

ROBERT GERSTNER

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

EDUCATION

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

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

[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

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, AMO division

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

- Oral presentations: *Harmonic Generation in Metallic Nanohybrids / Second and Third Harmonic Generation in CuS/Au/Al 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

Various

University of Manitoba USRA Poster Competition, Winnipeg, MB

Aug. 17, 2023

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

WORK EXPERIENCE

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

[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 \(Bronze\) Medal](#), St. Paul's High School

Jun. 2020

[President's Entrance Scholarship](#), Western University

Apr. 2020

SERVICE

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

[Advanced Badge](#), IBM Quantum Challenge Fall 2022

Nov. 2022

SKILLS

- 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](#).