

Andi Gu

andigu@g.harvard.edu |  [andigu](#)

EDUCATION

Harvard University

Quantum Science and Engineering (PhD)

Supported by the IBM PhD Fellowship (2024 – 2025)

Cambridge, MA

August 2022 -

University of California, Berkeley

Bachelor of Arts in Computer Science and Physics; GPA: 4.0/4.0 (Highest Distinction)

Thesis: Practical Hamiltonian learning with unitary dynamics and Gibbs states

Berkeley, CA

August 2018 - May 2022

PUBLICATIONS

1. D. Bluvstein, A. A. Geim, S. H. Li, S. J. Evered, J. P. B. Ataiades, G. Baranes, **A. Gu**, T. Manovitz, M. Xu, M. Kalinowski, S. Majidy, C. Kokail, N. Maskara, E. C. Trapp, L. M. Stewart, S. Hollerith, H. Zhou, M. J. Gullans, S. F. Yelin, M. Greiner, V. Vuletic, M. Cain, M. D. Lukin. "Architectural mechanisms of a universal fault-tolerant quantum computer." [ArXiv:2506.20661](#) [quant-ph], Jun. 2025.
2. **A. Gu**, S. Oliviero, L. Leone. "Magic-induced computational separation in entanglement theory." *Physical Review X Quantum*, vol. 6, no. 2. [doi:10.1103/PRXQuantum.6.020324](#), May 2025. [Accepted for a talk at QIP 2025] [Awarded Unitary Fund grant]
3. H. Hu*, **A. Gu***, S. Majumder*, H. Ren, Y. Zhang, D. Wang, Y. You, Z. Mineev, S. Yelin, A. Seif. "Demonstration of Robust and Efficient Quantum Property Learning with Shallow Shadows." *Nature Communications*, vol. 16, no. 1, p. 2943. [doi:10.1038/s41467-025-57349-w](#), Mar. 2025.
4. **A. Gu**, L. Leone, K. Goodenough, S. Khatri. "Constant Overhead Entanglement Distillation via Scrambling." [ArXiv:2502.09483](#) [quant-ph], Feb. 2025.
5. **A. Gu**, S. Oliviero, L. Leone. "Doped stabilizer states in many-body physics and where to find them." *Physical Review A*, vol. 110, no. 6. [10.1103/PhysRevA.110.062427](#), Dec. 2024.
6. **A. Gu**, Y. Quek, S. Yelin, J. Eisert, L. Leone. "Simulating quantum chaos without chaos." [ArXiv:2410.18196](#) [quant-ph], Aug. 2024.
7. V. Menon*, **A. Gu***, R. Movassagh. "Symmetries, correlation functions, and entanglement of general quantum Motzkin spin-chains." [ArXiv:2408.16070](#) [quant-ph], Aug. 2024. [Accepted for a talk at QIP 2025]
8. **A. Gu**, L. Leone, S. Ghosh, J. Eisert, S. Yelin, Y. Quek. "Pseudomagic Quantum States." *Physical Review Letters*, vol. 132, no. 21. [10.1103/PhysRevLett.132.210602](#), May 2024. [Highlighted by the editors as an *Editors' suggestion*]. [[Phys.org News](#)] [Accepted for a long talk at AQIS 2024]
9. **A. Gu**, L. Cincio, P.J. Coles. "Practical Hamiltonian Learning with Unitary Dynamics and Gibbs States." *Nature Communications*, vol. 15, no. 1, p. 312. [10.1038/s41467-023-44008-1](#), Jan. 2024.
10. **A. Gu**, H. Hu, D. Luo, T. Patti, N. Rubin, S. Yelin. "Zero and Finite Temperature Quantum Simulations Powered by Quantum Magic." *Quantum*, vol. 8. [10.22331/q-2024-07-23-1422](#), Jul. 2024.
11. **A. Gu**, X. Huang, W. Sheu, G. Aldering, A. S. Bolton, K. Boone, A. Dey, A. Filipp, E. Jullo, S. Perlmutter, D. Rubin, E. F. Schlafly, D. J. Schlegel, Y. Shu, and S. H. Suyu. "GIGA-Lens: Fast Bayesian Inference for Strong Gravitational Lens Modeling.", *The Astrophysical Journal*, vol. 935, no. 1, [10.3847/1538-4357/ac6de4](#), Aug. 2022.
12. **A. Gu**, A. Lowe, P. Dub, P. Coles, and A. Arrasmith. "Adaptive Shot Allocation for Fast Convergence in Variational Quantum Algorithms." [ArXiv:2108.10434](#) [quant-ph], Aug. 2021.
13. J. Calvey, T. Berenc, A. Brill, L. Emery, T. Fors, **A. Gu**, K. Harkay, T. Madden, N. Sereno, and U. Wienands. "Plan for Operating the APS-Upgrade Booster with a Frequency Sweep", in Proc. IPAC'21, Campinas, SP, Brazil, May 2021, pp. 201-204. [10.18429/JACoW-IPAC2021-MOPAB046](#)
14. X. Huang, C. Storfer, **A. Gu**, et al. "Discovering New Strong Gravitational Lenses in the DESI Legacy Imaging Surveys." *The Astrophysical Journal*, vol. 909, no. 1, Mar. 2021, p. 27. [10.3847/1538-4357/abd62b](#)

* denotes equal contributions.

PRESENTATIONS AND POSTERS

Invited Talk at Phasecraft <i>t-doped Entanglement</i>	London, UK May 2025
Invited Talk for the Google Quantum AI Tensor Network Seminar <i>Quantum Motzkin spin-chains: exact results and classical simulation</i>	Cambridge, MA November 2024
Invited Talk for the QAISIG QML Seminar <i>Practical Black Box Hamiltonian Learning</i>	Singapore April 2024
Invited Talk for the Qiskit Seminar <i>Entanglement meets Magic</i>	Cambridge, MA March 2024
Poster for QIP 2024 <i>Pseudomagic Quantum States</i>	Taipei, TW January 2024
Invited Talk at Phasecraft <i>Practical Black Box Hamiltonian Learning</i>	London, UK January 2023
Invited Talk at the QED-C Poster Sessions <i>Adaptive Shot Allocation for Fast Convergence in Variational Quantum Algorithms</i>	Arlington, VA June 2022
Invited Talk at the KIPAC Cosmology Seminar <i>GIGA-Lens: A Fast Differentiable Bayesian Lens Modeling Framework</i>	Stanford, CA April 2022
Invited Talks at the LBNL NERSC Machine Learning and Data Seminar <i>GIGA-Lens: A Fast Differentiable Bayesian Lens Modeling Framework</i>	Berkeley, CA April 2022
Poster for the UC Berkeley Undergraduate Physics Poster Session <i>Hamiltonian Learning with Unitary Dynamics</i>	Berkeley, CA March 2022
Invited Talk at the Supernova Cosmology Project Undergraduate Research Forum <i>Modeling Strong Gravitational Lenses Discovered in DESI Legacy Imaging Surveys with the HST</i>	Berkeley, CA September 2021
Presentation for the Information Science & Technology Institute Summer School Symposium <i>Learning Properties of Physical Systems from Quantum Circuit Data</i>	Los Alamos, NM August 2021
Poster for the UC Berkeley Undergraduate Physics Poster Session <i>Restricted Boltzmann Machines for Quantum State Tomography</i>	Berkeley, CA May 2021
Presentation for the 2020 Lee Teng Symposium <i>Tracking Studies with Frequency Ramp for the APS-U Booster</i>	Chicago, IL August 2020

WORK EXPERIENCE

Google Quantum AI <i>Research Intern</i> Developing applications of decoded quantum interferometry for decoding algebraic geometry codes	Los Angeles, CA May 2025 - August 2025
Phasecraft <i>Quantum Software Intern</i> Designing efficient and noise-resilient methods for materials models simulation	Bristol, UK May 2022 - August 2022
UC Berkeley Physics 111A Instrumentation Lab Undergraduate Teaching Assistant <i>Supervised by course instructors Dr. Amin Jazaeri and Dr. Mathias Reinsch</i>	Berkeley, CA May 2021 - August 2021
Gridware <i>Research Intern</i>	San Francisco, CA December 2019 - February 2020
Salesforce <i>Software Engineer Intern</i>	San Francisco, CA May - August 2019

AWARDS & HONORS

- Recipient of the IBM PhD Fellowship (2024 – 2025)
- Recipient of the Unitary Fund Grant (Spring 2023)
- Harvard Quantum Initiative Generation Q Graduate Fellowship (Fall 2023)
- NERSC High Performance Computing Achievement Awards (Fall 2022)
- UC Berkeley Physics Department Citation, awarded to the top graduating senior in the physics department (Spring 2022)
- Phi Beta Kappa Member
- H2H8 Research Grant (Spring 2021 – Spring 2022)
- Electrical Engineering & Computer Science Departmental Award (Fall 2021)
- Berkeley Physics Undergraduate Research Scholar (Spring 2021, Fall 2021)
- Western Union Foundation Global Scholarship (Fall 2019 – Spring 2020)
- Grand prize winner (from over 100 participants) at Jane Street's San Francisco ETC (Summer 2019)
- Overall third place winner (from over 700 participants) at CalHacks 2018, as well as the winner of best Google hack. Collaborated with Google on a case study for Google Cloud Platform.
- Edward Frank Kraft Award (Fall 2018)
- Broadridge Scholarship (Fall 2018 – Spring 2022)