

# MONTE MAHLUM

[monte-mahlum.github.io](https://monte-mahlum.github.io)

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## EDUCATION

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### McGill University

B.S. in Mathematics, Minor in Physics

2020 – 2024

Current GPA: 3.40

### Charles University (Univerzita Karlova)

2023

Semester Abroad

Local GPA: “Excellent”

### Notable Courses

14+ At honours level

Honours PDEs

Honours Algebra III (Groups, Rings, Modules)

Honours Analysis III (Measure Theory)

Honours Analysis IV (Functional Analysis)

Introduction to Lie Group Theory

Theory of Groups and Algebras for Particle Physics

General Theory of Relativity

Time Series Analysis

Deterministic Chaos

*Expected:*

Honours Differential Geometry

Honours Algebra IV

Introduction to Stochastic Processes

## EXPERIENCE

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### Research Assistant, University of Minnesota, Twin Cities

July 2023 –

Mathematics research investigating convexity and convergence of a novel particle method developed by W. Lee, L. Wang, W. Li for high dimensional Wasserstein gradient flow equations. For reference, contact Professor Li Wang (email below).

## RELEVANT EMPLOYMENT

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### Calculus, Probability, and Linear Algebra Tutor, Freelance

November 2023 –

Tutored one student at Concordia University in their first-year linear algebra course (also covering elements of probability theory). In 2024, tutoring the same student in their Calculus II course. Learning to explain abstract concepts to people who are unaccustomed to this way of thinking. Working to frame the material in an intriguing and inviting way.

### Calculus Tutor, Jewish Academic Student Support

September 2022 – December 2022

Tutored one student throughout their Calculus I course at a Quebec college (CEGEP). Developed important mathematical teaching skills and worked to find creative ways for the student to stay engaged when confronted with confusion. For reference, contact Micheal Calkhoun at [micheal@jasstutors.com](mailto:micheal@jasstutors.com).

## PROJECTS

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### Directed Reading Program

January 2024 –

This semester, I have been paired with McGill PhD student Alexis Leroux-Lapierre, [math.mcgill.ca/alapierre](https://math.mcgill.ca/alapierre), for a semester-long mentorship. We will begin with Alexis guiding me through the literature on representation theory, categorification, and knot invariants and it will end with an individual write-up of the

covered material. Alexis and I will also be regularly meeting with Professor Yvan Saint-Aubin (UdeM), Assistant Professor Iva Halacheva (Northeastern), Postdoc Chris Raymond (ULaval) and others to discuss open problems first surrounding Heisenberg categorification and Fock space representation.

### **Fibrations Podcast**

*September 2022 –*

Season 1 explores the academic research being conducted at McGill University. Consists of five episodes interviewing researchers in five different fields. Listen at [spotify.com/fibrations](https://spotify.com/fibrations).

### **Lecture on Lie Theory With Applications to Quantum Physics**

*June 2023*

Notes from a lecture given as the final presentation for a Charles University physics course, Advanced Concepts in Symmetry. [monte-mahlum.github.io/lie-theory](https://monte-mahlum.github.io/lie-theory).

### **25-Hour McGill Physics Hackathon**

*October 2022*

In a team of two, different numerical solutions to the Laplace Equation with fixed boundary conditions on the unit disc in  $\mathbb{R}^2$  were explored and visualized. A novel numerical method was developed. Project submission can be viewed [here](#).

## **LANGUAGES**

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### **English**

*First*

### **Spanish**

*2014 –*

Taken for seven years throughout secondary education. Current level of proficiency is conversational.

## **SKILLS**

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### **Programming Languages**

Proficiency in Python, and Latex

### **Other**

Jiu jitsu (since 2021), drums (since 2022), piano (since 2020), wilderness tripping guide for youth at YMCA Camp Widjiwagan (Summer 2021, 2022) for reference, contact Karen Pick at [karen.pick@ymcamn.org](mailto:karen.pick@ymcamn.org).

## **ACADEMIC REFERENCES**

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Professor Li Wang, University of Minnesota, [liwang@umn.edu](mailto:liwang@umn.edu)

Affiliation: research advisor.

Professor Josef Malek, Charles University, [malek@karlin.mff.cuni.cz](mailto:malek@karlin.mff.cuni.cz)

Affiliation: Functional Analysis course instructor.

Professor Peter Grutter, McGill University, [peter.grutter@mcgill.ca](mailto:peter.grutter@mcgill.ca)

Affiliation: Thermal Physics course instructor, podcast guest.