ERIC W. ASPLING

Phone number available for serious inquires only ◇ Binghamton, NY
easplin1@binghamton.edu ◇ Ericaspling.com

EDUCATION

Doctor of Philosophy in Theoretical Physics(upcoming), Binghamton University 2018-2023
Dissertation is a survey on the designing of an Unruh-DeWitt Quntum Computer with a focus on Relativistic Quantum Information channels and general entanglement properties of topologically protected edge states.

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, topologically protected edge states (CFTs) in condensed matter systems, 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 session 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 via. poster presentation at quantum information and probability 2022 in Vaxjö Sweden. List of abstracts as well as QIP2023 Ghent, Belgium List of Posters (802)
- Upcoming presentation of project at APS March Meeting 2023 Las Vegas Details
- 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*

- Eleven semesters of teaching these two course so far throughout my graduate program.
- Solved, taught, and presented problem sets for 60-80 first and second year students per semester. Ratemyprofessor profile

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.
- 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

Science Advisor/Researcher May 2021 - Current

Science Asylum (Nick Lucid)

Assisted in research, script-writing, proof-reading, and consultation for a few videos and topics of interest by the YouTuber Nick Lucid and his channel The Science Asylum which has over six hundred thousand subscribers.

Personal Science Communication Programs March 2020 - Current

- 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