Reece Robertson

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EDUCATION

PhD, Computer Science — **May 2026**
University of Maryland, Baltimore County — *Baltimore, Maryland*
- Dissertation: **Quantum Anti-Fragility: Case Studies in Error-Assisted Quantum Algorithms**
- UMBC Cyber Security Graduate Fellow
- UMBC Quantum Science Institute Affiliated Graduate Fellow
- Advisor: Sebastian Deffner, Physics

MS, Computer Science — **December 2024**
University of Maryland, Baltimore County — *Baltimore, Maryland*
- GPA: 3.94

BS, Applied and Computational Mathematics Emphasis (ACME) — **April 2022**
Brigham Young University — *Provo, Utah*
- Minor: Computer Science
- Honors Program
- GPA: 3.93

RESEARCH INTERESTS

- Quantum Information Science
- Quantum Error Correction
- Quantum Artificial Intelligence
- Quantum Networking
- Quantum Cryptography

PUBLICATIONS

Gibbs State Preparation on Trapped-Ion Devices — **In Preparation**
Reece Robertson, Mirko Consiglio, Emery Doucet, Tony Apollaro, Sebastian Deffner

Unitary Reconstruction of Distant CNOTs on NISQ Hardware — **In Preparation**
Reece Robertson, Adrian Romer, Zakaria Mzaouali, Christiane Koch, Sebastian Deffner

Resolvent-Norm Diagnostics in Lindblad-Generated Quantum Maps — **In Preparation**
Michael Moody, **Reece Robertson**, Devjyoti Tripathy, Sebastian Deffner

Noise-Aware Quantum Dynamics Compilation Via Tensor Networks — **In Preparation**
Emiliano Godinez-Ramirez, **Reece Robertson**, Roeland Wiersema, Lukasz Cincio

Introducing UNIQuE: The Unconventional Noiseless Intermediate Quantum Emulator — **November 2025**
Refinement of *Implementing a High-Performance Quantum Computing Emulator*
Reece Robertson, Dan Ventura
IEEE CASCON 2025 (Accepted); [arXiv:2409.07000]
Awarded IEEE Research Object Reviewed Badge

Simon's Period Finding on a Quantum Annealer — **September 2025**
Reece Robertson, Emery Doucet, Zakaria Mzaouali, Krzysztof Domino, Bartłomiej Gardas, Sebastian Deffner
IEEE Quantum Week 2025 (Accepted) [arXiv:2504.10771]

On the Baltimore Light RailLink into the quantum future — **August 2025**
Krzysztof Domino, Emery Doucet, **Reece Robertson**, Bartlomiej Gardas, and Sebastian Deffner
Sci. Rep. 15, 29576 (2025) [arXiv:2406.11268]

Implementing Grover's Algorithm On NISQ Chips — **July 2025**
Reece Robertson, Colburn Riffel, Matthew Slodov, Peter Hendrickson
IEEE NAECON 2025 (Accepted)

Steane Code Implementation on Toffoli Gates — **July 2025**
Colburn Riffel, **Reece Robertson**, Matthew Slodov, Peter Hendrickson
IEEE NAECON 2025 (Accepted)

Simon's algorithm in the NISQ cloud — **June 2025**
Reece Robertson, Emery Doucet, Ernest Spicer, Sebastian Deffner
Presented at Quantum Theromodynamics Conference 2024
Entropy 27, 658 (2025) [arXiv:2406.11771]

Implementing a High-Performance Quantum Computing Emulator **March 2022**
Reece Robertson
BYU Undergraduate Honors Thesis 218

RESEARCH EXPERIENCE

Quantum Computing Engineer, Specialist **May 2021–Present**
KBR *Chantilly, Virginia*
- Developing software tool for hardware-aware quantum algorithm compilation and resource estimation.
- Conducting research on quantum error correction routines and quantum search algorithms.
- Implementing Qiskit (Python) quantum solutions on 10+ hardware platforms for practical applications.
- Tied for first place and earned advanced distinction in all 2021–2024 IBM Quantum Challenges.

Quantum Computing Summer School Fellow **June 2025–August 2025**
Los Alamos National Laboratory *Los Alamos, New Mexico*
- Researched noise-aware variational algorithm optimization using tensor networks (JAX) on HPC system.
- Presented results to senior researchers and laboratory directorship.
- Studied emergent research in quantum information science.

Undergraduate Researcher in Quantum Field Theory **July 2020–May 2021**
BYU Department of Mathematics *Provo, Utah*
- Studied interaction of elementary particles in square potential well using partial differential equations.
- Presented weekly on topics in quantum field theory.

TEACHING EXPERIENCE

Quantum Computing & Software Development Guest Lecturer **August 2022–December 2024**
University of Maryland, Baltimore County *Baltimore, Maryland*
- Lectured bimonthly to graduate and undergraduate students on quantum computation and programming.
- Organized symposium between 20+ computer scientists and quantum physicists.
- Facilitated group and individual project presentation events for 100+ students
- Fielded questions regarding lecture material and community best practices.

Quantum Computing, Coding Theory, & Software Development Teaching Assistant **August 2022–December 2024**
University of Maryland, Baltimore County *Baltimore, Maryland*
- Mentored 300+ graduate and upper-class undergraduate students in quantum computing and coding theory.
- Mentored 150+ upper-class undergraduate students throughout the software development life cycle.
- Wrote weekly course material using LaTeX.
- Graded weekly assignments and providing individualized feedback to students.

Instructor for Qubit by Qubit High School Summer Program for UMBC **July 2024**
University of Maryland, Baltimore County *Baltimore, Maryland*
- Taught 15+ high school students foundational principles of quantum information science.
- Guided students in quantum software research and development projects.
- Fostered continuing research collaboration with an exceptional student.

Algorithm Design Lab Teaching Assistant **August 2021–December 2021**
BYU Department of Mathematics *Provo, Utah*
- Taught 90+ undergraduates in Python programming and essential programming concepts.
- Trained students to effectively write and debug code for 8 hours per week.

PRESENTATIONS

Simon's Period Finding on a Quantum Annealer **September 2025**
UMBC Quantum Science Institute

Simon's Period Finding on a Quantum Annealer **May 2025**
INQA Seminar (YouTube)

Introduction to Quantum Error Correction **April 2025**
Guest Lecture for Dr. Matthew Gibson (UTSA)

UMBC Combined Quantum Thermodynamics & Quantum Computation Research Symposium **October 2024**
Organizer & Presenter

FELLOWSHIPS & AWARDS

IEEE Research Object Reviewed Badge for UNIQuE Open-Source Software Package **November 2025**

UMBC Quantum Science Institute Graduate Fellowship **August 2025–August 2026**

UMBC Cyber Graduate Fellowship **January 2025–December 2025**

Full Tuition Academic Scholarship **January 2020–April 2022**