Bradley J. McGhee

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Education

Georgia Institute of Technology May 2027
Bachelor of Science in Mathematics *Atlanta, GA*

Minor, Quantum Sciences and Technology | **Minor,** Economics
Selected Coursework: algorithms, probability theory, abstract algebra, quantum mechanics, extremal combinatorics, graph theory, real analysis, complex analysis, quantum information, number theory
Graduate Coursework: enumerative combinatorics, group theory with quantum mechanics, microeconomic theory
GPA: 3.76

Research Experience

Research Assistant September 2026 – present
Georgia Institute of Technology | Extremal Combinatorics Group *Atlanta, GA*

- **Mentor:** Xiaoyu He, Assistant Professor of Mathematics
- Interpreted new results in extremal combinatorics produced by AI models.
- Evaluated misaligned behavior in AI models and future risks.

Quantitative Research Intern May 2026 – August 2026
Intercontinental Exchange Holdings, Inc. *Sandy Springs, GA*

- Researched, developed and tested new risk pricing techniques using real-world market data.
- Used options markets to derive pricing for new economic indicator contracts.
- Implemented novel strategies in Intercontinental Exchange's derivatives risk model.

Research Assistant August 2024 – December 2025
Georgia Institute of Technology | Center for Research into Novel Computing Hierarchies *Atlanta, GA*

- **Mentors:** Tom Conte, Associate Dean of Computing | Jeffrey Young, Principal Research Scientist
- Introduced quantum signal processing (QSP) algorithms into a new quantum programming language.
- Developed a compiler in Qiskit/Python for the new capabilities, bringing these algorithms to researchers.

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

- **Mentor:** Marco Guzzi, Associate Professor of Physics
- Made quantitative predictions for a collider experiment using models of an undiscovered Z' particle.
- Developed a C++ software tool for physicists to compute reaction cross-sections.

Honors & Awards

- President's Undergraduate Research Award at Georgia Tech (2024, 2025), a competitive salary award
- Eagle Scout Rank Award
- National Merit Scholarship Finalist

Papers & Manuscripts

1. **Random G-parking functions on generalized Petersen graphs**
   Bradley J. McGhee and R. Caleb Bunch
   in preparation (2026)

Presentations

1. **Generating quantum signal processing circuits with arbitrary functions** *Atlanta, GA*
   Suhana S. Shirol, Bradley J. McGhee, Austin J. Adams, Thomas Conte, Jeffrey Young
   Poster, Center for Research into Novel Computing Hierarchies Summit, 2025.

2. **Phenomenology of resonant Z' boson production at hadron colliders** *Marietta, GA*
   Bradley J. McGhee and Marco Guzzi
   Presentation, Wheeler Center for Advanced Studies Research Program, 2023.