Qiyu Liu

qiyuliuwork@gmail.com +1 573-975-9881

EDUCATION

University of California, Los Angeles **Sept 2023 - Present**

Master of Quantum Science and Technology

- GPA: 3.8

University of California, San Diego **Sept 2018 - July 2023**

Bachelor of Art and Science in Physics (Computational Physics)

- GPA: 3.6

EXPERIENCE

Quantum Computing Research **Aug 2022 - Oct 2022**

- Join Professor Thomas Mehen research program on quantum computing.
- Implemented Shor's algorithm's circuit using IBM Q computer.
- Article **Comparisons of Conventional Computing and Quantum Computing Approaches** accepted by TPCEE 2022 (TPCEE-205).

ACADEMIC PROJECT

Quantum Circuit Simulator **Nov 2023 - Jan 2024**

- Developed a Quantum Circuit Simulator Modular in Python to simulate quantum computer operations on classical hardware. Redesigned the workflow to enhance user accessibility, making the simulator intuitive for individuals with minimal coding background.
- Enabled execution of complex quantum algorithms such as Grover's, Shor's, and Quantum Approximation Algorithms. The simulator serves as an alternative to qiskit as both a valuable research tool in quantum computing and an educational resource for people to learn.

Optical Cavity **Oct 2023 - Nov 2023**

- Designed an Optical Cavity with ABCD matrix formulation and simulation from Python programs. Mode-matched the Helium-Neon laser light in resonance with the designed cavity.
- Captured the Hermite-Gaussian modes of lights and obtained stable TEM00 mode.

Mice Galaxies (NGC 4676) Collision Simulation **March 2023 - May 2023**

- Developed a Python-based simulation program to model the gravitational interactions and collisions of the NGC 4676 galaxies, known as the Mice Galaxies.
- Utilized the Leapfrog method for solving differential equations of motion, effectively capturing the dynamic gravitational interactions in the galactic collision process. Used Numpy and Pandas for efficient data organization.
- Transformed complex numerical data into engaging visual representations, creating GIF documents that illustrate the collision animation.

MCMC Gibbs Sampling Analysis of simulated Gravitational Wave detectors' data **Oct 2023 - Dec 2023**

- Developed a method to identify the change point in datasets from two Poisson distributions using Bayesian posterior inference and Monte Carlo Markov Chain Gibbs sampling techniques.
- Accurately determined the shift time (n0) and estimated rate parameters of the distributions. Demonstrated proficiency in advanced statistical techniques for precise data analysis.

EXTRA-CURRICULAR ACTIVITIES / LEADERSHIP ROLES

ETA OMEGA CHA FRATERNITY

CHANCELLOR **Sep 2020 - Sep 2022**

- Serve as chancellor to organize 30 fraternity members
- Organized and implemented a charity casino night events with 150 guests
- Managed to get funds of over 10,000 dollars from sponsors for the fraternity

ADDITIONAL

- Programming Skills: R, C++, C, Java, Python, Mathematica, Assembly
- Knowledge about introductory and advanced CS algorithms
- Strong background in physics and quantum information science and technology
- Experimental skill in Quantum Optics
- Language Skills: English (Bilingual proficiency), Mandarin (Native)