Matt Grau

(757) 683-5827
mgrau@odu.edu
www.graulab.org
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0000-0002-2684-6923
lnh9kdIAAAAJ
mgrau

2100K Physical Science Building
Physics Department
Old Dominion University
Norfolk, VA 23529

Education

2016 ◇ **Ph.D. Physics** University of Colorado Boulder, Boulder CO
Thesis: *Measuring the electron electric dipole moment with trapped molecular ions*

2012 ◇ **M.S. Physics** University of Colorado Boulder, Boulder CO

2009 ◇ **B.S. Physics** California Institute of Technology, Pasadena CA

Appointments

2021 – ◇ **Assistant Professor** Old Dominion University, Norfolk, VA

2020 – 2021 ◇ **Senior Scientist (Oberassistent)** ETH Zürich, Zürich, Switzerland

2016 – 2019 ◇ **Postdoctoral Research Assistant** ETH Zürich, Zürich, Switzerland

2009 – 2015 ◇ **Graduate Research Assistant** JILA, Boulder, CO

Teaching

Old Dominion University

Fall 2023 – 2025 ◇ PHYS 137T: Introduction to Quantum Science and Technology

Spring 2022 – 2025 ◇ PHYS 456: Intermediate Quantum Mechanics

Fall 2022, Spring 2023 ◇ PHYS 297: Introduction to Undergraduate Research
(co-Instructors: Charles Hyde, Yuan Zhang)

Fall 2022 ◇ PHYS 411: Introduction to Atomic Physics

ETH Zürich

Spring 2021 ◇ Physics III: Introduction to optical, statistical, and quantum physics (Head TA)

Spring 2020 ◇ Cavity QED and Ion Trap Physics (Co-Instructor: Daniel Kienzler)

Awards and Honors

2025 ◇ Old Dominion University SCHEV Outstanding Faculty Award "Rising Star" Nominee

2024 ◇ Tenure Track Faculty Distinguished Teaching Award, Old Dominion University College of Sciences

◇ Certificate of Excellence in Undergraduate Research, The Perry Honors College

◇ High Impact Faculty Certificate of Commendation, Old Dominion University Academic Success Center

Publications

(1428 citations, h-index 12)

Submitted Manuscripts

1. G. Blume, C. Kirk, S. Poudel, A. Hill, J. Hill, J. M. Grames, M. L. Stutzman, S. Marsillac, and **M. Grau**. "Advancements in Spin-polarized Photocathodes Fabricated by MOCVD". *The European Physical Journal Plus* (2026). submitted.

Peer Reviewed Articles

21. A. Masters, G. Blume, S. Poudel, J. M. Grames, M. Poelker, M. L. Stutzman, S. Polly, S. M. Hubbard, S. Marsillac, and **M. Grau**. "Impact of superlattice size on quantum efficiency and polarization in MOCVD-grown strained GaAs/GaAsP photocathodes". *Appl. Phys. Lett.* (2026). in press.

20. T. Rainaldi, V. Ale, **M. Grau**, D. Kharzeev, E. Rico, F. Ringer, P. Shome, and G. Siopsis. "Trigonometric continuous-variable gates and hybrid quantum simulations". *Journal of High Energy Physics* (2026). in press.

19. A. Kachwala, G. Blume, S. Marsillac, J. Grames, and **M. Grau**. "Modeling strain and quantum confinement in GaAs/$Ga_xIn_{1-x}P$ superlattices for spin-polarized electron sources". *J. Appl. Phys.* **138**, 234902 (2025), 234902. DOI: 10.1063/5.0300193.

18. J. Y. Araz, **M. Grau**, J. Montgomery, and F. Ringer. "Hybrid quantum simulations with qubits and qumodes on trapped-ion platforms". *Phys. Rev. A* **112**, 012620 (2025), 012620. DOI: 10.1103/kbv4-jj51.

17. J. Y. Araz, S. Bhowmick, **M. Grau**, T. J. McEntire, and F. Ringer. "State preparation of lattice field theories using quantum optimal control". *Phys. Rev. D* **111**, 034506 (2025), 034506. DOI: 10.1103/PhysRevD.111.034506.

16. Y. Zhou, J. O. Island, and **M. Grau**. "Quantum logic control and precision measurements of molecular ions in a ring trap: An approach for testing fundamental symmetries". *Phys. Rev. A* **109**, 033107 (2024), 033107. DOI: 10.1103/PhysRevA.109.033107.

15. B. Belfore, A. Masters, D. Poudel, G. Blume, S. Polly, E. Wang, S. M. Hubbard, M. Stutzman, J. M. Grames, M. Poelker, **M. Grau**, and S. Marsillac. "High figure of merit spin polarized electron sources grown via MOCVD". *Appl. Phys. Lett.* **123**, 222102 (2023), 222102. ISSN: 0003-6951. DOI: 10.1063/5.0170106.

14. I. Kurchavov, D. Maison, L. Skripnikov, **M. Grau**, and A. Petrov. "Nuclear magnetic quadrupole moment of ^{175}Lu and parity-violating polarization degree of levels in $^{175}LuOH^+$". *Phys. Rev. A* **108**, 052815 (2023), 052815. DOI: 10.1103/PhysRevA.108.052815.

13. O. Wipfli, H. F. Passagem, C. Fischer, **M. Grau**, and J. P. Home. "Integration of a high finesse cryogenic build-up cavity with an ion trap". *Rev. Sci. Instrum.* **94**, 083204 (2023), 083204. ISSN: 0034-6748. DOI: 10.1063/5.0155418.

12. D. E. Maison, L. V. Skripnikov, G. Penyazkov, **M. Grau**, and A. N. Petrov. "$\mathcal{T}$, $\mathcal{P}$-odd effects in the $LuOH^+$ cation". *Phys. Rev. A* **106**, 062827 (2022), 062827. DOI: 10.1103/PhysRevA.106.062827.

11. T. S. Roussy, D. A. Palken, W. B. Cairncross, B. M. Brubaker, D. N. Gresh, **M. Grau**, K. C. Cossel, K. B. Ng, Y. Shagam, Y. Zhou, V. V. Flambaum, K. W. Lehnert, J. Ye, and E. A. Cornell. "Experimental Constraint on Axionlike Particles over Seven Orders of Magnitude in Mass". *Phys. Rev. Lett.* **126**, 171301 (2021), 171301. DOI: 10.1103/PhysRevLett.126.171301.

10. B. J. Ward, N. Andriessen, J. M. Tembo, J. Kabika, **M. Grau**, A. Scheidegger, E. Morgenroth, and L. Strande. "Predictive models using "cheap and easy" field measurements: Can they fill a gap in planning, monitoring, and implementing fecal sludge management solutions?" *Water Res.* **196**, 116997 (2021), 116997. ISSN: 0043-1354. DOI: 10.1016/j.watres.2021.116997.

9. F. Reiter, F. Lange, S. Jain, **M. Grau**, J. P. Home, and Z. Lenarcic. "Engineering generalized Gibbs ensembles with trapped ions". *Phys. Rev. Res.* **3**, 033142 (2021), 033142. DOI: 10.1103/PhysRevResearch.3.033142.

8. D. E. Maison, L. V. Skripnikov, V. V. Flambaum, and **M. Grau**. "Search for CP-violating nuclear magnetic quadrupole moment using the $LuOH^+$ cation". *J. Chem. Phys.* **153**, 224302 (2020), 224302. DOI: 10.1063/5.0028983.

7. S. Jain, J. Alonso, **M. Grau**, and J. P. Home. "Scalable Arrays of Micro-Penning Traps for Quantum Computing and Simulation". *Phys. Rev. X* **10**, 031027 (2020), 031027. DOI: 10.1103/PhysRevX.10.031027.

6. W. B. Cairncross, D. N. Gresh, **M. Grau**, K. C. Cossel, T. S. Roussy, Y. Ni, Y. Zhou, J. Ye, and E. A. Cornell. "Precision Measurement of the Electron's Electric Dipole Moment Using Trapped Molecular Ions". *Phys. Rev. Lett.* **119**, 153001 (2017), 153001. DOI: 10.1103/PhysRevLett.119.153001.

5. K.-K. Ni, H. Loh, **M. Grau**, K. C. Cossel, J. Ye, and E. A. Cornell. "State-specific detection of trapped HfF^+ by photodissociation". *J. Mol. Spectrosc.* **300**, 12–15 (2014). Spectroscopic Tests of Fundamental Physics, 12–15. ISSN: 0022-2852. DOI: 10.1016/j.jms.2014.02.001.

4. M. H. Matheny, **M. Grau**, L. G. Villanueva, R. B. Karabalin, M. C. Cross, and M. L. Roukes. "Phase Synchronization of Two Anharmonic Nanomechanical Oscillators". *Phys. Rev. Lett.* **112**, 014101 (2014), 014101. DOI: 10.1103/PhysRevLett.112.014101.

3. H. Loh, K. C. Cossel, M. C. Grau, K.-K. Ni, E. R. Meyer, J. L. Bohn, J. Ye, and E. A. Cornell. "Precision Spectroscopy of Polarized Molecules in an Ion Trap". *Science* **342**, 1220–1222 (2013), 1220–1222. DOI: 10.1126/science.1243683.

2. **M. Grau**, A. Leanhardt, H. Loh, L. Sinclair, R. Stutz, T. Yahn, and E. Cornell. "Near-infrared LIF spectroscopy of HfF". *J. Mol. Spectrosc.* **272**, 32–35 (2012), 32–35. ISSN: 0022-2852. DOI: 10.1016/j.jms.2011.12.006.

1. H. Loh, J. Wang, **M. Grau**, T. S. Yahn, R. W. Field, C. H. Greene, and E. A. Cornell. "Laser-induced fluorescence studies of HfF^+ produced by autoionization". *J. Chem. Phys.* **135**, 154308 (2011), 154308. ISSN: 0021-9606. DOI: 10.1063/1.3652333.

Invited Conference Talks

3. A precision measurement of the electron's electric dipole moment using trapped molecular ions. Precision Physics, Quantum Electrodynamics, and Fundamental Interactions, IESC Cargese, France *May 2017*
2. Measuring the electron EDM with trapped molecular ions. ECTI 2016, Arosa, Switzerland *August 2016*
1. Testing T-symmetry using trapped molecular ions. 594. WE-Heraeus-Seminar, Bad Honnef, Germany *June 2015*

Invited Seminar Talks

11. Searching for Symmetry Violation with Molecular Ions and Quantum Logic. Physics Colloquium, Virginia Commonwealth University, Richmond, Virginia, USA *November 2024*
10. Searching for Symmetry Violation with Molecular Ions. Triangle Quantum Computing Seminar, Raleigh, North Carolina, USA *October 2024*
9. Searching for Symmetry Violation with Molecular Ions. CQRT Seminar, University of Oklahoma, Norman, Oklahoma, USA *November 2023*
8. Searching for Symmetry Violation with Molecular Ions. William & Mary, Williamsburg, Virginia, USA *October 2023*
7. Trapped ion quantum computing. Jefferson Lab Accelerator Seminar, Newport News, Virginia, USA *June 2022*
6. Searching for new physics with trapped molecular ions. Van Swinderen Institute, Groningen, Netherlands *March 2021*

Invited Seminar Talks (continued)

5. Searching for new physics with trapped molecular ions. Old Dominion University, Norfolk, Virginia, USA *March 2021*
4. Precision tests of fundamental symmetry violation using trapped molecular ions. Durham University, Durham, United Kingdom *April 2020*
3. Precision tests of fundamental symmetry violation using trapped molecular ions. Heinrich Heine University Düsseldorf, Dusseldorf, Germany *November 2019*
2. Trapping Ions in an optical lattice. JILA, Boulder, CO *March 2019*
1. Trapping Ions in an optical lattice. Caltech, Pasadena, CA *March 2019*

Contributed Conference Talks

2. Polarized Particles in Spin-Transparent Storage Ring as a Quantum Computer. DAMOP 2023, Spokane, Washington *June 2023*
1. Testing fundamental symmetries with lutetium based molecular ions. Facility for Rare Isotope Beams, East Lansing, Michigan *November 2022*

Students

Old Dominion University - Graduate (Current)

6. *Summer 2025* –. John Hill. *in collaboration with Dr. Sylvain Marsillac* (ECE)
5. *Summer 2023* –. Urban Kobal
4. *Fall 2022* –. Greg Blume. *in collaboration with Dr. Sylvain Marsillac*
3. *Fall 2022* –. Lucas Sturnfield. *in collaboration with Dr. Sylvain Marsillac* (D.Eng)
2. *Summer 2022* –. Will Jeffries. VSGC Graduate STEM Research Fellowship

Old Dominion University - Graduate (Former)

1. *Fall 2023*. Michaela Bochman. *in collaboration with Dr. Sylvain Marsillac* (ECE)

Old Dominion University - Undergraduate (Current)

23. *Spring 2026* –. Isaiah McCoy. Measuring the metastable $D_{5/2}$ state lifetime in Ba^{+} (Senior Thesis)
22. *Fall 2024* –. Austen Wendt. Fitting NV^{-} ODMR spectra
21. *Fall 2022* –. Joshua Wager. Creating PID control of laser wavelengths. Undergraduate Research and Creativity Fellowship, VSGC Undergraduate STEM Research Scholarship, ODU Outstanding Undergraduate Researcher Award Recipient

Old Dominion University - Undergraduate (Former)

20. *Fall 2023 – Fall 2025*. Kaitlyn Levine. Measuring AOM diffraction efficiency (Independent Undergraduate Research). *in collaboration with Dr. Charles Sukenik*
19. *Summer 2025*. James Wile. Simulating mid-circuit measurement comagnetometry
18. *Spring 2025 – Summer 2025*. Ambrose Orth. Creating a pulse sequencer using a low-cost microcontroller. Undergraduate Research and Creativity Fellowship
17. *Spring 2025 – Summer 2025*. Panagiotis Taoulas. Repumping hyperfine states of Lu^{+}. Undergraduate Research and Creativity Fellowship
16. *Summer 2024*. Annika Cote. Observing Electron Spins in Diamond Using NV^{-} Centers (Senior Thesis). *in collaboration with Dr. Yuan Zhang*

Students (continued)

15. *Summer 2024*. Jessica Blevins. Photoluminescence spectroscopy of NV centers in diamond. VSGC funded REU
14. *Summer 2024*. Michael Hildebrand. Computer code to generate microwave pulse sequences. VSGC funded REU
13. *Fall 2023 – Fall 2024*. Lawrence Umali. Generating 614 nm light to reset barium quits. Undergraduate Research and Creativity Fellowship
12. *Summer 2023 – Spring 2024*. Ryan ONeill. Calculating the rovibronic structure of I_2 (Senior Thesis)
11. *Summer 2023*. Jacob Chaney. Repump Laser For Lu^+ Cooling. Program for Undergraduate Research and Scholarship
10. *Spring 2023 – Spring 2024*. Melanie Johnson. Current control of barium atomic beam oven (Senior Thesis)
9. *Fall 2022 – Spring 2023*. Thomas Powell. Saturated absorption spectroscopy of I_2 molecules (Senior Thesis)
8. *Fall 2022 – Spring 2023*. David Routhier. Third harmonic generation of 351 nm laser light (Senior Thesis)
7. *Fall 2022 – Spring 2023*. DaRon Wilkins. Generating laser sidebands to address hyperfine splitting the $^3D_1$ state of Lu^+ (Senior Thesis)
6. *Summer 2022*. Alastair Deans. Calculating the rovibronic structure of I_2
5. *Summer 2022*. Wyatt Elliot. Designing and PCB connector interface between the experimental chamber and digital control system
4. *Summer 2022 – Spring 2023*. Evan Johnson. Stabilizing multiple lasers to a single high-finesse optical cavity (Senior Thesis). VSGC Undergraduate STEM Research Scholarship
3. *Spring 2022*. Urban Kobal. Simulating Ion-Trapping and the Stability of the Trap (Senior Thesis)
2. *Spring 2022 – Summer 2022*. Tyler Rose. Design and fabrication of a lab environmental monitoring system
1. *Spring 2022*. Anthony Shea. Design and fabrication of a linear Paul trap (Senior Thesis)

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19. *2016 – 2021*. Oliver Wipfli. Optical trapping of ion crystals in a high-finesse cavity (PhD Student). Defended April 2022
18. *2016 – 2021*. Christoph Fischer. Quantum non-demolition readout for optically trapped alkaline-earth Rydberg atoms (PhD Student). Defended January 2022
17. *Spring 2021*. Maria Radisch. Calculating the magic wavelength of Ca^+ (Bachelor Semester Thesis)
16. *Spring 2021*. Javier Naya Hernández. Localized modes in microtrap arrays (Masters Semester Thesis)
15. *Spring 2021*. Lukas Mouton. Optimizing the laser cooling of Ba^+ (Masters Semester Thesis)
14. *Autumn 2020*. Cédric Huber. Ligand Field Theory Calculation of $LuOH^+$ (Masters Semester Thesis)
13. *Autumn 2020*. Noah Berner. Printed Circuit Board Design for Direct Digital Synthesis (Masters Semester Thesis)
12. *Spring 2019*. Theo Dressler. Spectroscopy of high energy Rydberg states of Magnesium (Masters Semester Thesis)
11. *Summer 2018*. Christopher Böhm. Automating control of VECSEL laser system (Summer Internship)
10. *Summer 2018*. Adithyan Radhakrishnan. Lifetime Studies on Magnesium Rydberg Atom (Summer Internship)
9. *Spring 2018*. Theo Dressler. Temperature stabilization inside a Herzan Cabinet to secure laser-light alignment (Bachelor Semester Thesis)
8. *Spring 2018*. Nathan Torelli. Characterization of UV optical fibers (Bachelor Semester Thesis)
7. *Spring 2018*. Ludwig Hruza. Temperature measurement of ^{24}Mg atoms in a MOT using time of flight measurement (Bachelor Semester Thesis)
6. *Spring 2018*. Martin Woschank. Design of a compact 2D magneto-optical trap for loading ion traps (Master's Thesis)

Students (continued)

5. *Autumn 2017*. Hung Do Thi Xuan. Laser System for Optical Control of Magnesium Ions (Erasmus Master's Thesis)
4. *Autumn 2017*. Danny Kun. Implementation of a Python DDS communication protocol to drive AOMs (Bachelor Semester Thesis)
3. *Spring 2017*. Nicolo D'Anna. Programmable Analog Input Node (Masters Semester Thesis)
2. *Summer 2016*. Hung Do Thi Xuan. Laser frequency stabilization for optical trapping of Magnesium ions (Summer Internship)
1. *Summer 2016*. Akshay Sawhney. Laser cooling simulation of magnesium atoms (Summer Internship)

University of Colorado Boulder

2013 – 2016. Yiqi Ni. JILA eEDM experiment

Dissertation Committees

PhD Committees

italics indicates committee chair

9. *2026 –*. Sushil Poudel, PhD Electrical and Computer Engineering
8. *2025 –*. Kazuki Makino, PhD Physics
7. *2024 –*. Markus Zirnheld, PhD Physics
6. *2023 –*. Dylan English, PhD Physics
5. *2023 –*. Jake Montgomery, PhD Physics (Stony Brook University)
4. *2023 –*. *Urban Kobal*, PhD Physics
3. *2022 –*. *William Jeffries*, PhD Physics
2. *2022 –*. Greg Blume, PhD Physics
1. *2022 –*. Noah Swan, PhD Physics

Senior Thesis Committees

italics indicates committee chair

18. *2026*. *Isaiah McCoy*, Senior Thesis, Physics
17. *2026*. *Joshua Wager*, Senior Thesis, Physics
16. *2025*. Maria Rekkus, Senior Thesis, Physics
15. *2025*. Jessica Blevins, Senior Thesis, Physics
14. *2025*. Andrew Maciejunes, Senior Thesis, Physics
13. *2025*. Colin Matthews, Senior Thesis, Physics
12. *2024*. *Annika Cote*, Senior Thesis, Physics
11. *2024*. Theodore Skelton, Senior Thesis, Physics
10. *2024*. *Ryan O'Neill*, Senior Thesis, Physics
9. *2024*. Gabriel Barrios, Senior Thesis, Physics
8. *2024*. Ruben Galicia-Avila, Senior Thesis, Physics
7. *2023*. *Evan Johnson*, Senior Thesis, Physics
6. *2023*. *DaRon Wilkins*, Senior Thesis, Physics
5. *2023*. *David Routhier*, Senior Thesis, Physics

Dissertation Committees (continued)

4. *2023. Thomas Powell*, Senior Thesis, Physics
3. *2022.* Mark Reginato-Colon, Senior Thesis, Physics
2. *2022.* Urban Kobal, Senior Thesis, Physics
1. *2022.* Adam Lane, Senior Thesis, Physics

Grants Awarded

11.	2024 – 2026	*Hybrid Quantum Computation Using Qubits and Qumodes on QSCOUT* (Sandia National Laboratories). Role: PI.	QSCOUT user access
10.	2024 – 2025	*Fabrication of Spin Polarized Electron Sources with High Polarization and QE for DOE NP* (DOE). Role: Co-PI.	$472,000
9.	2024	*Summer Research Experience for Undergraduate Students: Exploring NV-Center Quantum Sensing* (VSGC Innovative Proposals). Role: PI.	$7,400
8.	2023	*Developing Capacity for Quantum Science with Trapped Ions* (ODU Program for Undergraduate Research and Scholarship). Role: PI.	$10,000
7.	2023	*High School Physics and Mathematics Teacher Professional Development of Integrated STEM through Arduinos at Old Dominion University* (VSGC Innovative Proposals). Role: PI.	$7,300
6.	2023	*Trapping lutetium ions for quantum computing* (VSGC New Investigator Program). Role: PI.	$10,000
5.	2022 – 2023	*Enhancing the Design of Photocathodes* (DOE). Role: Co-PI.	$359,000
4.	2023	*Polarized Bunched Electron Beam in Low-Energy Spin-Transparent Storage Ring as a Quantum Computer* (Jefferson Lab LDRD). Role: Co-PI.	$93,220
3.	2022	*Photocathodes with 90% Polarization for DOE Nuclear Physics* (DOE). Role: Co-PI.	$200,000
2.	2022	*Where is the antimatter? An investigation and mitigation of systematic errors in a novel search for new physics* (ODU Summer Research Fellowship Program). Role: PI.	$7,000
1.	2021	*Seeing atoms with the naked eye* (SNF Agora 199782). Role: Co-PI. *Awarded in former research group.* PI: Jonathan P. Home	199'978 CHF

Academic Service

Department

Spring 2026	◇ AMO Faculty Search Committee
2024 –	◇ Graduate Admissions Committee
2022 –	◇ Graduate Recruitment Committee
	◇ Graduate Preview Committee
	◇ Undergraduate Program Committee
Summer 2022	◇ Research Assistant Professor Search Committee
Spring 2022	◇ Submitted College of Sciences Undergraduate Research Program on behalf of the department

Academic Service (continued)

College

- Fall 2025 ◇ Lead Marshall, Undergraduate Degree Ceremony
- Spring 2025 ◇ Faculty Marshall, Undergraduate Degree Ceremony
- Fall 2023 ◇ Robing Marshall, Undergraduate Degree Ceremony
- Spring 2023 ◇ Floating Marshall, Undergraduate Degree Ceremony
- Spring 2022 ◇ Assistant Deputy Marshall, Advanced Degree Commencement Ceremony

University

- Spring 2025 – ◇ General Education Steering Committee
- Summer 2025 – ◇ General Education Student Learning Outcomes Working Group
- ◇ General Education First Year Seminar Working Group
- Fall 2024 ◇ General Education Reform Reading Group
- 2023 – ◇ Radiation Safety Committee
- Spring 2025 ◇ Radiation Safety Officer Search Committee
- Spring 2022 ◇ Lead Marshall, Advanced Degree Commencement Ceremony, Strome College of Business

Professional Service

- 2026 ◇ Proposal Review: Israel Science Foundation
- 2025 ◇ Peer Review: Journal of Quantitative Spectroscopy and Radiative Transfer
- ◇ IEEE Quantum Computing and Engineering QTEM Program Committee (QEC25)
- ◇ Proposal Review: DOE, NSF, Research Corporation
- 2024 ◇ Proposal Review: NSF
- ◇ Proposal Review: National Science Centre Poland (PRELUDIUM)
- 2023 ◇ Proposal Review: AFOSR
- ◇ Peer Review: Journal of Quantitative Spectroscopy and Radiative Transfer
- April 2025 ◇ ODU GSGA Conference Judge
- April 2022 ◇ Volunteer Judge, Virginia State Science and Engineering Fair
- 2021 ◇ Proposal Review: French National Research Agency
- 2019 ◇ Peer Review: Atoms, New Journal of Physics
- 2018 ◇ Peer Review: Atoms
- 2017 ◇ Peer Review: Optics Express, The European Physical Journal, Atoms
- 2016 ◇ Peer Review: Applied Physics B

Community Engagement

- April 2025 ◇ ODU Visiting Students Day Laboratory Tours
- March 2024 ◇ *Searching for missing antimatter with a single ion*, ODU College of Sciences Science Fridays Talk
- November 2023 ◇ *Searching for Symmetry Violation with Molecular Ions*, Society of Physics Students University at Buffalo Talk

Community Engagement (continued)

August 2023 ◇ *Searching for New Physics by Looking for Symmetry Violation*, Remote Experience for Young Engineers and Scientists (REYES) Talk

June 2023 ◇ High School STEM Teacher Professional Development Workshop Organizer

February 2022 ◇ *Precision measurement: Looking for new physics in all the small places*, ODU Society of Physics Students Speed-Researching Talk

April 2022 ◇ Virginia State Science and Engineering Fair Judge