

William Miyahira

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🌐 LinkedIn

📄 Scholar

🌐 Website

Summary

Experienced physicist with a passion for harnessing quantum mechanics for developing next-generation sensors and devices with real-world applications.

Education

- 2021 – present 📖 **Ph.D., William & Mary**
Advisor: Seth Aubin Research: Ultracold Atomic Physics
- 2019 – 2021 📖 **M.S. Physics, William & Mary**
- 2015 – 2019 📖 **B.S. Physics and Mathematics, University of Puget Sound**


Skills

- Research 📖 Experimental planning, hardware control, data analysis and visualization, scientific writing, ability to work independently and in a team
- Instrumentation 📖 Oscilloscopes, spectrum analyzers, vector network analyzers, electronics (analog, digital, RF), optics (lasers, optomechanics), RF sources, ARDUINO, 3D printing, Dektak Surface Profiler
- Programming 📖 Matlab, Python, C++, LaTeX, HTML
- Software 📖 FEKO, HFSS, SONNET, FUSION 360, INKSCAPE
- Languages 📖 English (native), French (elementary)





Employment History

- 2020 – 📖 **Graduate Research Assistant**, Physics Department, William & Mary.
- Maintain and improve apparatus for routinely producing ultracold atoms on a micro-magnetic atom chip trap
 - High-frequency electromagnetic design and simulation of atom chip structures, microstrip resonators, and coplanar waveguides using FEKO, SONNET, and HFSS
 - Design, construction, and testing of a multi-channel microwave source at 6.8 GHz based on IQ modulation with precision digital phase control and agile frequency sweeping (100 MHz scan range)
 - Experimental measurements of atom chip potential roughness suppression for a DC and AC Zeeman chip trap
 - Mentor and train undergraduates and new graduate students working in the lab
- 2018 📖 **Sherman Fairchild Research Scholar**, Physics Department, University of Puget Sound.
- Worked with Dr. David Latimer to theoretically investigate methods of polarizing Majorana fermions via their anapole moment.
 - Collaborated on a paper, “Dipoles in Quantum Field Theory”, which appeared in the American Journal of Physics





Employment History (continued)

- 2017  **Adam S. Goodman Research Scholar**, Physics Department, University of Puget Sound.
- Worked with Dr. Randy Worland to study the effects of commercial dampeners on the modal decay rates of a circular drum.
 - “Top Undergraduate Research Poster” – 2018 APS Northwest Division Conference

Grants and Awards

- 2022-24  “Microwave Atom Chip for Spin-Specific Atom Interferometry”, Virginia Space Grant Consortium Graduate Fellowship – \$6,000/year (\$12,000 total)
- 2018  Top Undergraduate Research Poster – 2018 APS Northwest Division Conference
-  University of Puget Sound Concerto Aria Competition Winner
- 2015  Eagle Scout – Boy Scouts of America (Troop 44, San Mateo, CA)

Professional Service

- 2024-present  William & Mary Physics Graduate Student Association President
- Organize events to develop and maintain a culture amongst the physics graduate students as well as address graduate student concerns within the department
- 2021-present  Optica (formally OSA) Student Chapter Vice President
- Organize quantum/AMO career seminars and journal clubs
 - Design and manage W&M Optica chapter website
- 2020-21  Optica (formally OSA) Student Chapter Treasurer
-  Physics Graduate Student Association Vice President

Select Publications

Journal Articles

- 1 A. P. Rotunno, **W. Miyahira**, S. Du, and S. Aubin, “Radio-frequency ac zeeman force for ultracold atoms,” *Submitted to Physical Review A*, 2024.
- 2 S. Du, A. Ziltz, **W. Miyahira**, and S. Aubin, “Suppression of potential roughness in atom-chip ac zeeman traps,” *Physical Review A*, vol. 105, no. 5, p. 053 127, 2022.
- 3 **W. Miyahira**, A. P. Rotunno, S. Du, and S. Aubin, “Microwave atom chip design,” *Atoms*, vol. 9, no. 3, p. 54, 2021.
- 4 **W. Miyahira** and D. C. Latimer, “Dipoles in quantum field theory,” *American Journal of Physics*, vol. 87, no. 2, pp. 146–152, 2019.

Conference Proceedings

- 1 **W. Miyahira** and S. Aubin, “Potential roughness suppression in a rf ac zeeman atom chip trap,” in *Quantum Sensing, Imaging, and Precision Metrology II*, SPIE, vol. 12912, 2024, pp. 247–251.
- 2 R. Worland and **W. Miyahira**, “Physics of musical drum head damping using externally applied products,” in *Proceedings of Meetings on Acoustics*, AIP Publishing, vol. 35, 2018.