

Jared Wogan

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"The best that most of us can hope to achieve in physics is simply to misunderstand at a deeper level." - Wolfgang Pauli

I am starting a Master's at Western University in September 2022, working on numerical methods for calculating transition amplitudes in the EPRL model of quantum gravity. I am passionate about theories of gravity and causality within general relativity and quantum mechanics. I am also interested in the philosophy of physics especially pertaining to interpretations of quantum mechanics and quantum gravity.

Education

Brock University, University of Guelph

B.Sc in Physics (Honours), Minor in Mathematics

2017 – 2022

- Cumulative average of 82% (3.7 GPA on 4 point scale)
- Major average of 92% (4.0 GPA on 4 point scale)
- Upper level course average of 93% (4.0 GPA on 4 point scale)

Welland Centennial Secondary School

Ontario Secondary School Diploma

2013 – 2017

- Grade 12 average of 94.3%
- French immersion

Research Experience

Undergraduate Thesis.....

PyOGRe

Advisor: Professor Barak Shoshany

Brock University

September 2021 – April 2022

- A Python Object-Oriented General Relativity package
 - Adaptation of the Mathematica package OGRE

Research Projects.....

Wormhole Time Machines and Multiple Histories

Advisor: Professor Barak Shoshany

Brock University

April 2021 – September 2021

- Studying Time Travel Paradoxes and Causality
 - Created a simulation of paradoxes within Mathematica
 - Updated existing paradox model to use temperature instead of colours for the particles
 - Replaced model TDP space with a wormhole metric using general relativity to calculate geodesics that produce paradoxes

Publications

Wormhole Time Machines and Multiple Histories

Jared Wogan, Barak Shoshany

arXiv:2110.02448

October 2021

Scholarships, Awards & Honours

Returning Scholars Award

Brock University, \$1,500

2021

- Returning student with an average of 94.9% the previous year

Match of Minds

Brock University, \$5,000

2021

- Research Grant

Dean's Honour List

Brock University

2021

- Average of 80%+ for academic year of 2020 - 2021

Entrance Scholarship

University of Guelph, \$7,000

2017

- Outstanding admissions average

Ontario Scholar

Welland Centennial Secondary School

2017

- Obtained an average of 80% or higher in any six Grade 12 courses

Euclid Test

University of Waterloo

2017

- School champion

Mathematics Scholarship

Welland Centennial Secondary School, \$150

2017

- Presented to the student with the highest GPA in grade 12 Mathematics

Physics Scholarship

Welland Centennial Secondary School, \$150

2017

- Presented to the student with the highest GPA in grade 12 Physics

Fermat Test

University of Waterloo

2016

- Certificate of Distinction for ranking top 25% of contestants

Conference Posters

The Quantum Information Structure of Spacetime

Western University, Ontario, Canada

June 2022

- PyOGRe: A Python Object-Oriented General Relativity package

Media Appearances

New Brock research explores time travel paradoxes

Brock University, Ontario, Canada

December, 2021

Teaching Experience

Private Tutor

Independent Private Tutor

January 2020 – Present

- Work one-on-one with individual students at the High school level
- Specialize in intermediate and senior level math, calculus, data management, and physics

Independent Peer Tutor

Brock University

2020

- Organized and taught a student study group for Electromagnetism
- Held review and one-on-one sessions with students in need of assistance

Mathematics PAL

Welland Centennial Secondary School

2017

- Teaching assistant and tutor for a grade 9 french mathematics course
- Worked one-on-one and motivated students
- Marked and wrote problems for tests

Relevant Coursework

- **Physics:** Classical Mechanics, Electromagnetism, Quantum Mechanics, Statistical Mechanics and Thermal Physics, Optics, General & Special Relativity
- **Mathematics:** Calculus, Differential Equations, Linear Algebra, Statistics, Complex & Real Analysis, Differential Geometry

Technical & Personal Skills

- **Programming Languages:** Python, C++, Physica, Javascript, Markdown, HTML, CSS
- **Software:** Git, Mathematica, Maple, \LaTeX
- **Operating Systems:** Mac OS, Linux, Windows
- **Personal Skills:** Passionate, Hard Working, Collaborative, Time Management, Organization, Planning, Leadership, Curious

Extracurricular Activities

Brock University Physics Discord

Discord Maintainer

2021 – Present

- Created and maintain the (unofficial) University Physics Discord

University of Guelph

Physics Club

2017-2018

- Participated in weekly gatherings to discuss current developments Physics
- Meeting professors and other students
- Telescope observation night

University of Guelph

Jack.org

2017-2018

- Mental health awareness movement
- Volunteered and participated in regular events throughout school terms

Work Experience

McDonalds Canada

Line Cook, Customer Service

Fonthill, ON

March 2019 – Present

- Customer service
- Communication skills
- Working as a team towards common goals

Candian Niagara Power

IT Intern / Coop Student

Fort Erie, ON

May 2018 – September 2018

- Computer maintenance and deployment

Hard Rock Cafe

Dishwasher, Line Cook

Niagara Falls, ON

June 2015 - September 2017

- Working and collaborating with team members
- Communication skills
- Working in a stressful and time sensitive environment

Hobbies

Computers

- Regularly building and maintaining computers

Programming

- Passion Projects
- Developed a Discord bot for use in my personal Discord
- Creating fractals using Python

Music

- Occasional mixing done in FL Studio