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## Laura Cui

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### EDUCATION

- Ph.D.** Physics, *California Institute of Technology* SEPT 2023 - PRESENT  
⊗ Advised by John Preskill and Fernando Brandão
- S.B.** Physics and Mathematics, *Massachusetts Institute of Technology* SEPT 2019 - JUNE 2023  
⊗ GPA: 4.9/5.0, Thesis: “Probing Local Many-Body Dynamics with Random Quantum Circuits”
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### SELECTED AWARDS & HONORS

- Sigma Pi Sigma Inductee** 2023  
*Invited for outstanding scholarship in physics at MIT*
- NSF Graduate Research Fellowship Program Honorable Mention** 2023  
*Received one of 825 honorable mentions*
- MIT Goldwater Scholarship Nomination** 2022  
*Selected as one of two nominees from the MIT School of Science*
- Regeneron Science Talent Search Scholar** 2019  
*Awarded for work on near-threshold doubly heavy tetraquark states*
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### 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* MAY 2025  
NUS Center for Quantum Technologies, *Seminar talk* APR 2025
- Random quantum circuits as a model for the classification of topological phases**  
MIT Center for Theoretical Physics, *QIP Seminar* JUNE 2023
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## 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 &amp; Informatica, Amsterdam, Netherlands</i>	NOV 2024

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## 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>6.1200: 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

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## 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

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

<b>University of Maryland Center for Fundamental Physics, <i>Visitor</i></b> Supervised by Thomas D. Cohen	JUNE 2018 - AUG 2018
<b>blair3sat, <i>Co-founder, Optical Mission Lead</i></b> With Ryan Tse, Patrick Kim, Sujay Swain, Benjamin Cohen, and Gautom Das	SEPT 2017 - JUNE 2019
<b>Naval Research Laboratory, <i>Science and Engineering Apprenticeship Program</i></b> Space Science Division	JUNE 2017 - AUG 2017

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## PROFESSIONAL ACTIVITIES

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

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## OUTREACH & COMMUNITY SERVICE

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