

Caleb Rotello

RESEARCH INTERN · QUANTUM APPLICATIONS

303-475-1515 | caleb@rotello.dev | [calebrotello](https://github.com/calebrotello) | [calebrotello](https://www.linkedin.com/in/calebrotello)

Education

Colorado School of Mines

M.S. IN QUANTUM ENGINEERING

Golden, Colorado

May 2021 - Aug. 2022

- Thesis title: *Symmetry Protected Subspaces in Quantum Simulations*
- Advisor: Dr. Eliot Kapit, Associate Professor
- 4.0 GPA

Colorado School of Mines

B.S. IN COMPUTER SCIENCE

Golden, Colorado

Aug. 2018 - May 2021

- 3.78 GPA, 4.0 Major GPA
- Transamerica C-MAPP Scholar, 2020

Skills

Quantum Computing	Quantum code execution, NISQ algorithms, Noise mitigation, Mathematical physics
Programming Languages	C++, Python, OCaml, R, Matlab, Mathematica
Software	Cirq, Qiskit, Lex, Yacc, Git
Hardware	7K Cryostat, SQUID, Class 1000 clean room, Photolithography, Evaporator, VNA calibration & measurement

Work Experience

National Renewable Energy Laboratory

QUANTUM COMPUTING RESEARCH INTERN

Golden, Colorado

Nov. 2021 - Present

- Discovered an algorithm to identify symmetry protected subspaces in quantum systems
 - *Automated detection of symmetry-protected subspaces in quantum simulations*, arxiv:2302.08586
- Wrote gate model quantum simulations
- Reviewed quantum advantage in power systems
- Collaborated with researchers across disciplines

Colorado School of Mines

GRADUATE RESEARCH ASSISTANT

Golden, Colorado

May 2021 - Aug. 2022

- Submitted loop quantum gravity simulation code to Google's Sycamore processor
- Implemented quantum optimization algorithms for research
- Wrote and successfully defended a thesis
 - *Symmetry-protected subspaces in quantum simulations*

Invitae

RESEARCH & DEVELOPMENT INTERN

Boulder, Colorado

Summers 2020, 2021

- Discovered algorithm to efficiently detect DNA sample errors with lexical analysis
- Created analysis code for research on acute myeloid leukemia
- Implemented algorithm to pair RNA alpha and beta sequences across multiple cells
- Wrote C++, Python, and R AMP chemistry analysis software

Honors

- 2022 **1st Place**, Womanium Hackathon, IBM Challenge *Humans vs Quantum Computers*
- 2020 **4th Place**, HackCU VI Hackathon
- 2019 **Semifinalist**, RASC-AL

Online

CU Boulder

NASA

Extracurricular Activity

- 2011-17 **Eagle Scout**, Boy Scouts of America
- 2021-22 **Vice President**, Creative Writing Club
- 2022 **Poetry Editor**, *High Grade Art Journal*

Troop 794, Colorado

Mines

Mines