

# ROBERT GERSTNER

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[Website](#) ♦ [LinkedIn](#) ♦ [Google Scholar](#) ♦ [arXiv](#) ♦ [GitHub](#)

## EDUCATION

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**Master of Science**, Physics (Thesis-Based) 2024 - 2026  
McGill University Montréal, QC

**Bachelor of Science**, Honours Specialization in Integrated Science with Physics 2020 - 2024  
University of Western Ontario London, ON

- 3.98/4.0 cumulative GPA, 94% average

## RESEARCH EXPERIENCE

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**Master's Student**, [Dr. Bill Coish's Group](#) Sep. 2024 - Present  
McGill University Montréal, QC

- Project: Shortcuts to the Quantum Many-Body Problem with Machine Learning

**Undergraduate Thesis Student**, [Dr. Mahi Singh's Group](#) Sep. 2023 - May 2024  
University of Western Ontario London, ON

- Project: Second and Third Harmonic Generation in Gold, Aluminum, and Copper Sulfide Nanohybrids

**Summer Research Student**, [Dr. Jesko Sirker's Group](#) May 2023 - Jan. 2024 / May - Aug. 2024  
University of Manitoba Winnipeg, MB

- Project: Operator Growth and Many-Body Localization

## PUBLICATIONS

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[1] Weisse, A., **Gerstner, R.**, & Sirker, J. Operator Growth in Disordered Spin Chains: Indications for the Absence of Many-Body Localization. [arXiv:2401.08031](#). Submitted to Physical Review X (2024).

[2] Meng, Q., **Gerstner, R.**, Yan, Y., MacDonald, J. E., Haglund, R. F., & Singh, M. Third Harmonic and Sum Frequency Generations in Plasmonic Multilayer Films of Au, Al and CuS Nanoparticles. Submitted to Advanced Optical Materials (2024).

## CONFERENCES, WORKSHOPS, AND CONTRIBUTED PRESENTATIONS

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**Workshop on Quantum Simulation with Spin Qubits**, Vancouver, BC Nov. 12-14, 2024

**Fall INTRIQ Meeting**, Bromont, QC Oct. 15-16, 2024

**IEEE Quantum Week 2024**, Montréal, QC Sep. 15-20, 2024

**CAP Congress**, London, ON May 27-31, 2024

- Oral presentation: *Second and Third Harmonic Generation in CuS/Au/Al Nanohybrids* - 3rd prize in AMO

**Honours Thesis Presentations**, London, ON Feb. 16 / Apr. 24, 2024

- Oral presentation: *Harmonic Generation in Metallic Nanohybrids*

**Integrated Research Presentation**, London, ON Mar. 22, 2024

- Poster: *Second and Third Harmonic Generation in Metallic Nanohybrids*

**Sirker Group Seminar**, Virtual Nov. 29, 2023

- Oral presentation: *Operator Growth in Lattice Models and Connections to Anderson and Many-Body Localization*

**Canadian Undergraduate Physics Conference**, Waterloo, ON Oct. 28, 2023

- Poster: *Operator Growth and Many-Body Localization via Graphs and Nested Commutators*

Singh Group Seminar, London, ON  
University of Manitoba USRA Poster Competition, Winnipeg, MB

Various  
Aug. 17, 2023

- Poster: *Operator Growth and Many-Body Localization via Graphs and Nested Commutators*

## WORK EXPERIENCE

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**Teaching Assistant** Sep. 2024 - Present  
McGill University Montréal, QC

**Membership, Sales, and Experience Associate** Jun. - Aug. 2021 / May - Aug. 2022  
YMCA-YWCA of Winnipeg Winnipeg, MB

**General Store Employee** Jul. - Aug. 2020  
Hnausa General Store Hnausa, MB

**Mathematics and Chemistry Tutor** Jun. 2017 - Jun. 2020  
St. Paul's High School Winnipeg, MB

## SCHOLARSHIPS & AWARDS

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**NSERC CGS-M**, University of Manitoba (Declined), McGill University (Accepted) Apr. 2024

**NSERC USRA**, University of Manitoba Feb. 2024

**S.R. Valluri Scholarship in Mathematical or Theoretical Physics**, Western University Nov. 2023

**Kyle Brandon Traves Memorial Scholarship in Science**, Western University Nov. 2023

**Dr. Gérard Hébert Scholarship in Physics**, Western University Nov. 2023

**Faculty of Science USRA**, University of Manitoba Mar. 2023

**Andrew and Sarah Hamilton Scholarship**, Western University Nov. 2022

**Class of '49 Prize**, Western University Nov. 2022

**Faculty Association Award**, Western University Nov. 2021

**Chancellors' Scholarship**, University of Manitoba (Declined) Aug. 2020

**Governor General's Medal**, St. Paul's High School Jun. 2020

**President's Entrance Scholarship**, Western University Apr. 2020

## SERVICE

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**Mentorship.** Mentored two first-year university students in Western's Integrated Science program to assist them with transitioning to university, learning about university, academics, and extra-curriculars. Also mentored two third-year physics students.

**Event Lead.** Organized and led an information session about undergraduate summer research in science for students of Western's Integrated Science program.

**EnviroUSC Collaboration.** As part of a group of students in Western's Integrated Science program, collaborated with campus environmental organization EnviroUSC to create an extensive study on Western's environmental policies and performance in comparison to other schools.

## CERTIFICATIONS

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**Advanced Badge**, IBM Quantum Challenge Fall 2022 Nov. 2022

## SKILLS

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- Programming with Python, Julia, Mathematica, Maple, C++, Qiskit, and LaTeX. Experience with Git/GitHub.
- Scientific writing and public speaking.
- Problem solving, critical thinking, and mathematical proficiency.
- Communication and team collaboration.
- Time management: balancing academics with being a high-level **track and field athlete**.