ERIC W. ASPLING

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EDUCATION

Doctor of Philosophy in Theoretical Physics, Binghamton University 2018-2023
Dissertation is on the designing of an Unruh-DeWitt Quntum Computer with a focus on Relativistic Quantum Information.

Bachelor of Sciences in Mathematical Physics, Binghamton University 2016 - 2018
Broome Community College 2006-2008, 2016 - 2017
Rowan University 2008-2010

RESEARCH INTEREST

Relativistic Quantum Information including, Unruh-DeWitt detectors, emergent spacetime, and information paradoxes. Furthermore, I am interested in connection between these topics, quantum computing, and quantum thermodynamics.

RESEARCH EXPERIENCE

Undergraduate researcher Sept 2016 - April 2018
Dr. Bruce White *Binghamton University*

- Studied novel algorithms for diagonalizing dynamical matrices relating to phonon vibrations.
- Systems of interest included cubic lattices with Anderson localities and amorphous substrates.
- Presented project during a poster section at APS April 2018 in Columbus Ohio. Abstract

Graduate Researcher April 2018 - Oct 2020
Dr. Charles Nelson *Binghamton University*

- Assisted in the development of a model of parastatistical (a subfield of Axiomatic Field Theory) dark matter.
- Topics studied include: $\mathcal{N} = 1$ SUSY, cosmology, general relativity, particle physics, etc.

Graduate Researcher Oct 2020 - Current
Dr. Michael Lawler *Binghamton University*

- Developed theory for the first laboratory realizable Unruh-DeWitt Quantum Computer. arXiv.2210.12552
- Presented project at quantum information and probability 2022 in Vaẍjö Sweden. List of abstracts
- Evaluated quantum thermodynamics of transverse Ising model using the novel approach of time averaged classical shadows. arXiv.2211.01259

TEACHING AND MENTORING EXPERIENCE

Graduate Teaching Assistant Aug 2018 - Current
Calculus Based Introductory Physics (PHYS 131-132) *Binghamton University*

- Ten semesters of teaching these two course so far throughout my graduate program.
- Solved and presented problem sets for 60-70 first and second year students per semester.

Lead Lecturer July-August 2021,2022
Calculus Based Introductory Physics (PHYS 132) *Binghamton University*

- Prepared lecture notes and in-class demonstrations on the second semester of introductory physics which focuses on electricity and magnetism.
- Created and graded assessments to ensure the students adequately understood the necessary material.

Graduate Mentor Nov 2021 - Current
Dr. Michael Lawler *Binghamton University*

- Mentored and advised an undergraduate researcher in the preparation and presentation of their senior thesis defense.
- Together, the student and I study quantum information channels of cosmological phenomena.

SCIENCE COMMUNICATION

- Created and developed the science communication channel Physics Office Hours. The channel was originally designed to provide extra help to first and second year students taking introductory physics. It shortly turned into teaching the public topics ranging throughout all of physics. (Twitch, YouTube).
- Occasional blog writing for my research group's website Blog