Shereen Elaidi

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Education

McGill University Sept. 2016 – May 2021

Bachelor of Arts in Honours Mathematics, Minor in Computer Science *Montreal, Quebec, Canada*

- Relevantt courses: Honours Analysis 1 - 4 (Fundamentals, Metric Spaces, Measure Theory, and Introductory Functional Analysis), Math 567 (Introduction to Functional Analysis), Math 475 (Honours PDEs), Math 580 (Graduate PDEs 1), Math 458 (Honours Differential Geometry), Math 247 (Honours Applied Linear Algebra), Math 466 (Honours Complex Analysis), and Math 480 (Honours Independent Study in Spectral Theory).

Experience

Undergraduate Research Assistant May 2020 – Present

McGill University Department of Mathematics & Statistics *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 May 2019 – August 2019

Canadian Centre for Computational Genomics *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 February 2018 – August 2018

McGill Space Institute (MSI) *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

- Fall 2019: Directed Reading Program on Lorentzian Causality Theory: Final Report
- Summer 2018: "AI 4 Social Good" Summer Program. One of 30 participants selected to participate in a summer boot camp about machine learning. We 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.
- Summer 2019: McGill NeuroTech – Read academic papers on spiking neural nets.
- Winter 2021: 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).
- November 2020: Won 1st place at the McGill Physics Hackathon. Worked on a simulation of electrodynamics on a torus. The project can be found here.
- **Interests**: My primary motivation for studying mathematics is to 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.