Jordan Sawchuk

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Education

2023 – ···· **Ph.D. Simon Fraser University** Nonequilbrium statistical physics
Thesis focus: *Differential geometry of optimal control in mesoscopic systems*
Supervisor: *Dr. David Sivak*

2020 – 2023 **B.Sc. University of British Columbia** Honours physics, minor in mathematics.
Thesis: *Quantization of constrained Hamiltonian systems and negative energy densities in QFT.*
Supervisor: *Dr. Daniel Vollick*
Graduating average: *97.1%*

2018 – 2020 **A.S. Okanagan College** Associate of Science, Graduated with Distinction
Graduating average: *96.15%*

Experience

Academic

2024 **Conference Organizer,** Frontiers in Biophysics 2024
2022 – 2023 **Academic Assistant,** University of British Columbia.
2020 – 2021 **Writing Consultant,** University of British Columbia.
2019 – 2020 **Microbiology Laboratory Assistant,** Okanagan College.

Teaching

2024 **Teaching Assistant,** Simon Fraser University.
2021 – 2023 **Teaching Assistant,** University of British Columbia.
2020 – 2023 **Math & Physics Tutor,** Self-employed.
2019 – 2020 **Physics Learning Assistant,** Okanagan College
2020 **Biology Laboratory Assistant,** Okanagan College

Volunteering

2022 **Invigilation & marking,** BCSS Math Contest
2018-2022 **Farmhand,** Okanagan Fruit Tree Project Society
2017-2018 **Dog walker,** Prince George BCSPCA
2015 **English tutor,** Kamloops Immigration Centre

Other

2019 – 2021 **Farmhand,** Lightfoot Farm *(Kelowna, BC)*
2018 – 2019 **Helicopter & drill pad construction,** BCR *(Whitehorse, YT)*
2017 – 2018 **Bartender,** Alpine Pub & Grill *(Prince George, BC)*
2016 – 2017 **Line cook,** Munin's Post *(Kelowna, BC)*
2016 **Dispatcher,** BC Wildfire *(Kamloops, BC)*
2015 **Regional lead landscaper,** Class Design *(Kamloops, BC)*
2014 – 2015 **Breakfast cook,** Fireside Grill *(Kamloops, BC)*
2013 **Sous chef,** Long John's Pub *(Vernon, BC)*

Publications & Communication

Journal Articles

1. **J. R. Sawchuk** and D. A. Sivak, "Global thermodynamic manifold for conservative control of stochastic systems," *Physical Review Research*, vol. 8, no. 1, p. 013 004, 2026. DOI: 10.1103/j59j-q88v.

Preprints

1. **J. R. Sawchuk** and D. A. Sivak. "Thermodynamic geometry of friction on graphs: Resistance, commute times, and optimal transport." arXiv: 2601.01273 [cond-mat]. (2026).

Posters & Talks (*Presenter marked with an asterisk*)

1. **J. R. Sawchuk*** and D. A. Sivak, "Equivalence of commute-time geometry, resistance distance, and thermodynamic geometry in slowly driven markov chains," Berkeley Statistical Mechanics Meeting, Berkeley, CA, 2026. URL: https://berkeleystatmech.org/index.html.
2. **J. R. Sawchuk*** and D. A. Sivak, "A global thermodynamic manifold for optimal conservative control," APS Global Physics Summit, Anaheim, CA, 2025. URL: https://summit.aps.org/events/MAR-W65/9.
3. S. Alderson*, G. Cornell, A. Menard, I. Kennedy, E. Launer, A. Nikou, **J. R. Sawchuk**, A. Zavahir, J. Andrews, F. Moosvi, H. Nakahara, and J. Bobowski, "Jupyter-based physics labs: Introducing scientific computing & discovery," UBC ALT-2040 Showcase, Kelowna, BC, 2024. URL: https://github.com/UBC-Okanagan-Physics-Labs/ALT-2040-Showcase/blob/5dc9b8871baa27ffeb948af1163d932a5e661d8d/Jupyter%20Labs%20-%2020240527.pdf.
4. **J. R. Sawchuk***, I. Kennedy, E. Launer, A. Zavahir, A. Nikou, J. Andrews, H. Nakahara, F. Moosvi, and J. Bobowski, "Integrating discovery and computational skills into first-year physics labs," UBC ALT-2040 Showcase, Kelowna, BC, 2023. URL: https://github.com/UBC-Okanagan-Physics-Labs/Celebrate-Learning-Week-Poster/blob/main/2023-ALT-2040-Poster-Jake-Bobowski.pdf.
5. **J. R. Sawchuk*** and J. Hopkinson, "Cation ordering on a lattice of corner-sharing tetrahedra: Investigation of a simple ising-like model, kelowna, bc," UBC Faculty of Sciency Undergraduate Research Award Symposium, 2022. URL: https://drive.google.com/file/d/1BXa6n3Th8LbiKmG93pxw5Qus9g58-CdT/view.

Honours & Awards

Academic honours

2023 **Graduating Student Award in Physics**, University of British Columbia
2022 **Upper-Level Physics Award**, University of British Columbia
2021 **Second Year Physics Award**, University of British Columbia
Upper-Level Mathematics Award (Nominated), University of British Columbia
2020 **President's Award**, Okanagan College
Associate of Science Award, Okanagan College

Workshops

2025 **Statistical Aspects of Nonlinear Physics Summer School**, Institut des Hautes Études Scientifiques

Honours & Awards (continued)

2022 **PSI Start Program**, Perimeter Institute

Scholarships

2025 – 2028 **NSERC CGS-D**, Simon Fraser University

2023 **NSERC CGS-M**, Simon Fraser University

2022 **James R. Conway Scholarship**, University of British Columbia

2021 & 2022 **Deputy-Vice Chancellor Scholarship for Continuing Students**, University of British Columbia

2021 **Irving K. Barber Transfer Scholarship**, University of British Columbia

Research Awards

2025 **Travel & Research Award**, Simon Fraser University

2023 **NSERC USRA**, Simon Fraser University

2022 **Irving K. Barber Undergraduate Research Award**, University of British Columbia