Kaleb Ruscitti

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Education:

University of Waterloo
Candidate for Bachelor of Mathematical Physics, minor in Pure Mathematics
Expected Graduation: April 2021

Employment History:

University of Waterloo, Department of Pure Mathematics (4 mo.)
May-Aug 2020
Undergraduate Research Assistant under Dr. Ruxandra Moraru

- Conducted novel research towards understanding the symplectic structure of co-Higgs bundles.
- Read, summarized and applied the results from previous works in the area to develop new results.
- Adapted to self-guided research conditions imposed due to coronavirus.

Institut National de la Recherche Scientifique (4 mo.)
May-Aug 2019
Undergraduate Research Assistant under Dr. Roberto Moriandotti

- Studied the use of mathematical optimization to develop and improve optical experiments.
- Developed a mathematical procedure to analyse the results of our optimization process and quantify the magnitude of errors from physical non-idealities.
- Verified the procedure both with mathematical proof and monte carlo simulations.

Institute for Quantum Computing (12 mo.)
Jan-April 2019
Undergraduate Research Assistant under Dr. Raffi Budakian

- Developed a novel technique to measure the electrical transfer function of an experimental system.
- Learned about nuclear magnetic resonance and spin physics, as applied to quantum information.
- Worked with microscale and vacuum-safe components, including computer assisted design and assembly for use in the experiment.

Jan-April 2017, 2018
Undergraduate Research Assistant under Dr. Rajibul Islam.

- Constructed a system to manipulate the frequency spectrum of laser light.
- Improved my personal organization, problem solving and laboratory skills.
- Presented and explained my work to peers in group meetings and conferences.

Grants and Awards:

2x Undergraduate Student Research Award, NSERC — Jan 2019, April 2020
$4,500, held at the University of Waterloo.

Undergraduate Student Research Award, NSERC — April 2019
$4,500, held at the Institut National de la Recherche Scientifique

Confucius Institute Scholarship, Confucius Institute in Waterloo — Sept 2018
$1,000, given for scholarship in a Chinese study abroad program.

Presentations:

"Adaptive Optics for Ion-Addressing in an Ion Trap Quantum Simulator" - PhUnC 2018, Western University.

Extracurricular Activities:

Mathematical Physics Seminar - Organized a group of students who meet to present and discuss papers.
Physics Club - Elected as a communications executive
Ballroom Dancing - Both as a competitor and as a club communications executive.

Other Relevant Skills:

Experienced in computer programming in Python, C++ and LabVIEW
Experienced with symbolic and numeric mathematical computations.
Proficient in French and Mandarin Chinese.