

Curriculum Vitae for Ryohei (Rio) Weil

Personal Information

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Education

University of British Columbia (2022-current)

MSc Physics (Quantum information and computation)

- Supervisor: Dr. Robert Raussendorf

University of British Columbia (2018-2022)

BSc Combined Honours Physics and Mathematics (with distinction)

- Honours thesis: [A Simulation of a Simulation: Algorithms for Symmetry-Protected Measurement-Based Quantum Computing Experiments](#)

Publications

W. S. Porter et al. “Investigating nuclear structure near $N = 32$ and $N = 34$: Precision mass measurements of neutron-rich Ca, Ti, and V isotopes”. In: *Physical Review C* 106, 024312 (2022) DOI: [10.1103/PhysRevC.106.024312](https://doi.org/10.1103/PhysRevC.106.024312). arXiv: [2206.15329](https://arxiv.org/abs/2206.15329).

- Contribution: Experimental shifts for collecting data.

Research

Xanadu (4 months - Full-time) (2023)

Research Resident, Architecture Team

- Developed quantum error correction simulations for benchmarking photonic quantum computing architectures.

University of British Columbia (4 months - Full-time) (2021)

Theory Research Student, Quantum Information Group

- Used condensed matter techniques to analyze resource states for measurement-based quantum computation.

University of British Columbia (4 months - Full-time) (2020)

Computational NMR Research Student, Solid-State NMR Group

- Used SIMPSON NMR simulations to investigate the viability of maximum-length binary sequences in inhomogenous magnetization transfer for application in Myelin imaging.

TRIUMF (4 months - Full-time) (2019)

Experimental Nuclear Physics Research Student, TITAN Group

- Assisted with the commissioning of a cryogenic Penning trap (CryoMPET) for precision mass measurement of ions.
- Developed SIMION simulations for optimization of ion extractions.

Teaching & Outreach

UBC Department of Physics and Astronomy

(2019-current)

Teaching Assistant and Lab Development Assistant

- PHYS 500: Graduate Quantum Mechanics (1 term)
- PHYS 402: Applications of Quantum Mechanics (2 terms)
- PHYS 200: Relativity and Quanta (2 terms)
- PHYS 129: Introductory Experimental Physics II (1 term)
 - Helped to develop simulations for the 2021-2022 iteration of the course.
- PHYS 119: Introductory Experimental Physics I (3 terms)
 - Developed materials for 2022 iteration of course involving Python.
 - Developed curriculum and simulations for 2020-2021 online course.
- SCIE 001: First-year Honours Physics/Mathematics (6 terms)

UBC Department of Physics and Astronomy

(2018-2022)

Physics Circle Coordinator/Outreach Volunteer

- Organized sessions, recruited faculty speakers, and developed discussion materials for UBC Physics circle, an outreach program for secondary school students.
- Helped with event planning, activity development, and organization for annual UBC Physics Olympics events.

Schools & Presentations (materials [here](#))

Quantum Resources Workshop [Nanyang Technological University] (2023)

Poster Title: Characterizing resource states and efficient regimes of MBQC on NISQ devices

Xanadu Research Resident Symposium [Xanadu] (2023)

Talk Title: MBQC efforts in the war on loss

Quantum Matter Workshop [Perimeter Institute] (2022)

Poster Title: Investigating computational phases of matter on NISQ devices

Algebraic Structures in Quantum Computation V [UBC] (2022)

Talk Title: A Simulation of a Simulation: Algorithms for Measurement-Based Quantum Computing

Physics Circle [UBC] (2022)

Talk Title: The Physics of Snowmageddon

Cornerstone Models of Quantum Computing Summer School [TRIUMF] (2021)

Physics Circle [UBC] (2021)

Talk Title: Symmetry in Electrostatics

MRI Group [UBC] (2020)

Talk Title: ihMT, MLBS and SIMPSON

TRIUMF Summer Student Symposium [TRIUMF] (2019)

Talk Title: Extracting CryoMPET

Honours and Awards

NSERC	(2022-2023)
CGS Master's - \$17500	
UBC Department of Physics and Astronomy	(2022)
Rudi Haering Medal in Physics - <i>Most outstanding graduating student in Physics</i>	
Canadian Association of Physicists	(2022)
1 st Place Nationwide - University Prize Examination	
NSERC	(2020-21)
Undergraduate Student Research Award (USRA) (x2) - \$12000 total	
UBC Department of Mathematics	(2020-21)
Stanley M Grant Scholarship in Mathematics (x2) - \$3000 total	
UBC	(2019-21)
Trek Excellence Award (x3) - <i>Top 5% of year and faculty</i> - \$4500 total	
UBC Department of Physics and Astronomy	(2021)
Gordon Merritt Shrum Memorial Scholarship - \$2875	
UBC Faculty of Science	(2021)
Volkoff Scholarship in Science - \$2350	
Canadian Association of Physicists	(2021)
10 th Place Nationwide - University Prize Examination	
UBC Department of Physics and Astronomy	(2020)
W H MacInnes Scholarship in Physics and Mathematics - \$3500	
Canadian Association of Physicists	(2020)
Winner - Student Advisory Council Problem Competition	
UBC Department of Physics and Astronomy	(2019)
Erich Vogt First-year Summer Research Experience Award - \$3500	