Gregory D. Kahanamoku-Meyer

Formerly: Gregory D. Meyer
High performance computing, quantum computing, and cryptography

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EDUCATION

University of California at Berkeley — *PhD [expected 2023]*

AUGUST 2017 - PRESENT

Lab of Dr. Norman Yao, Department of Physics. MA awarded 2019.

Yale University, New Haven, CT — *BS Physics (intensive track)*

AUGUST 2012 - MAY 2016

Distinction in the major; cum laude; Howard L Schultz award.

SELECTED RESEARCH PROJECTS

Classically verifiable quantum advantage

We present a new protocol for demonstrating quantum computational advantage, with efficient classical verification. A quantum circuit is presented in Cirq. A first experimental implementation is performed in trapped ions, using mid-circuit measurements.

GDKM, S. Choi, U. Vazirani, N. Yao. *Classically-verifiable quantum advantage from a computational Bell test.* arXiv:2104.00687 (upcoming Nature Physics)

GDKM, D. Zhu, et al. *Interactive Protocols for Classically-Verifiable Quantum Advantage.* arXiv:2112.05156

dynamite: massively parallel numerical quantum dynamics

Extremely fast time evolution and eigensolving for numerical quantum many-body spin chain physics, parallelized using MPI and CUDA. dynamite.readthedocs.io

Forging quantum data: classically defeating a quantum test

I demonstrate how to break a cryptographic "proof of quantumness" that had remained unbroken since 2008. Implementation in Julia.

GDKM. *Forging quantum data: classically defeating an IQP-based quantum test.* arXiv:1912.05547

PROGRAMMING

Languages: Python, Julia, C, C++, ...

Parallelism: MPI, OpenMP, CUDA

Tools: Cython, CUDA.jl, iTensor, Cirq, Qiskit, Docker, SLURM

GitHub: github.com/GregDMeyer

GRAD. FELLOWSHIPS

National Defense Science + Engineering Graduate Fellowship (NDSEG) *Dept. of Defense*
$115,200 + tuition, fees, etc.

Graduate Research Fellowship Program (GRFP) *National Science Foundation*
[declined for NDSEG above]
$102,000 + institutional grant

Heising-Simons Fellowship in Physics
UC Berkeley $67,000

TALKS

Invited conference talk: APS March Meeting, *Focus session: Quantum digital and analog algorithms*

Seminars: Harvard Physics, MIT Physics, MIT Cryptography and Security, IBM Quantum, Simons Institute, UT Austin Quantum Info., IT Lisbon Physics