

# Haotian WEI

Ph.D. Candidate, 6+ yrs Theoretical Quantum Scientist

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## EDUCATION

<b>Ph. D. in Physics</b> , Rice University, <i>Houston, TX</i>	Exp. May 2026
<b>M. Sc. in Physics</b> , Rice University, <i>Houston, TX</i>	Dec 2024
<b>B.Sc. in Physics</b> , Fudan University, <i>Shanghai, China</i>	Jun 2020
• Outstanding Graduate of Class 2020	
<b>Visiting Student</b> , University of California, <i>Berkeley, CA</i>	Aug - Dec 2017

## RESEARCH EXPERIENCE

<b>Doctoral Researcher</b> , <i>Rice University, Houston, TX</i>	Jun 2021 - Present
Advisor: Dr. Kaden Hazzard	
<b>Research Assistant</b> , <i>Fudan University, Shanghai, China</i>	Sep 2018 – Jun 2020
Advisor: Dr. Yang Qi	

## PUBLICATIONS

**Highlights:** 6 papers | 250+ citations | 70+ media coverages | 3 Editors' Suggestions | Nat. Phys., PRL, Sci. Adv.

**Google Scholar:** [scholar.google.com/citations?user=mu-7-UAAAAJ](https://scholar.google.com/citations?user=mu-7-UAAAAJ)

- **Hao-Tian Wei**, Eduardo Ibarra-García-Padilla, Michael L. Wall, and Kaden R. A. Hazzard. “Hubbard Parameters for Programmable Tweezer Arrays” *Physical Review A [Editors' Suggestion]* **109**, 013318 (2024).
- Dasom Kim, Sohail Dasgupta, Xiaoxuan Ma, Joong-Mok Park, **Hao-Tian Wei**, Liang Luo, Jacques Doumani, Xinwei Li, Wanting Yang, Di Cheng, Richard HJ Kim, Henry O Everitt, Shojiro Kimura, Hiroyuki Nojiri, Jigang Wang, Shixun Cao, Motoaki Bamba, Kaden RA Hazzard and Junichiro Kono. “Observation of the magnonic Dicke superradiant phase transition” *Science Advances [Featured in news]* **11**, eadt1691 (2025).
- Zoe Z. Yan, Benjamin M. Spar, Max L. Prichard, Sungjae Chi, **Hao-Tian Wei**, Eduardo Ibarra-García-Padilla, Kaden R. A. Hazzard, and Waseem S. Bakr. “Two-Dimensional Programmable Tweezer Arrays of Fermions” *Physical Review Letters [Editors' Suggestion] [Featured in news]* **129**, 123201 (2022).
- Shintaro Taie, Eduardo Ibarra-García-Padilla, Naoki Nishizawa, Yosuke Takasu, Yoshihito Kuno, **Hao-Tian Wei**, Richard T. Scalettar, Kaden R. A. Hazzard, and Yoshiro Takahashi. “Observation of Antiferromagnetic Correlations in an Ultracold SU(N) Hubbard Model” *Nature Physics [Featured in news]* **18**, 1356–61 (2022).
- Ibarra-García-Padilla, Eduardo, Sohail Dasgupta, **Hao-Tian Wei**, Shintaro Taie, Yoshiro Takahashi, Richard T. Scalettar, and Kaden R. A. Hazzard. “Universal Thermodynamics of an SU(N) Fermi-Hubbard Model” *Physical Review A [Editors' Suggestion]* **104**, 043316 (2021).
- Yuan Da Liao, Han Li, Zheng Yan, **Hao-Tian Wei**, Wei Li, Yang Qi, and Zi Yang Meng. “Phase Diagram of the Quantum Ising Model on a Triangular Lattice under External Field” *Physical Review B* **103**, 104416 (2021).

## PROFESSIONAL SKILLS

**Programming Languages:** Python (NumPy/SciPy/PyTorch/Qiskit/vLLM), C/C++, MATLAB, Mathematica & Julia

**Algorithms:** Variational Quantum Algorithms, Optimization, Tensor Network, Matrix Diagonalization (Arnoldi/Lanczos), Monte Carlo Sampling, Numerical Analysis, Data Correlation Analysis, Regression, Deep Neural Networks, LLM

**Expertise in Quantum Hardware:** Neutral Atom, Ion Traps, Superconducting Qubits

**Application Skills:** High-performance computing (HPC), Git workflow, data visualization (Matplotlib/Inkscape), MySQL

**GitHub Profile:** [github.com/htwei17](https://github.com/htwei17)

- *Pymanopt* (800+★) – extended core functionality of Riemannian manifold optimizer
- *HubbardTweezer* – individually created and maintain gate-engineering toolkit of next-gen neutral atom quantum hardware

**Languages:** English (fluent), Chinese Mandarin (native)

**Interests:** Linguistics (phonetics/phonology), Saxophone

## LEADERSHIP & OUTREACH

<b>Physics &amp; Astronomy Graduate Student Association (PAGSA)</b> , Rice University, <i>Houston, TX</i>	Jun 2022 – Jun 2024
• Treasurer & Journal club coordinator	
<b>Academic Reviewer</b> , Physical Review Letters, Physical Review Applied, Physical Review A&B	Aug 2024 - Present
• Reviewed 10+ top scientific articles	
<b>APS March Meeting 2023</b> , <i>Las Vegas, NV</i>	Mar 2023
• Chaired a session in the world's largest physics conference with 14,000+ attendees	