YUXUAN (VINCE) ZHANG

MP1023, 60 St George St, Toronto, ON, Canada
yzhang@physics.utoronto.ca ◇ personal page

EDUCATION

Ph.D. in Physics, The University of Texas at Austin — Aug. 2017 – Aug. 2023
Advisors: Andrew C. Potter and Scott Aaronson
Specialized in **quantum information** and **condensed matter theory**
Thesis: *Exploring quantum matter in the era of quantum computers*

B.S. in Physics, University of California, Santa Barbara — Sep. 2013 – Jun. 2016
Graduated with **Highest Honors**, top 2.5%

POSTDOCTORAL FELLOWSHIP

CQIQC Prize Post-Doctoral Fellowship, University of Toronto — Sep. 2023 – Present
Joint appointed at the Vector Institute for Artificial Intelligence
Hosts: Yong-Baek Kim and Juan Felipe Carrasquilla Álvarez

JOURNAL PUBLICATIONS

All-photonic one-way quantum repeaters — arXiv
D. Niu, **Y. Zhang**, A. Shabani, and H. Shapourian
Accepted, *npj Quantum Information*

Holographic Quantum Simulation of Entanglement Renormalization Circuits — PRX-Q
S. Anand, J. Hauschild, **Y. Zhang**, A. C. Potter, and M. P. Zaletel
PRX Quantum 4, 030334

Quantum volume for photonic quantum processors — PRL
Y. Zhang, D. Niu, A. Shabani, and H. Shapourian
Physical Review Letters, 130, 110602
CLEO conference 2023

Qubit-efficient simulation of thermal states with quantum tensor networks — PRB
Y. Zhang, S. Jahanbani, D. Niu, R. Haghshenas, and A. C. Potter
Physical Review B, 106, 165126

Holographic simulation of correlated electrons on a trapped-ion quantum processor — PRX-Q
D. Niu, R. Haghshenas, **Y. Zhang**, M. Foss-Feig, G. K. Chan, and A. C. Potter
PRX Quantum, 3, 030317

Straddling-gates problem in multipartite quantum systems — PRA
Y. Zhang
Physical Review A, 105, 062430

QED driven QAOA for network-flow optimization — Quantum
Y. Zhang, R. Zhang, and A. C. Potter
Quantum, 5, 510 (2021)

PREPRINTS

Sequential quantum simulation of spin chains with a single circuit QED device — arXiv
Y. Zhang, S. Shabani, A. Riswadkar, S. Shankar, and A. C. Potter

One-half reflected entropy is not a lower bound for entanglement of purification arXiv
J. Couch, P. Nguyen, S. Racz, G. Stratis, **Y. Zhang**

CEPC Conceptual Design Report Volume II: Physics & Detector arXiv
M. Abbrescia et al., including **Y. Zhang**

CEPC Conceptual Design Report: Volume 1 – Accelerator arXiv
M. Abbrescia et al., including **Y. Zhang**

MANUSCRIPTS IN PREPARATION

Verifiable quantum advantage with peaked circuit sampling
Y. Zhang, S. Aaronson Talk
NISQAH, Neve Ilan, Israel, 2023

PRACTICAL EXPERIENCE

Visiting Researcher Perimeter Institute for Theoretical Physics Aug. 2023

Graduate Research Assistant UT Austin Jan. 2020 – Aug. 2023

Mentor: The Quantum Collective UT Austin Sep. 2022 – May 2023

PhD Intern Cisco Systems, Inc. May 2022 – Aug. 2022

Mentor: Directed Reading Program UT Austin Jan. 2018 – May 2022

Teaching Assistant: Quantum Computing UT Austin Jan. 2019 – Dec. 2019

Teaching Assistant: Physics Lab for Engineers UT Austin Sep. 2017 – Dec. 2018

Visiting Researcher The Institute of High Energy Physics Jul. 2016 – Aug. 2017

AWARDS AND FELLOWSHIPS

Professional Development Award UT Austin Spring 2023

Minnesota Condensed Matter Summer School UMN Summer 2023

Professional Development Award UT Austin Fall 2019

Quantum Ideas Summer School Duke Summer 2019

Lawrence C. Biedenharn Jr. Endowed Fellowship UT Austin Fall 2017 – Spring 2018

Dean's Honors, UCSB Fall 2013 – Spring 2016

ON-CAMPUS ACTIVITIES

Chair and Representative Graduate Welfare Committee Jun. 2020 – May 2022

- Tripled the physics department's budget for students
- Fought for equity and diversity in graduate school
- Coordinated social events regularly

PROFESSIONAL SERVICE

Referee Physical Review Letters Summer 2023 – Present

Referee Physical Review B Spring 2023 – Present

Referee Neural Networks Spring 2023 – Present

Referee International Symposium on Symbolic and Algebraic Computation Fall 2023

Session Chair APS March Meeting Spring 2023

Abstract Sorter APS March Meeting Fall 2022

Referee Quantum Information Processing Spring 2021

STUDENTS MENTORED

Xiaoxiao (Alice) Xiong, UBC → Stanford Honors Thesis, 2023

Michelle Gelman, UT Austin → USC Honors Thesis, 2023

Shahin Jahanbani, UT Austin → UCB Research Project, 2022

PRESENTATIONS AND INVITED TALKS

- "Quantum volume for measurement-based quantum processors," APS March Meeting, Las Vegas, Spring 2023
- "Quantum Volume for Photonic Quantum Computing," Cisco Research, San Jose, Fall 2022
- "Holographic simulation of correlated electrons and thermal states on a trapped-ion quantum processor," APS March Meeting, Chicago, Spring 2022
- "Holographic simulation of correlated electrons and thermal states on a trapped-ion quantum processor," Brookhaven National Laboratory, Spring 2022
- "Interacting fermions on a quantum processor," Quantum Circuits, Inc., New Haven, Spring 2022
- "QED driven QAOA for network-flow optimization," Quantum Information Processing (QIP), Shenzhen, Winter 2020
- "Quantum computing today," The Institute of High Energy Physics, Beijing, Summer 2019