

Gregory D. Kahanamoku-Meyer, PhD

also known as: Gregory D. Meyer

Summary

I am a researcher who bridges computer science and quantum physics, with a focus on bringing theoretical ideas to practical realization. I design algorithms and cryptographic protocols for quantum computers, specifically targeting current or near-term quantum devices. I also develop high-performance computing tools for discovering and engineering new physics.

Academic History

JAN 2024 - PRESENT

Massachusetts Institute of Technology – *Postdoctoral Associate/Fellow*

- Laboratories of Dr. Isaac Chuang and Dr. Peter Shor

JULY 2023 - JAN 2024

Lawrence Berkeley National Laboratory + UC Berkeley – *Postdoctoral Researcher*

AUGUST 2017 - JUNE 2023

University of California at Berkeley – *PhD, Physics*

- Advisor: Dr. Norman Yao (Physics, now at Harvard Physics)
- Co-advised by Dr. Umesh Vazirani (Electrical Engineering and Computer Science)
- Master's degree awarded 2019

SUMMER 2021, SUMMER 2023

Simons Institute for the Theory of Computing – *Visiting Researcher*

OCTOBER 2016 - JULY 2017

University of California at Berkeley – *Post-baccalaureate Researcher*

AUGUST 2012 - MAY 2016

Yale University – *Bachelor of Science, Physics (intensive track)*

- Distinction in the major
- Cum laude
- Research thesis #1 (2015): Analysis of experimental high-energy particle physics data with the ATLAS collaboration
- Research thesis #2 (2016): Numerical optimization of microwave pulse sequences for coupled multi-level superconducting qubit-microwave cavity systems

SUMMER 2015

National Institute of Standards and Technology (NIST), Time and Frequency Division – *Summer Undergraduate Research Fellow*

SUMMER 2013 - MAY 2015

European Organization for Nuclear Research (CERN), ATLAS collaboration – *Undergraduate Researcher*

Fellowships, Grants, and Awards

2025-2027

Intelligence Community Postdoctoral Fellowship – *US Department of Defense*

2018-2021

Natl. Defense Science & Engineering Grad. Fellowship – *US Department of Defense*

2018 (declined for NDSEG above)

Graduate Research Fellowship Program (GRFP) – *US National Science Foundation*

2017-2018

Heising-Simons Fellowship in Physics – *University of California at Berkeley*

UNDERGRADUATE AWARDS AND PRIZES:

Howard L. Schultz Award; Summer Undergraduate Research Fellowship at the National Institute of Standards and Technology; Alan S. Tetelman 1958 Fellowship; Yale Science Scholars Program

Publications

13. **G. Kahanamoku-Meyer**, S. Ragavan, K. Van Kirk. **Parallel Spooky Pebbling Makes Regev Factoring More Practical.** [arXiv:2510.08432](https://arxiv.org/abs/2510.08432)
12. **G. Kahanamoku-Meyer**, J. Blue, T. Bergamaschi, C. Gidney, I. Chuang. **A log-depth quantum Fourier transform that rarely needs ancillas.** [arXiv:2505.00701](https://arxiv.org/abs/2505.00701)
11. **G. Kahanamoku-Meyer**, S. Ragavan, V. Vaikuntanathan, K. Van Kirk. **The Jacobi factoring circuit: quantum factoring with near-linear gates and sublinear space and depth.** [STOC 2025](https://arxiv.org/abs/2505.00701)
10. **G. Kahanamoku-Meyer**, N. Yao. **Fast quantum integer multiplication with zero ancillas.** [arXiv:2403.18006](https://arxiv.org/abs/2403.18006)
9. **G. Kahanamoku-Meyer**. **Forging quantum data: classically defeating an IQP-based quantum test.** [Quantum 7, 1107 \(2023\)](https://arxiv.org/abs/2311.1107)
8. Z. Brakerski, A. Gheorghiu, **G. Kahanamoku-Meyer**, E. Porat, T. Vidick. **Simple Tests of Quantumness Also Certify Qubits.** [CRYPTO 2023](https://arxiv.org/abs/2311.1107)
7. **G. Kahanamoku-Meyer** and D. Zhu (co-first authors), L. Lewis, C. Noel, O. Katz, B. Harraz, Q. Wang, A. Risinger, L. Feng, D. Biswas, L. Egan, A. Gheorghiu, Y. Nam, T. Vidick, U. Vazirani, N. Yao, M. Cetina, C. Monroe. **Interactive cryptographic proofs of quantumness using mid-circuit measurements.** [Nat. Phys. 19, 1725–1731 \(2023\)](https://arxiv.org/abs/2305.1725)
6. **G. Kahanamoku-Meyer**, S. Choi, U. Vazirani, N. Yao. **Classically-verifiable quantum advantage from a computational Bell test.** [Nat. Phys. 18, 918–924 \(2022\)](https://arxiv.org/abs/2205.0918)

5. R. Van Beeumen, K. Ibrahim, **G. Kahanamoku-Meyer**, N. Yao, C. Yang. **Enhancing scalability of a matrix-free eigensolver for studying many-body localization.** [The International Journal of High Performance Computing Applications](#), 36(3), 307–319 (2022)
4. B. Kobrin, Z. Yang, **G. Kahanamoku-Meyer**, C. Olund, J. Moore, D. Stanford, N. Yao. **Many-Body Chaos in the Sachdev-Ye-Kitaev Model.** [Phys. Rev. Lett.](#) 126, 030602 (2021)
3. F. Machado, D. Else, **G. Kahanamoku-Meyer**, C. Nayak, N. Yao. **Long-Range Prethermal Phases of Nonequilibrium Matter.** [Phys. Rev. X](#) 10, 011043 (2020)
2. R. Van Beeumen, **G. Kahanamoku-Meyer**, N. Yao, C. Yang. **A scalable matrix-free iterative eigensolver for studying many-body localization.** [HPCAsia2020: Proceedings of the International Conference on High Performance Computing in Asia-Pacific Region \(2020\)](#)
1. F. Machado, **G. Kahanamoku-Meyer**, D. Else, C. Nayak, N. Yao. **Exponentially Slow Heating in Short and Long-range Interacting Floquet Systems.** [Phys. Rev. Research](#) 1, 033202 (2019)

Seminars and other talks

- 2025-10-15, Tufts University. *Quantum Computing Seminar.*
- 2025-09-18, Tufts University. *Quantum Computing Seminar.*
- 2025-06-24, STOC 2025.
- 2025-05-26, Simons Institute. *Quantum Reunion Workshop.*
- 2025-05-23, UC San Diego. *Theory lunch seminar.*
- 2025-05-02, University of Washington. *Theory lunch seminar.*
- 2024-11-19, IBM. *Quantum computing seminar.*
- 2024-10-03, MIT Quantum Information Science group. *Quantum Information Processing Seminar.*
- 2024-09-11, University of Maryland + NIST. *QICS seminar.*
- 2024-05-16, Google Quantum AI. *Qualtran group meeting seminar.*
- 2023-11-02, University of Hawai'i at Mānoa. *Department colloquium.*
- 2023-10-26, Google Quantum AI. *Guest seminar.*
- 2023-10-25, Caltech Institute for Quantum Information and Matter. *IQIM seminar.*
- 2023-10-20, Massachusetts Institute of Technology. *Quantum information science group seminar.*
- 2023-10-19, Harvard University. *Quantum information seminar.*
- 2023-07-14, Simons Institute for the Theory of Computing. *Summer cluster lightning talk.*
- 2023-03-01, IBM Quantum. *Guest seminar.*
- 2022-08-04, CLEAR Project. *PubScience.*
- 2022-05-03, UC Berkeley. *Guest lecture, CHEM 195/295: Special topics in Quantum Computing.*
- 2022-03-15, APS March Meeting. *Quantum Digital and Analog Algorithms [Focus]. (invited)*
- 2022-02-22, Harvard University, Department of Physics. *CMT Kid's Seminar.*
- 2022-02-09, Quantum Systems Accelerator (QSA). *Science session.*
- 2021-11-10, IBM Quantum. *Quantum computing seminar.*
- 2021-10-08, MIT Cryptography and Information Security group. *CIS seminar.*
- 2021-09-29, NSF Challenge Institute for Quantum Computation (CIQC). *Colloquium introduction.*
- 2021-09-28, Physics of Information and Quantum Technologies, IT Lisbon. *Group meeting.*
- 2021-07-14, Simons Institute for the Theory of Computing. *Quantum Wave in Computing Reunion.*
- 2021-05-21, MIT Quantum Information Science group. *Quantum Information Processing Seminar.*
- 2021-04-26, UT Austin quantum information center. *Group meeting.*
- 2021-04-23, AIDE-QC. *All hands meeting.*
- 2021-04-21, Quantum Systems Accelerator (QSA). *Science session.*
- 2021-02-01, Quantum Information Processing (QIP 2021).
- 2020-08-26, AIDE-QC. *Verification and debugging thrust meeting.*
- 2020-06-02, APS DAMOP 2020.
- 2019-05-30, APS DAMOP 2019.
- 2018-03-08, APS March Meeting 2018.
- 2017-06-07, APS DAMOP 2017.