
Laura Cui

Pasadena, CA 91125
lcui (at) caltech.edu

EDUCATION

Ph.D. Physics, <i>California Institute of Technology</i>	SEPT 2023 - PRESENT
Advised by John Preskill and Fernando Brandão	
S.B. Physics and Mathematics, <i>Massachusetts Institute of Technology</i>	SEPT 2019 - JUNE 2023
GPA: 4.9/5.0, Thesis: "Probing Local Many-Body Dynamics with Random Quantum Circuits"	

SELECTED AWARDS & HONORS

Sigma Pi Sigma Inductee	2023
<i>Invited for outstanding scholarship in physics at MIT</i>	
NSF Graduate Research Fellowship Program Honorable Mention	2023
<i>Received one of 825 honorable mentions</i>	
MIT Goldwater Scholarship Nomination	2022
<i>Selected as one of two nominees from the MIT School of Science</i>	
Regeneron Science Talent Search Scholar	2019
<i>Awarded for work on near-threshold doubly heavy tetraquark states</i>	

SELECTED PUBLICATIONS & PREPRINTS

* denotes equal contribution

- [3] **Laura Cui**, Thomas Schuster, Liang Mao, Hsin-Yuan Huang, Fernando Brandão, *Random unitaries from Hamiltonian dynamics*. arXiv:2510.08434 [quant-ph] (2025).
 - [2] Liang Mao, **Laura Cui**, Thomas Schuster, Hsin-Yuan Huang, *Random unitaries that conserve energy*. arXiv: 2510.08448 [quant-ph] (2025).
 - [1] **Laura Cui**,* Thomas Schuster,* Fernando Brandão, Hsin-Yuan Huang, *Unitary designs in nearly optimal depth*. arXiv:2507.06216 [quant-ph] (2025).
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RESEARCH TALKS & SEMINARS

Unitary designs in nearly optimal depth

Waterloo IQC Quantum Innovators Workshop, *Invited talk*

OCT 2025

Designs and random dynamics in very low depth

Stanford Institute for Theoretical Physics, *QIQC Seminar*
NUS Center for Quantum Technologies, *Seminar talk*

MAY 2025
APR 2025

Random quantum circuits as a model for the classification of topological phases

MIT Center for Theoretical Physics, *QIP Seminar*

JUNE 2023

INVITED SCHOOLS & WORKSHOPS

Workshop II on Random Quantum Circuits (Upcoming) <i>Institute for Theoretical Physics, University of Cologne, Cologne, Germany</i>	AUG 2026
Workshop on Random Quantum Circuits <i>QuSoft and Centrum Wiskunde & Informatica, Amsterdam, Netherlands</i>	NOV 2024

ADDITIONAL SCHOOLS & WORKSHOPS

Cal-Bay Quantum School <i>Munich Center for Quantum Science and Technology, Garching, Germany</i>	JUNE 2024
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TEACHING EXPERIENCE

California Institute of Technology

Teaching Assistant, <i>Ph/CS 219a: Quantum Computation</i>	FALL 2025
Teaching Assistant, <i>Ph 129b: Analytic Techniques in Mathematical Methods of Physics</i>	WINTER 2025
Teaching Assistant, <i>Ph 12: Waves, Quantum Physics, and Statistical Mechanics</i>	WINTER 2024 - FALL 2024

Massachusetts Institute of Technology

Undergraduate Teaching Assistant, <i>6.S000: Mathematics for Computer Science</i>	SPRING 2023
Lecturer and Head Grader, <i>18.S097: Proof-Writing Workshop</i>	WINTER 2021
Undergraduate Teaching Assistant, <i>8.02: Electricity and Magnetism</i>	FALL 2020

Other

Course mentor, <i>MIT Physics Mentorship Program</i>	FALL 2021 - SPRING 2023
Residential Counselor, <i>MathROOTS @ MIT</i>	JUNE 2022 - JULY 2022
Teaching Assistant, <i>Art of Problem Solving Academy Gaithersburg</i>	NOV 2017 - JULY 2020

ADDITIONAL PUBLICATIONS & MANUSCRIPTS

- [2] Rubi Gonzalez, **Laura Cui**, *A conversation with Angie Drobnic Holan on misinformation, fact-checking, and the modern media landscape*. MIT Science Policy Review **6**, 153-158 (2025).
 - [1] **Laura Cui**, *Local information scrambling in random quantum circuits*. Based on work supervised by John Preskill, Alexander Dalzell, and Hsin-Yuan (Robert) Huang. Presented in Caltech Summer Undergraduate Research Fellowship Symposium (2021).
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ADDITIONAL TECHNICAL EXPERIENCE

Interuniversity Institute for Marine Sciences, <i>Research Assistant</i> Supervised by Derya Akkaynak	JUNE 2023 - AUG 2023
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MIT Center for Theoretical Physics, <i>Research Assistant</i> Supervised by Aram Harrow, Daniel Ranard	JAN 2022 - JAN 2024
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Caltech Institute for Quantum Information and Matter, <i>Research Assistant</i> Supervised by John Preskill, Alexander Dalzell, Hsin-Yuan (Robert) Huang	JUNE 2021 - AUG 2021
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MIT Research Laboratory of Electronics, <i>Research Assistant</i> Supervised by Dirk Englund, Carlos Errando Herranz	JUNE 2020 - AUG 2020
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J.P. Morgan Chase & Co., <i>Quantitative Research Intern</i> Rates Data Analytics Team	JAN 2020
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University of Maryland Joint Quantum Institute, <i>Research Assistant</i> Supervised by Jacob M. Taylor, Daniel Carney	JUNE 2019 - AUG 2019
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University of Maryland Center for Fundamental Physics, Visitor
Supervised by Thomas D. Cohen

JUNE 2018 - AUG 2018

blair3sat, Co-founder, Optical Mission Lead
With Ryan Tse, Patrick Kim, Sujay Swain, Benjamin Cohen, and Gautom Das

SEPT 2017 - JUNE 2019

Naval Research Laboratory, Science and Engineering Apprenticeship Program
Space Science Division

JUNE 2017 - AUG 2017

PROFESSIONAL ACTIVITIES

I have served as a subreviewer for the Quantum Information Processing (QIP) and Theory of Quantum Computation, Communication and Cryptography (TQC) conferences.

OUTREACH & COMMUNITY SERVICE

Caltech CUWiP 2028 , Organizing Committee	PRESENT
Caltech FUTURE of Physics , Co-chair	SUMMER 2025
Caltech Gender Minorities and Women in PMA , Treasurer	FALL 2024 - PRESENT
Caltech PMA Graduate Student Advisory Board , Member	FALL 2023 - PRESENT
MIT Physics Values Committee , Undergraduate Representative	FALL 2021 - SPRING 2023
MIT Undergraduate Society for Women in Mathematics , President	SUMMER 2022 - SPRING 2023
MIT Undergraduate Womxn in Physics , Executive Board Member	SUMMER 2021 - SPRING 2023
MIT Society of Physics Students , Executive Board Member	SUMMER 2021 - SPRING 2023
MIT Educational Studies Program , Executive Board Member	FALL 2019 - FALL 2022
HMMT Education , Speaker	SPRING 2021 - FALL 2021