Shawn **Geller**

Graduate Student · Quantum Characterization

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Summary

PhD student working in quantum information theory, specializing in characterization of quantum systems.

Work Experience

National Institute of Standards and Technology — *Boulder, CO*

Research Assistant, Knill Group — *January, 2019 - Present*

- Developed theory for adaptive measurement strategies for application to repeated fluorescence measurements, for example in trapped-ion systems.
- Worked with Ion storage group at NIST to characterize measurement fidelity of an ion system under repetitive fluorescence measurement.
- Worked with Kaufman Lab at JILA to characterize indistinguishability of a neutral atom array towards implementing a BosonSampling experiment.
- Worked with Aumentado group at NIST to characterize entanglement in coupled mechanical oscillators.

University of Colorado — *Boulder, CO*

Research Assistant, Dessau Group — *May, 2018 - January, 2019*

- Worked on a project to use computer vision to improve a float zone crystal growth process
- Performed sample preparation for ARPES at both the in-house laser-ARPES system and at the Advanced Light Source

University of Colorado — *Boulder, CO*

Teaching Assistant — *August, 2017 - May, 2018*

- Taught recitation sections of introductory electrodynamics and introductory mechanics.

National Institute of Standards and Technology — *Boulder, CO*

Research Assistant, Knappe Group — *August, 2015 - August, 2016*

- Performed testing of Rubidium atomic magnetometers and gradiometers.
- Designed PCBs for lasers to heat an array of atomic magnetometers.

Selected Presentations

SQuInT 2022 — *Berkeley, CA*

Contributed talk to be given soon on Adaptive Sequential Measurements — *Oct. 2022*

Publications

Improving quantum state detection with adaptive sequential observations

S Geller, DC Cole, S Glancy, E Knill

Quantum Science and Technology 7 (3), 034004

May 13, 2022

High-fidelity indirect readout of trapped-ion hyperfine qubits

SD Erickson, JJ Wu, PY Hou, DC Cole, **S Geller**, A Kwiatkowski, S Glancy, E Knill, DH Slichter, AC Wilson, D Leibfried

Physical Review Letters 128 (16), 160503

April 21, 2022

Direct observation of deterministic macroscopic entanglement

S Kotler, GA Peterson, E Shojaee, F Lecocq, K Cicak, A Kwiatkowski, **S Geller**, S Glancy, E Knill, RW Simmonds, J Aumentado, JD Teufel

Science 372 (6542), 622-625

May 7, 2021

A microfabricated optically-pumped magnetic gradiometer

D Sheng, AR Perry, SP Krzyzewski, **S Geller**, J Kitching, S Knappe

Applied Physics Letters 110 (3), 031106

January 16, 2017

Education

Reed College *Portland, OR*

B. A. in Physics *Aug. 2011 - May 2015*

- Phi Beta Kappa

University of Colorado *Boulder, CO*

M. S. in Physics *Aug. 2017 - May 2021*

University of Colorado *Boulder, CO*

Ph. D. in Physics *Expected May 2023*