Laura Cui

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Education

Massachusetts Institute of Technology
Bachelor of Science in Physics and Mathematics

- GPA: 5.0/5.0
- Expected graduation: June 2023
- Selected coursework: Quantum Physics (8.04, 8.05, 8.06), Quantum Information Science (8.370, 8.371), Quantum Field Theory (Harvard Physics 253A, 253B), Statistical Mechanics (8.044, 8.333), Mathematical Physics (Harvard Physics 289R), Abstract Algebra (18.701), Functional Analysis (18.102), Differential Forms (18.952), Undergraduate String Theory (8.251)

Research Experience

JUNE 2021 - SEPTEMBER 2021
Caltech Institute for Quantum Information and Matter - *Undergraduate Research Fellow*

- Advised by Prof. John Preskill and Alexander Dalzell
- Defined and investigated conditions in which local scrambling occurs in random quantum circuits

JUNE 2020 - SEPTEMBER 2020
MIT Research Laboratory of Electronics - *Undergraduate Student Researcher*

- Advised by Prof. Dirk Englund and Dr. Carlos Errando Herranz
- Applied bond-orbital model for strain-induced second order corrections to optical susceptibility in non-centrosymmetric materials

JUNE 2019 - AUGUST 2019
University of Maryland Joint Quantum Institute - *Undergraduate Research Assistant*

- Advised by Prof. Jacob M. Taylor and Dr. Daniel Carney
- Investigated decoherence due to long-range interactions in tabletop quantum gravity experiment

JUNE 2018 - AUGUST 2018
University of Maryland Center for Fundamental Physics - *Research Assistant*

- Advised by Prof. Thomas D. Cohen
- Developed toy models for doubly heavy tetraquarks by reducing to two-body system in heavy mass limit to show systems with single state are weakly bound, independent of exact QCD interactions

Awards and Honors

2022 **MIT Goldwater Scholarship Nomination**
Selected as one of two nominees from the School of Science

2019 **Regeneron Science Talent Search Scholar**
For work with near-threshold doubly heavy tetraquark states

Poster Presentations

2019 **Small Satellite Conference,** Utah State University, Logan, UT

"Space-based Ionosonde Receiver and Visible Limb-viewing Airglow Sensor (SIRVLAS): A CubeSat Instrument Suite for Enhanced Ionospheric Charge Density Measurements"

with Ryan Tse, Patrick Kim, Sujay Swain, Benjamin Cohen, and Gautom Das

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Teaching

JANUARY 2021
18.S097: Proof-Writing Workshop - *Lecturer*

- Contributed to designing curriculum material and adapting class to remote format
- Coordinated grading of weekly assignments

Industry Experience

JANUARY 2020
J.P. Morgan Chase & Co. - *Quantitative Research Intern, Rates Data Analytics*

- Develop and implement predictive models for fixed income trading

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Other

JANUARY 2021
MIT Physics Directed Reading Program - *Mentee*

- Read and present on black hole physics, with focus on quantum information approaches in recent literature

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Activities and Community Service

MIT Society of Physics Students

2021– *Outreach Chair*
Coordinate outreach efforts and PRISM undergraduate physics research conference

MIT Physics Mentorship Program

2021– *8.04: Quantum I Mentor*
Work with students individually to offer guidance with course material and different paths in physics as well as navigating other aspects of MIT

MIT Educational Studies Program

2020 *Community Working Group Director*
Lead discussions and efforts to build community at programs for middle and high school students, in addition to assisting with program logistics

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Skills

- Proficient in Python, Java, MATLAB, and Mathematica
- Experience with data science libraries and machine learning
- Fluent in English and Mandarin Chinese, working proficiency in Spanish