Micah Banschick

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Education

University of Connecticut Storrs, CT
B .Sc. in Physics and Mathematics (Honors). Graduation Date: May 2027
Thesis: [To be determined] - *Advisor: Prof. Peter Schweitzer*

Research

Optical Signatures of Ion-neutral Collisions - *Advisor: Dr. Benjamin Prince* Kirtland Air Force Base, NM
Air Force Research Laboratory May 2024 – August 2024

- Experimentally gathered optical emissions of $N_2^+ + N_2$ collisions for $N_2^+(B-X)$ and $N_2^+(A-X)$ between 16 $\frac{eV}{q}$ and 600 $\frac{eV}{q}$ kinetic energies using a 13.86 MHz radio frequency ion source.
- Analyzed vibrational and rotational transitions through the generation of basis functions calculated in Diatomic, with subsequent simulation of the data accomplished with IgorPro.

Merging Supermassive Black Hole Binary Systems - *Advisor: Prof. Jonathan Trump* Storrs, CT
University of Connecticut January 2024 – Present

- Calculated the spectral emission distributions of supermassive black holes by integrating radially through their mini-disks.
- Modeled black hole luminosity fluctuations using Python packages such as matplotlib and astropy.

Quantum Computation Power with Qubit - *Advisor: Prof. Lea Ferreira dos Santos* Storrs, CT
Yale University January 2024 – Present

- Analyzed the matrix symmetry of the Kerr Hamiltonian representing the observables of a qubit.
- Demonstrated code redundancies using contour plots in Python and Mathematica.

Predicting Stock Trends Using LSTM-Neural Networks - *Advisor: Prof. Phillip Bradford* Stamford, CT
University of Connecticut May 2022 – July 2022

- Used TensorFlow and LSTM-Neural Networks to predict Stock trends.
- Collaborated weekly with the research supervisor about how to improve the program.

Psychology of Human Expression - *Advisor: Yuvalal Liron* Rehovot, Israel
Weizmann Institute of Science September 2016 - January 2017

- Simulated over 500 instances of expression through mock-illustrations and analyzed results in MATLAB.
- Brainstormed, prepared, and presented discoveries and ideas to the research team weekly.

Posters & Presentations

Air Force Research Laboratory - *Advisor: Dr. Benjamin Prince* Poster Presentation, July 2024

Awards & Honors

Philips Scholar: $11,838.40 USRA, 2024
Honors Scholar in Physics: Thesis: [To be determined] University of Connecticut, 2023
Annual Physics Award University of Connecticut, 2023
Annual Mathematics Award University of Connecticut, 2023

Skills & Interests

Research: Quantum Dynamics, Particle Physics, Supermassive Black Holes, QFT, Quantum Computing
Technical: Python, Mathematica, Matlab, LaTeX, IgorPro, Diatomic, Javascript, Java, Ruby, Excel Solver
Laboratory: Molecular Spectroscopy, Ion Beam Imaging, Radio Frequency Ion Sourcing, Wein Velocity Filtration