

# ROBERT GERSTNER

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

## EDUCATION

**Master of Science**, Physics (Thesis-Based) 2024 - 2026  
McGill University — 4.0/4.0 Montréal, QC

**Bachelor of Science**, Honours Specialization in Integrated Science with Physics 2020 - 2024  
University of Western Ontario — 3.98/4.0 London, ON

## RESEARCH EXPERIENCE

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

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

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

## 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 Physica Scripta (2024).

[3] **Gerstner, R.** Band Structures of One-Dimensional Periodic Materials with Graph Theory. [arXiv:2412.15107](#) (2024).

## CONFERENCES, WORKSHOPS, AND CONTRIBUTED PRESENTATIONS

**APS Global Physics Summit**, Anaheim, CA Mar. 17-21, 2025

Oral presentation: *Operator Growth and the Absence of Many-Body Localization*

**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

**Undergraduate Honours Thesis Presentations**, London, ON Feb. 16, Mar. 22, 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 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

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<b>Teaching Assistant</b> McGill University	Sep. - Dec. 2024 <i>Montréal, QC</i>
<b>Membership, Sales, and Experience Associate</b> YMCA-YWCA of Winnipeg	Jun. - Aug. 2021 / May - Aug. 2022 <i>Winnipeg, MB</i>
<b>General Store Employee</b> Hnausa General Store	Jul. - Aug. 2020 <i>Hnausa, MB</i>
<b>Mathematics and Chemistry Tutor</b> St. Paul's High School	Jun. 2017 - Jun. 2020 <i>Winnipeg, MB</i>

## SCHOLARSHIPS & AWARDS

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<b>NSERC CGS-M</b> , University of Manitoba (Declined), McGill University (Accepted)	Apr. 2024
<b>NSERC USRA</b> , University of Manitoba	Feb. 2024
<b>S.R. Valluri Scholarship in Mathematical or Theoretical Physics</b> , Western University	Nov. 2023
<b>Kyle Brandon Traves Memorial Scholarship in Science</b> , Western University	Nov. 2023
<b>Dr. Gérard Hébert Scholarship in Physics</b> , Western University	Nov. 2023
<b>Faculty of Science USRA</b> , University of Manitoba	Mar. 2023
<b>Andrew and Sarah Hamilton Scholarship</b> , Western University	Nov. 2022
<b>Class of '49 Prize</b> , Western University	Nov. 2022
<b>Faculty Association Award</b> , Western University	Nov. 2021
<b>Chancellors' Scholarship</b> , University of Manitoba (Declined)	Aug. 2020
<b>Governor General's Medal</b> , St. Paul's High School	Jun. 2020
<b>President's Entrance Scholarship</b> , 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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<b>Deep Learning Specialization</b> , DeepLearning.AI	Jan. 2025
<b>Advanced Badge</b> , IBM Quantum Challenge Fall 2022	Nov. 2022

## SKILLS

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- Programming with Python, Julia, Mathematica, Maple, C++, Qiskit, TensorFlow, PyTorch, 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**.