MONTE MAHLUM

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EDUCATION

McGill University *2020 – 2024*
B.S. in Mathematics, Minor in Physics 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

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

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.

PROJECTS

Directed Reading Program *January 2024 –*
This semester, I have been paired with McGill PhD student Alexis Leroux-Lapierre, 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) and Postdoc Chris Raymond (ULaval) and others to discuss open problems first surrounding Heisenberg categorification and Fock space representation. Further information can be found here.

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.

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.

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

English *First*
Spanish *2014 –*
Taken for seven years throughout secondary education. Current level of proficiency is conversational.

SKILLS

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.

ACADEMIC REFERENCES

Professor Li Wang, University of Minnesota, liwang@umn.edu
Affiliation: research advisor.

Professor Josef Malek, Charles University, malek@karlin.mff.cuni.cz
Affiliation: Functional Analysis course instructor.

Professor Peter Grutter, McGill University, peter.grutter@mcgill.ca
Affiliation: Thermal Physics course instructor, podcast guest.