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EXPERIENCE & EDUCATION

California Institute of Technology
Sherman Fairchild Postdoctoral Scholar

Pasadena, CA
Sept. 2023—present

University of California, Berkeley
Postdoctoral Researcher
Advisor: Norman Y. Yao

Berkeley, CA
Jan. 2023—Aug. 2023

University of California, Berkeley
Ph.D., Physics
Thesis: Many-Body Quantum Information Dynamics
Advisor: Norman Y. Yao

Berkeley, CA
Aug. 2016—Dec. 2022

- National Science Foundation Graduate Research Fellowship (2016–2021)
- Theory Fellowship, UC Berkeley Physics Department (2016–2017)

University of California, Berkeley
Bachelors of Science, Engineering Physics

Berkeley, CA
Aug. 2011—May 2015

- Minor in Mathematics

ADDITIONAL EXPERIENCE

Google Quantum AI
Research Intern & Student Researcher

Venice, CA
May 2021—Dec. 2022

Boston University
Visiting Researcher, Physics Department

Boston, MA
Aug. 2015—July 2016

PUBLICATIONS & PREPRINTS

*: co-first authors.

- [1] Alicja Dutkiewicz, Thomas O’Brien, **Thomas Schuster**, *The advantage of quantum control in many-body Hamiltonian learning*. arxiv:2304.07172 (2023).
- [2] Bryce Kobrin, **Thomas Schuster**, Norman Y. Yao, *Comment on “Traversable wormhole dynamics on a quantum processor”*. arxiv:2302.07897 (2023).
- [3] **Thomas Schuster**, Norman Y. Yao, *Operator growth in open quantum systems*. arxiv:2208.12272 (2022).
- [4] **Thomas Schuster**, Murphy Niu, Jordan Cotler, Thomas O’Brien, Jarrod R. McClean, Masoud Mohseni, *Learning quantum systems via out-of-time-order correlators*. arxiv:2208.02254 (2022).
- [5] Jordan Cotler, **Thomas Schuster**, Masoud Mohseni, *Information-theoretic hardness of out-of-time-order correlators*. arxiv:2208.02256 (2022).

- [6] **Thomas Schuster***, Bryce Kobrin*, Ping Gao, Iris Cong, Emil Khabiboulline, Norbert Linke, Chris Monroe, Mikhail D. Lukin, Beni Yoshida, Norman Y. Yao, *Many-body quantum teleportation via operator spreading in the traversable wormhole protocol*. *Physical Review X*, **12** 031013 (2022).
- [7] Machiel S. Blok*, Vinay V. Ramasesh*, **Thomas Schuster**, Kevin O'Brien, John M. Kreikebaum, Dar Dahlen, Alexis Morvan, Beni Yoshida, Norman Y. Yao, Irfan Siddiqi, *Quantum information scrambling on a superconducting qutrit processor*. *Physical Review X*, **11.2** 021010 (2021).
- [8] **Thomas Schuster**, Felix Flicker, Ming Li, Svetlana Kotochigova, Joel E. Moore, Jun Ye, Norman Y. Yao, *Realizing Hopf insulators in dipolar spin systems*. *Physical Review Letters*, **127.1** 015301 (2021).
- [9] **Thomas Schuster**, Felix Flicker, Ming Li, Svetlana Kotochigova, Joel E. Moore, Jun Ye, Norman Y. Yao, *Floquet engineering ultracold polar molecules to simulate topological insulators*. *Physical Review A*, **103.6** 063322 (2021).
- [10] Jiho Noh*, **Thomas Schuster***, Thomas Iadecola, Sheng Huang, Mohan Wang, Kevin P. Chen, Claudio Chamon, Mikael C. Rechstman, *Braiding photonic topological zero modes*. *Nature Physics* **16**, 989-993 (2020).
- [11] **Thomas Schuster**, Snir Gazit, Joel E. Moore, Norman Y. Yao, *Floquet Hopf insulators*. *Physical Review Letters*, **123** 266803 (2019).
- [12] Kevin Landsman, Caroline Figgatt, **Thomas Schuster**, Norbert M. Linke, Beni Yoshida, Norman Y. Yao, Chris Monroe, *Verified quantum information scrambling*. *Nature* **567**, 61-65 (2019).
- [13] Quntao Zhuang, **Thomas Schuster**, Beni Yoshida, Norman Y. Yao, *Scrambling and complexity in phase space*. *Physical Review A*, **99** 062334 (2019).
- [14] Rupert A. Croft, Peter E. Freeman, **Thomas Schuster**, Chad M. Schafer, *Prediction of galaxy ellipticities and reduction of shape noise in cosmic shear measurements*. *Monthly Notices of the Royal Astronomical Society*, **469** 4422-4427 (2017).
- [15] **Thomas Schuster**, Thomas Iadecola, Claudio Chamon, Roman Jackiw, So-Young Pi, *Dissipationless conductance in a topological coaxial cable*. *Physical Review B*, **94** 115110 (2016).
- [16] Thomas Iadecola, **Thomas Schuster**, Claudio Chamon, *Non-abelian braiding of light*. *Physical Review Letters*, **117** 073901 (2016).

INVITED TALKS

- [1] *The power of time-reversal in quantum learning*. Quantum Machine Learning Seminar, **National University of Singapore** (virtual), July 2023.
- [2] *Many-body quantum information dynamics*. AMO Seminar, **University of California, Berkeley**, April 2023.
- [3] *Many-body quantum information dynamics*. Quantum Information Group Meeting, **Massachusetts Institute of Technology** (virtual), January 2023.
- [4] *Many-body teleportation and error propagation via quantum information dynamics*. HQI Quantum Fest, **Harvard University**, December 2022.
- [5] *Many-body quantum teleportation via quantum information dynamics*. Condensed Matter Theory Group Meeting, **California Institute of Technology**, November 2022.

- [6] *Many-body quantum teleportation via quantum information dynamics*. Quantum Information Group Meeting, **Massachusetts Institute of Technology**, September 2022.
- [7] *Many-body quantum teleportation via quantum information dynamics*. Harvard Quantum Information Group Meeting, **Harvard University**, September 2022.
- [8] *Learning quantum systems via out-of-time-order correlators*. Theory Seminar, **Google Quantum AI** (virtual), March 2022.
- [9] *Many-body quantum teleportation via operator spreading in the traversable wormhole protocol*. It from Qubit Seminar, **Stanford University**, March 2022.
- [10] *Operator size and error propagation: the Loschmidt echo in many-body quantum systems*. Geoflow Collaboration Meeting, **University of California, Berkeley**, September 2021.
- [11] *Many-body quantum teleportation via operator spreading in the traversable wormhole protocol*. Quantum/Gravity Seminar, **Brandeis University** (virtual), May 2021.
- [12] *Floquet Hopf insulators*. Condensed Matter Seminar, **Technion, Israel Institute of Technology**, June 2019.

CONTRIBUTED TALKS

- [1] *Learning quantum systems via out-of-time-order correlators*. Contributed talk. **APS March Meeting**, Las Vegas, NV, USA, 2023.
- [2] *Operator size and error propagation: the Loschmidt echo in many-body open quantum systems*. Contributed talk. **APS March Meeting**, Chicago, IL, USA, 2022.
- [3] *Many-body quantum teleportation via operator spreading in the traversable wormhole protocol*. Contributed poster. **Conference on Quantum Information Processing** (virtual), 2021.
- [4] *Many-body quantum teleportation via operator spreading in the traversable wormhole protocol*. Contributed poster. **Annual Meeting of the APS Division of Atomic, Molecular, Optical Physics** (virtual), 2021.
- [5] *Unitary designs for continuous variable systems*. Contributed talk. **APS March Meeting**, Boston, MA, USA, 2019.
- [6] *Distinguishing information scrambling from decoherence in a trapped ion quantum simulator*. Contributed poster. **Annual Meeting of the APS Division of Atomic, Molecular, Optical Physics**, Fort Lauderdale, FL, USA, 2018
- [7] *Floquet Hopf insulator in dipolar spin systems*. Contributed talk. **APS March Meeting**, Los Angeles, CA, USA, 2018.

SCHOOLS & WORKSHOPS ATTENDED

- [1] Condensed Matter Summer School on Dynamics and Quantum Information in Many-body Systems. University of Minnesota, 2023.
- [2] Online School on Ultra Quantum Matter. Perimeter Institute (virtual), 2020.
- [3] Les Houches Summer School on Quantum Dynamics and Disorder. Les Houches, France, 2019.
- [4] Quantum Connections Summer School. Stockholm, Sweden, 2018.