

JAMES BERKELEY LARSEN

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EDUCATION

- BS** Brigham Young University April 2023
Mathematics
Applied and Computational Mathematics Emphasis
Computer Science Minor
Graduated Magna Cum Laude (GPA: 3.98/4.00)
- PhD** University of Michigan May 2028
Applied and Interdisciplinary Mathematics
Scientific Computing

HONORS AND AWARDS

- Michigan Institute for Computational Discovery & Engineering (MICDE) Fellow** 2025
- DOE Computational Science Graduate Fellowship (CSGF)** 2023 to 2027
- BYU Department of Mathematics Top Junior** 2022
- BYU College of Physical and Mathematical Sciences Dean's List** 2021 to 2022
- UT Austin Qiskit Fall Fest 1st Place** 2021
Team project verifying quantum random number generation at quantum hackathon hosted by IBM at UT Austin
- BYU Student Research Conference "Best in Session"** 2021
Presentation on using machine learning to classify crowd noise

RESEARCH EXPERIENCE

- Lawrence Berkeley National Laboratory**, Berkeley, CA May 2025 to Aug 2025
R&D Intern, Quantum Algorithms and Applications Collaboratory
Research focus: Quantum signal processing, optimal constrained polynomial approximation, Fourier analysis (developed software: <https://qsppack.readthedocs.io/>)
- Sandia National Laboratories**, Albuquerque, NM May 2022 to Apr 2025
R&D Intern, Quantum Algorithms and Applications Collaboratory

Research focus: Quantum algorithms for ground state preparation, speed limits for open quantum systems

BYU Department of Mathematics, Provo, UT

Aug 2021 to Apr 2023

Undergraduate Research Assistant, with Dr. Mark Kempton

Research focus: Isospectral reductions in relation to quantum walks on graphs

TEACHING EXPERIENCE

Brigham Young University, Provo, UT

Sep 2022 to Dec 2022

Department of Mathematics

Teaching Assistant: Algorithm Design and Optimization Lab

- Prepared curriculum and course materials for Python programming labs
- Taught content to 50+ students, provided one-on-one tutoring, graded work

Brigham Young University, Provo, UT

Sep 2020 to Dec 2020

Department of Computer Science

Teaching Assistant: Data Structures and Algorithms

- Provided on-demand tutoring and C++ debugging assistance for 200+ students
- Collaborated with three professors and 20+ assistants to improve course content

PUBLICATIONS

Peer Reviewed Publications

Larsen, J.B., Grace, M.D., Baczewski, A.D., and Magann, A.B., “Feedback-based Quantum Algorithms for Ground state Preparation”

Published in *Physical Review Research* 9/25/2024.

Kocia, L., Calderon-Vargas, F.A., Grace, M.D., Magann, A.B., Larsen, J.B., Baczewski, A.D., and Sarovar, M., “Self-Healing of Trotter Error in Digital Adiabatic State Preparation”

Published in *Physical Review Letters* 8/7/2023.

Larsen, J.B., Grace, M.D., Baczewski, A.D., and Magann, A.B., “Lyapunov Control-inspired Quantum Algorithms for Ground State Preparation”

Published in *CSRI Summer Proceedings 2022* by Sandia National Laboratories.

Journal Papers in Preparation

Larsen, J.B., Albash, T., Magann, A.B., and Arenz, C., “Speed Limits for Annealing in Open Quantum Systems”

PRESENTATIONS

Poster Presentation, “Path-independent Speed Limits for Open Quantum Systems”
Quantum Information Processing Conference (QIP), Feb 2025.

Lecture, “Quantum Singular Value Transformation”
Arbeitsgemeinschaft on Quantum Signal Processing and Nonlinear Fourier Analysis, Oct 2024.

Poster Presentation, “Feedback-based Quantum Algorithms for Ground State Preparation”
Southwest Quantum Information and Technology Workshop (SQuInT), Oct 2023.

Oral Presentation, “Lyapunov Control-Inspired Quantum Algorithms for Ground State Preparation”
APS March Meeting, Mar 2023.

Poster Presentation, “Quantum Walks on Graphs”
Joint Mathematics Meetings (JMM), Jan 2023.

Poster Presentation, “Lyapunov Control-Inspired Quantum Algorithms for Ground State Preparation”
Southwest Quantum Information and Technology Workshop (SQuInT), Oct 2022.

Oral Presentation, “Quantum Walks on Graphs”
BYU Student Research Conference (SRC), Mar 2022.

Oral Presentation, “Crowd Noises Classification”
BYU Student Research Conference (SRC), Mar 2021.

PROFESSIONAL AFFILIATIONS

Society for Industrial and Applied Mathematics (SIAM)	2021-Present
BYU Chapter President from September 2021 to December 2022	

LANGUAGES

English: Native

Chinese: Advanced Speaking and Listening, Intermediate Writing and Reading

French: Intermediate Speaking, Listening, and Reading