Bradley J. McGhee

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Education

Georgia Institute of Technology December 2026
B.S. Mathematics, Minors in Quantum Technology and in Strategic Analysis *Atlanta, GA*

Coursework: Algorithms, Probability Theory, Applied Combinatorics, Abstract Algebra, Quantum Mechanics
GPA: 3.76

Experience

Quantum Compiler Research Assistant August 2024 – Present
Georgia Institute of Technology, Center for Research into Novel Computing Hierarchies *Atlanta, GA*

- Worked with the quantum signal processing (QSP) and quantum singular value transform (QSVT) frameworks.
- Created new syntax for QSP, enabling the creation of QSP-based algorithms in a high-level language.
- Developed a compiler for the new syntax with Python and Qiskit, bringing high-level QSP to researchers.
- Presented a poster on generating QSP circuits from arbitrary functions at the 2025 CRNCH Summit.

Elementary Particle Physics Research Intern June 2023 – December 2023
Kennesaw State University, Theoretical Particle Physics Group *Kennesaw, GA*

- Made quantitative predictions for a hadron collider experiment using a model of an undiscovered Z' particle.
- Accounted for electromagnetic, strong, weak, and combined-electroweak contributions in the Fenyman calculus.
- Developed a tool for physicists to compute reaction cross-sections for Z' production using C++ and LHAPDF.
- Composed and presented a 40-page manuscript detailing my process and phenomenological results.

Projects

Basemath (Library) | *Rust* github.com/nptnl/basemath

- Created a math functions library in Rust with **zero** dependencies.
- Used generic types to allow several datatypes in the same math functions.
- Implemented exponentiation, trigonometric functions, and arbitrary polynomials of generic-typed coefficients.
- Reached **6,000+** total downloads Rust's package distributor.

General Fractal Generator | *Rust* github.com/nptnl/generic-fractals

- Created input and parameter space fractal generators for recursive functions on complex numbers.
- Used multi-threading in Rust for parallel image generation, with a **5x speedup**.
- Created a custom image format to easily write and store plots **2x** smaller than PPM/PGM.
- Generated plots based on **arbitrary** functions, producing both well-known and novel sights.

Honors & Awards

- President's Undergraduate Research Award (x2), a competitive Georgia Tech salary award for lab research.
- Eagle Scout Rank Award
- National Merit Scholarship Finalist

Skills & Interests

Languages and Tools: Python, C, C++, Rust, HTML, CSS, Git, ZSH
Quantum Software: Qiskit, Aer, Bloqade, PyQSP, LHAPDF
Organizations: GT Quantum Computing Association, GT Swim Club, GT Jazz Ensemble, GT Intramural Sports
Hobbies: Swimming, running, jazz, pickleball, table tennis, lifting, lifeguarding, writing