

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 a student in my final year at Brock University, finishing a Bachelors of Science with a major in Physics and a minor in Mathematics. I am passionate about theories of gravity and causality within general relativity and quantum mechanics. I would like to use the skills and knowledge from this degree to push myself to explore these topics further, with a focus on theories of quantum gravity.

Education

Brock University, University of Guelph

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

2017 – 2022

- Cumulative average of 81.0% (3.7 GPA on 4 point scale)
- Major average of 89.0% (4.0 GPA on 4 point scale)
- Upper level course average of 91.4% (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

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