. Campbell, C. Cao, T. Choi, S. Clark, S. Debnath, C. Figgatt, D. Hayes, D. Hucul, V. Inlek, R. Islam, S. Korenblit, K. Johnson, A. Manning, J. Mizrahi, B. Neyenhuis, A. Lee, P. Richerme, C. Senko, J. Smith, and K. Wright. *J. Phys.: Conf. Ser.* **467**, 012008 (2013).
- 06/2013 Gordon Research Conference on Atomic Physics, Newport RI. "Simulating Quantum Magnetism Using Trapped Ions."
- 11/2012 DARPA Optical Lattice Emulator Conference, Miami FL. "Frustrated Antiferromagnetism in a Trapped Ion Quantum Simulator with Tunable Long-Range Interactions."
- 08/2008 "Cryogenic Particle Accumulation In ATRAP And The First Antihydrogen Production Within A Magnetic Gradient Trap For Neutral Antimatter"
C.H. Storry, A. Carew, D. Comeau, E.A. Hessels, M. Weel, M.C. George, D. Grzonka, W.Oelert, T. Seifzick, Z. Zhang, G. Gabrielse, P. Laroche, D. LeSage, B. Levitt, W.S. Kolthammer, R. McConnell, P. Richerme, J. Wrubel, A. Speck, F. Markert, F. Nilus, M. Scheid, and J. Walz. *Proc. of the Workshop on Cold Antimatter Plasmas and Application to Fundamental Physics.* **1037**, 254 (2008).
- 07/2008 International Conference on Atomic Physics (ICAP) 2008, Storrs, CT. "First Antihydrogen Production Within a Penning-Ioffe Trap."
- 04/2008 Cambridge-Connecticut AMO Open House, Cambridge, MA. "A Combined Penning-Ioffe Trap for Antihydrogen."

TEACHING AND ADVISING

- 2018 Indiana University P222: Physics II (Spring)
Indiana University P221: Physics I (Fall)
- 2017 Indiana University P332: Theory of Electricity and Magnetism II (Spring)
Indiana University X498: Undergrad. Readings in Quantum Information (Spring)
Indiana University P221: Physics I (Fall)
- 2016- Advisor to 4 graduate students: Marissa D'Onofrio, Michelle Lollie, AJ Rasmusson, Yuanheng Xie
- 2015- Lab supervisor to 15 undergraduate students: Sam Dunipace, Sahand Emamian, Anton Frommelt, Ryan Hastings, Andrew Henderson, Ciaran Hill, Eleni Hughes, Justin Kittell, Paula Madetzke, Luke Meeker, Noah Schlossberger, Grant Schumacher, Rusil Wickramasekera, Evangeline Wolanski, Mofan Zhang

- 2016 Indiana University P332: Theory of Electricity and Magnetism II (Spring)
Indiana University P331: Theory of Electricity and Magnetism I (Fall)
Indiana University P803: Readings in Experimental Quantum Information (Fall)
- 2015 Indiana University P331: Theory of Electricity and Magnetism I (Fall)
- 2014 Joint Quantum Institute Summer School Speaker
- 2014 Guest lecturer for Quantum Mechanics I, University of Maryland
- 2012-15 Directly supervised six graduate students. All were involved in the experimental effort to perform quantum simulations of many-body physics using trapped ions.
- 2008-11 Directly supervised four undergraduate students. Projects included cryogenic apparatus design and assembly, high current circuitry, experimental control software, and finite-element analysis of electromagnetic fields in a Penning trap
- 2008-9 Teaching fellow for Harvard undergraduate course Modern Optics and Quantum Electronics.
- Taught recitation sections
 - Held office hours and review sessions
 - Developed and graded problem sets and exams.
- Received 5.0/5.0 on student course evaluations and was awarded a Certificate of Distinction in Teaching
- 2004-5 Tutor for MIT undergraduate physics courses in Vibrations and Waves, Relativity, and Quantum Mechanics I
- 2003-6 Grader for MIT undergraduate physics courses in Electricity and Magnetism I, Vibrations and Waves, Relativity, Quantum Mechanics I, II, & III
- 2003 Physics teacher with the MIT Teaching Opportunities in Physical Science (TOPS) program
- Designed the curriculum for two week long physics courses on vibrations and waves
 - Designed and constructed lecture demonstrations
 - Instructed middle- and high-school students at the Thayer Academy (Braintree, MA) and the Boston Museum of Science

SERVICE TO INSTITUTIONS

INDIANA UNIVERSITY PHYSICS DEPARTMENT:

- 2018 Co-chair of faculty search committee for AMO/Quantum Information Experimentalist
- 2018 Hosted CMP/LENS seminar speakers: Chen-Lung Hung (Purdue University), Jeff Ou (IUPUI)
- 2018 Hosted Department Colloquium speaker: Cheng Chin (Univ. of Chicago)
- 2018 Dissertation committee member: Abu Ashik Md Irfan, JB Holmes
- 2018 REU Seminar speaker: "Quantum Simulation with Trapped Atomic Ions"
- 2018 Current research in Physics (P408/508) speaker: "Quantum Simulation with Trapped Atomic Ions"
- 2017 Undergraduate Thesis Supervised: Noah Schlossberger, "An Experimental Configuration to Probe for Lorentz Symmetry Violation in Electrons Using Trapped Yb+ Ions"
- 2017 Grad Day speaker and tour guide
- 2017 Hosted Department Colloquium speaker: Chris Monroe (Univ. of Maryland)

- 2017 Hosted CMP/LENS seminar speakers: Paul Hess (Univ. of Maryland), Le Luo (IUPUI)
- 2017 Current research in Physics (P408/508) speaker: "Quantum Simulation with Trapped Atomic Ions"
- 2017 REU Seminar speaker: "Quantum Simulation with Trapped Atomic Ions"
- 2017 Guest speaker to IU Bridge Program students: "Perspectives on Funding"

- 2016 Hosted Department Colloquium speaker: David Huse (Princeton Univ.)
- 2016 Hosted CMP/LENS seminar speakers: Smitha Vishveshwara (UIUC), Taylor Hughes (UIUC), Kater Murch (Washington Univ. in St. Louis).
- 2016 IU Undergraduate Physics Club speaker: "Physics of Music"
- 2016 Current research in Physics (P408/508) speaker: "Quantum Simulation with Trapped Atomic Ions"
- 2016 REU Seminar speaker: "Quantum Simulation with Trapped Atomic Ions"

- 2015 IU Undergraduate Physics Club speaker: "Quantum Simulation with Trapped Atomic Ions"

- 2018- Graduate Curriculum and Exams Committee
- 2017-18 Student/Staff/Faculty Relations Committee
- 2016-17 Outreach Committee
- 2015-17 Graduate Curriculum and Exams Committee
- 2015- Emergency Control Committee
- 2015- Undergraduate Curriculum Committee

INDIANA UNIVERSITY:

- 2018 Wrote 41 letters of recommendation for 14 different students
- 2017 Wrote 65 letters of recommendation for 10 different students
- 2016 Wrote 92 letters of recommendation for 17 different students
- 2016 Event-day coordinator and volunteer at Indiana Science Fest
- 2016 New Faculty Orientation Speaker: "Setting Up Your Lab," hosted by the office of the VPFAA and the OVPR
- 2015 Volunteer at Indiana Science Fest

UNIVERSITY OF MARYLAND:

- 2014 Joint Quantum Institute Tour Coordinator for ICAP 2014
- 2013 Session Judge: Graduate Research Interaction Day

CERN:

- 2011 Invited blogger for "Quantum Diaries," a site dedicated to sharing the work and thoughts of physicists at CERN and around the world
- 2010-12 Official CERN tour guide for the Antiproton Decelerator

SERVICE TO PROFESSION

REVIEWING:

- 2018- Proposal reviewer for the Dept. of Energy Quantum Information Science Program
- 2017- Proposal reviewer for the Air Force Office of Scientific Research and the Air Force Research Laboratory
- 2015- Proposal reviewer for National Science Foundation and the Swiss National Science Foundation
- 2013- Referee for Science, Nature, Nature Physics, Nature Communications, Physical Review Letters, Physical Review X, Physical Review A, Physical Review D, New

Journal of Physics, Physics Today, Quantum Information Processing, Europhysics Letters

ORGANIZING:

- 2017-18 Program Committee for APS March Meeting, Division of Quantum Information
- 2017 Session Chair: "Ions," OSA Quantum Information and Measurement Meeting, Paris, France
- 2017 Session Chair: "Advances in Analog Quantum Simulation," APS March Meeting, New Orleans, LA
- 2016 Session Organizer: "Advances in Quantum Simulation," APS March Meeting 2017, New Orleans, LA
- 2016 Session Chair: Advances and Recent Experiments with Different Realizations of Quantum Bits, APS DAMOP Conference, Providence, RI
- 2013 Session Chair: Quantum Information Processing with Ions, APS DAMOP Conference, Quebec City, Canada
- 2013-5 Abstract sorter for APS DAMOP and March Meeting conferences
- 2012 Session Chair: Particle Spectroscopy, APS DAMOP Conference, Anaheim CA

ADVISORY:

- 2014 Invited scientific panelist for the Charleston Conference on Library Science, Charleston, SC
- 2014 Visiting Committee for the APS journal Phys. Rev. X, Stony Brook, NY