




William Miyahira




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Education

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





Employment History

- 2020 –  **Research Assistant**, Physics Department, William & Mary.
Helping develop novel broadband microwave atom chip traps for ultracold atoms for use in precision atom interferometry measurements of inertial forces and fundamental interactions.
- Maintain and improve apparatus for routinely producing Bose-Einstein condensates (BEC) using 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 in optics, electronics, simulation, instrumentation, and experimental techniques
- 2019 – 2021  **Teaching Assistant**, Physics Department, William & Mary.
Taught undergraduate labs in electronics and introductory physics. Graded for an undergraduate course in mathematical physics.
- 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.
- Learned techniques in quantum field theory (QFT)
 - 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.
- Gained experience with electronic speckle pattern interferometry, spectrum analyzers, Microsoft Excel, Labview, and high-speed video
 - Awarded “Top Undergraduate Research Poster” at 2018 APS Northwest Division Conference
- 2017 – 2019  **Course Assistant**, Physics Department, University of Puget Sound.
Helped teach undergraduate labs and graded courses in introductory physics.

Skills




- | | |
|-----------------|---|
| Coding |  Matlab, Python, C++, LaTeX, HTML |
| Instrumentation |  Oscilloscopes, spectrum analyzers, vector network analyzers, electronics (analog, digital, RF), RF sources, ARDUINO, 3D printing, Dektak Surface Profiler |
| Software |  FEKO, HFSS, SONNET, FUSION 360, INKSCAPE |
| Languages |  English (native), French (elementary) |

Leadership and Awards

Awards and Achievements

- 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)

Leadership

- 2021-present  Optica (formally OSA) Student Chapter Vice President
- 2020-21  Optica (formally OSA) Student Chapter Treasurer
-  Physics Graduate Student Association Vice President

Research Publications

Journal Articles

- 1 **W. Miyahira**, A. P. Rotunno, T. Tingle, and S. Aubin, “Experimental demonstration of potential roughness suppression in a radio-frequency ac zeeman chip trap,” *In preparation*,
- 2 **W. Miyahira**, T. Tingle, and S. Aubin, “Tapered microstrip wedge for broadband atom chip experiments,” *In preparation*,
- 3 A. P. Rotunno, **W. Miyahira**, S. Du, and S. Aubin, “Radio-frequency ac zeeman force for ultracold atoms,” *Submitted to Physical Review A*, 2024.
- 4 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.

- 5 **W. Miyahira**, A. P. Rotunno, S. Du, and S. Aubin, “Microwave atom chip design,” *Atoms*, vol. 9, no. 3, p. 54, 2021.
- 6 **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 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.

References

Available on Request