

Education

University of Maryland

Ph.D. in Physics, GPA: 3.8/4.0

Advisors: Andrew M. Childs and Alexey V. Gorshkov

NSF Graduate Research Fellowship, LPS Quantum Graduate Fellowship

College Park, MD

August 2019–Current

University of California

B.A in Physics, B.A in Computer Science, GPA: 3.95/4.00

High Distinction in General Scholarship, Phi Beta Kappa, Upsilon Pi Epsilon (CS Honor Society)

Berkeley, CA

August 2015–May 2019

Research Experience

Joint Center for Quantum Information and Computer Science (QuICS), UMCP

Graduate Research Assistant

College Park, MD

August 2019–Current

- Advised by Professor Alexey Gorshkov and Professor Andrew Childs
- My research interests are mainly in quantum computation, including architecture-aware unitary synthesis, quantum algorithms, and complexity theory.
- Designed protocols for quantum routing and circuit synthesis.
- Designed algorithms for quantum state preparation and for efficient classically verifiable quantum advantage.
- Proved lower bounds on the time taken for different fundamental tasks in quantum information processing, making use of graph theory and computational complexity theory.
- Co-authored 4 peer reviewed publications, 7 conference presentations, and 4 articles in preparation or under submission.

Whaley Group, UC Berkeley

Research Assistant

Berkeley, CA

January 2018–May 2019

- Applied tensor network-based quantum machine learning models to image recognition tasks in Prof. Birgitta Whaley's group.

ATLAS, Lawrence Berkeley National Lab

Research Assistant

Berkeley, CA

August 2016–January 2018

- Analyzed potential dark matter signatures in ATLAS collider data

Industry Experience

IBM Quantum

Quantum Research Intern

Yorktown Heights, NY

May 2024–August 2024

- Investigated quantum circuit synthesis and compilation for fault-tolerant architectures.
- Investigated efficient encodings for simulating systems of fermions.

Zapata Computing

Quantum AI Research Intern

Boston, MA

May 2022–October 2022

- Researched approaches to mitigate the occurrence of barren plateaus in Quantum Neural Networks, which are a major challenge for training in Quantum Machine Learning.

Amazon (AWS)

Software Engineering Intern

- Created an SDK to for computer vision applications

Seattle, WA

May 2018–August 2018

Sonos

Software Engineering Intern

- Built full-stack features across Android, iOS, Mac and Windows.

Boston, MA

June 2017–August 2017

Publications and Research Work

- [1] S. Austin, **D. Devulapalli**, K. Hoang, F. Zhou, K. Srinivasan, and A. Gorshkov, *A vapor cavity qed system for quantum computation and communication*, In preparation. Draft available on request.
- [2] **D. Devulapalli**, T. Mooney, and J. D. Watson, *The complexity of determining whether finite-sized quantum systems thermalize*, In preparation. Draft available on request.
- [3] N. Berthussen, **D. Devulapalli**, E. Schoute, A. M. Childs, M. J. Gullans, A. V. Gorshkov, and D. Gottesman, “Toward a 2d local implementation of quantum low-density parity-check codes”, *PRX Quantum*, vol. 6, no. 1, p. 010 306, Jan. 2025. eprint: arXiv:2404.17676.
- [4] **D. Devulapalli**, C. Yin, A. Y. Guo, E. Schoute, A. M. Childs, A. V. Gorshkov, and A. Lucas, “Quantum routing and entanglement dynamics through bottlenecks”, no. arXiv:2505.16948, May 2025, arXiv:2505.16948 [quant-ph].
- [5] Z. Liu, **D. Devulapalli**, D. Hangleiter, Y.-K. Liu, A. J. Kollár, A. V. Gorshkov, and A. M. Childs, “Efficiently verifiable quantum advantage on near-term analog quantum simulators”, *PRX Quantum*, vol. 6, no. 1, p. 010 341, Mar. 2025. eprint: arXiv:2403.08195.
- [6] N. Constantinides, A. Fahimniya, **D. Devulapalli**, D. Bluvstein, M. J. Gullans, J. V. Porto, A. M. Childs, and A. V. Gorshkov, “Optimal routing protocols for reconfigurable atom arrays”, no. arXiv:2411.05061, Nov. 2024, arXiv:2411.05061 [quant-ph].
- [7] **D. Devulapalli**, E. Schoute, A. Bapat, A. M. Childs, and A. V. Gorshkov, “Quantum routing with teleportation”, *Physical Review Research*, vol. 6, no. 3, p. 033 313, Sep. 2024. eprint: arXiv:2204.04185.
- [8] A. Y. Guo, A. Deshpande, S.-K. Chu, Z. Eldredge, P. Bienias, **D. Devulapalli**, Y. Su, A. M. Childs, and A. V. Gorshkov, “Implementing a fast unbounded quantum fanout gate using power-law interactions”, *Physical Review Research*, vol. 4, no. 4, p. L042016, Oct. 2022. eprint: arXiv:2007.00662.

Leadership and Service

- Reviewer/Subreviewer
Conferences: Quantum Information Processing (QIP) 2023, 2024, Journals: Quantum
- Quantum Computing at Berkeley
 - Established student-run quantum computing club; led seminars, events, and industry panels
 - Designed and taught an introductory quantum computing course to 27 undergraduate students.
- Mentorship
 - Mentored 3 undergraduates for research in quantum computing on verifiable quantum advantage and quantum routing.

Skills

- **Programming:** C, C++, Python, Java, Scheme/Lisp