Andrew M. Projansky

PH.D. Student
Quantum Information Science
Department of Physics & Astronomy
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Education

June 2026 — Expected Completion of Ph.D. in Physics,
Dartmouth College, Hanover, NH, USA
Field: Quantum Information Science | Advisor: James D. Whitfield

May 2021 — B.A. in Physics,
Hamilton College, Clinton, NY, USA

May 2021 — B.A. in Mathematics,
Hamilton College, Clinton, NY, USA

Employment

Aug 2021–Present — **Graduate Research and Teaching Assistant**
Dartmouth College, Dept. of Physics and Astronomy, Hanover, NH, USA
Research Group of James Whitfield

Aug 2020–May 2021 — **Research Intern**
The Griffiss Insitute, Rome, NY, USA
Quantum Algorithms Group

Sep 2019–May 2021 — **Research and TA Intern**
Hamilton College, Dept. of Physics and Dept. of Mathematics, Clinton, NY, USA

Scholarships, Awards, & Recognitions

June 2023 — Physics and Astronomy Chair's Teaching Award
March 2023 — Guarini Outstanding Grad Student Teachers
April 2021 — Elihu Root Fellowship

Scientific Background & Interests

General

- Quantum information science and quantum computing

Specific

- Classical simulability, matchgates, Clifford circuits, entanglement spectral statistics in quantum circuits, signatures of integrability and connections to classical simulability, fermion-to-qubit transforms, spin-to-fermion mappings

Technical Experience

General	Python, C++, Github, Microsoft Office Suite, Latex
Specific	Tensor network methods, Numerical integration, Hartree-Fock calculations, Qiskit, Amazon Braket
Github	https://github.com/andrewprojansky

Relevant Graduate Courses

Classical Mechanics, Quantum Mechanics, Statistical Mechanics, Advanced Statistical Mechanics, Mathematical Methods, Condensed Matter, Condensed Matter Field Theory, Quantum Information Theory, Special topics course in Dynamical Systems and Quantum Information

Teaching Background

PRESENT

- Graduate teaching assistant for introductory physics courses for majors and non-majors; duties included grading assignments and exams, proctoring exams, and lab instruction.
- Graduate teaching assistant for philosophy of physics course for non-majors; duties included lab instruction, exam grading, and grading essay and discussion responses to topics.

PAST

- Undergraduate teaching assistant for novel undergraduate physics course in introductory quantum information; duties included grading assignments, holding office hours, and providing guidance on presentations.
- Undergraduate grading assistant for undergraduate physics and math courses.

Publications & Preprints

2024

- **Andrew M. Projansky**, Jason Necaise, James D. Whitfield
  "Extending Simulability of Cliffords and Matchgates"
  Submitted to Journal of Physics A: Mathematical and Theoretical|arXiv:2410.10068

- Thomas M. Henderson, Brent Harrison, Ilias Magoulas, Jason Necaise, **Andrew M. Projansky**, Francesco A. Evangelista, James D. Whitfield, Gustavo E. Scuseria
  "Fermionic Mean-Field Theory as a Tool for Studying Spin Hamiltonians"
  Accepted to the Journal of Chemical Physics | arXiv:2410.02125

- Brent Harrison, Jason Necaise, **Andrew M. Projansky**, James D. Whitfield
  "A Sierpinski Triangle Data Structure for Efficient Array Value Update and Prefix Sum Calculation"
  arXiv:2409.04348

- Brent Harrison, Mitchell Chiew, Jason Necaise, **Andrew M. Projansky**, Sergii Strelchuk, James D. Whitfield
  "A Sierpinski Triangle Fermion-to-Qubit Transform"
  arXiv:2403.03990

2023

- **Andrew M. Projansky**, Joshuah T. Heath & James D. Whitfield
  "Entanglement spectrum of matchgate circuits with universal and non-universal resources"
  Quantum | doi.org/10.22331/q-2024-08-07-1432

2021

- Daniel Koch, Michael Samodurov, **Andrew M. Projansky**, Paul M. Alsing
  "Gate-Based Circuit Designs For Quantum Adder Inspired Quantum Random Walks on Superconducting Qubits"
  International Journal of Quantum Information | arXiv:2012.10268

Presentations

- "Entanglement spectrum statistics in free fermion circuits" (work done w/Joshuah T. Heath & and James D. Whitfield)
  - (in-person) Contributed poster, QSim, August 15th, 2024

- "Fermionic Circuits Beyond Matchgates: Entanglement Spectra and Simulability"
  - (in-person) Invited Talk, QBraid Internal Meeting, July 16th, 2024

- "Entanglement Spectrum Statistics, and Fermions in Quantum Information "
  - (in-person) Invited Talk, Group Meeting of Stefanos Kourtis, March 27th, 2024

- "Entanglement spectrum statistics in matchgate circuits with supplemental resources" (work done w/Joshuah T. Heath & and James D. Whitfield)
  - (in-person) Contributed talk, APS March Meeting, March 4th, 2024