

Shereen Elaidi

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EDUCATION

McGill University

Bachelor of Arts in Honours Mathematics, Minor in Computer Science

Sept. 2016 – May 2021

Montreal, Quebec, Canada

EXPERIENCE

Undergraduate Research Assistant

McGill University Department of Mathematics & Statistics

May 2020 – Present

Montreal, Quebec, Canada

- Conducted a research project about the wave equation in cosmological space-times under the supervision of Prof. Chen, Prof. Jakobson, and Prof. Tsogtgerel.
- Read research papers, learnt the basics of relativity and spectral theory, prepared presentations, wrote a report, and obtained an explicit solution for the wave equation on a torus with the Friedmann-Robertson-Walker metric.
- The project began as a summer research project; we are now working on it on the side.

Undergraduate Research Assistant

Canadian Centre for Computational Genomics

May 2019 – August 2019

Montreal, Quebec, Canada

- Wrote a pipeline on the lab's computing clusters to analyze the influence of the gut's microbiome on fibromyalgia using the whole genome shotgun (WGS) sequencing program, MOCAT2.
- Modified the source code of MOCAT2 to reduce run-time and RAM usage.
- Analyzed 156 samples from patients using the pipeline.

Undergraduate Research Assistant

McGill Space Institute (MSI)

February 2018 – August 2019

Montreal, Quebec, Canada

- Wrote and debugged a Python program to compute light-curves from exoplanets (a crucial part of exoplanet mapping).
- Attended weekly meetings to discuss astrophysics research developments.
- Participated in outreach programs including AstroPhysics Nights and Quebec's annual science festival "Eureka Festival!"

COMMUNITY BUILDING

Society of Undergraduate Mathematics Students (SUMS) | VP Academic

May 2020 – Present

- Represents the academic interests of undergraduate math students by serving as a liaison between the Department of Mathematics and the students. I also helped develop departmental guidelines for the Fall 2020 online semester.
- Plans and runs academic events including advice sessions and exam review sessions for select U0/U1 classes.
- Student representative to the Equity, Outreach, and Student Wellbeing (EOSW) committee.

Peer Mentor Buddy Program

November 2019 – Present

- Mentors U0/U1 students by helping them adjust to both university and studying mathematics at a university-level.

EXTRACURRICULARS

- Directed Reading Program (Fall 2019 – Lorentzian Causality Theory)
- "AI 4 Social Good" Summer Program (Summer 2018 – attended a machine learning bootcamp then wrote a program to predict the risk of one getting into a cycling accident based on the rider's physical location and time of day in Montreal).
- McGill NeuroTech (Summer 2019 – read academic papers on Spiking Neural Nets (SNN)).
- In the Winter 2021 semester I will be TAing an unofficial, student-run course on Reinforcement Learning, [SUMS 707](#)
- Grading: Math 247 (Honours Applied Linear Algebra), Math 203 (Introduction to Statistics), and Math 254 (Honours Analysis 1).
- Won 1st place at the McGill Physics Hackathon in November 2020. Worked on a simulation of electrostatics on a torus. The project can be found [here](#).
- **Interests:** My primary motivation for studying mathematics is learn techniques used rigorously describe physical phenomena. Accordingly, my particular interests include analysis, PDEs, mathematical physics, ergodic theory, differential geometry, and probability.

PRESENTATIONS

“A Brief Introduction to Ergodic Theory”: Presented at SUMM (The Seminary on Undergraduate Mathematics in Montreal), [Slides here](#). (Jan. 2020)

“Building Up to Lorentzian Causality Theory”: Presented my work from the Fall 2019 Directed Reading Program. [Slides here](#). (Jan. 2020)

“Mathematical Physics Summer Talks”: Gave weekly presentations on independently-learned topics in relativity with three other undergraduates in Summer 2020.