WEISHUN ZHONG

www.weishunzhong.com
Princeton, New Jersey, 08540
wszhong@ias.edu

EMPLOYMENT

Institute for Advanced Study, Princeton, NJ *Sep.2023-*
Member, Simons Center for Systems Biology, School of Natural Sciences

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA *Sep.2017-June.2023*
Ph.D. Department of Physics
Advisors: Haim Sompolinsky (Harvard) and Mehran Kardar (MIT)
Thesis: Non-equilibrium Physics: from Spin Glasses to Machine and Neural Learning

University of Chicago, Chicago, IL *Sep.2016-Jun.2017*
M.S., *Physical Sciences Division*, Physics GPA: 3.93/4.0
Advisors: Arvind Murugan and David J. Schwab

University of Michigan *Sep.2013-May.2016*
B.S., *highest distinction*, Physics and Mathematics GPA: 3.97/4.0
Advisor: James T. Liu

PUBLICATIONS

1. "Random Tree Model for Meaningful Memory", **Weishun Zhong**, Tankut Can, Atonis Georgiou, Ilya Shnayderman, Mikhail Katkov, Misha Tsodyks, *arXiv: 2412.01806*
2. "Hierarchical Working Memory and a new Magic Number ", **Weishun Zhong**, Mikhail Katkov, Misha Tsodyks, *arXiv: 2408.07637*
3. "Advantage of Quantum Neural Networks as Quantum Information Decoders ", **Weishun Zhong**, Oles Shtanko, Ramis Movassagh, *arXiv:2401.06300, under review*
4. "A Theory of Weight Distribution-constrained Learning", **Weishun Zhong**, Ben Sorscher, Daniel D Lee, Haim Sompolinsky, *arXiv:2206.08933; NeurIPS 2022*
5. "Many-body Localized Hidden Generative Models", **Weishun Zhong**, Xun Gao, Susanne Yelin, Khadijeh Najafi, *arXiv: 2207.02346; Physical Review Research 6.4 (2024): 043041.*
6. "Quantifying Many-body Learning far from Equilibrium with Representation Learning", **Weishun Zhong***, Jacob M Gold*, Sarah Marzen, Jeremy L England, Nicole Yunger Halpern, *arXiv: 2001.03623; Scientific reports 11.1 (2021): 1-11*
7. "Learning about Learning by Many-body Systems", **Weishun Zhong***, Jacob M Gold*, Sarah Marzen, Jeremy L England, Nicole Yunger Halpern, *arXiv:2004.03604; ICML workshop ML Interpretability for Scientific Discovery (2020)*
8. "Non-equilibrium Statistical Mechanics of Continuous Attractors", **Weishun Zhong**, Zhiyue Lu, David J. Schwab, and Arvind Murugan, *arXiv: 1809.11167; Neural computation (2020) 32 (6)*
9. "A Closer Look at Disentangling in β-VAE", Harshvardhan Sikka*, **Weishun Zhong***, Jun Yin, Cengiz Pehlevan, *arXiv:1912.05127; 53rd Asilomar Conference on Signals, Systems, and Computers (2019)*
10. "Associative Pattern Recognition in Macro-Molecular Self-Assembly", **Weishun Zhong**, David J. Schwab, and Arvind Murugan, *arXiv: 1701.01769; J Stat Phys (2017) 167: 806*
11. "A Holographic c-Theorem for Schrödinger Spacetimes", James T. Liu and **Weishun Zhong**, *arXiv: 1510.06975; JHEP 1512 (2015) 179*

AWARDS & HONORS

- Simons Membership, *Simons Foundation* 2024
- Eric and Wendy Schmidt Membership, *Eric and Wendy Schmidt Foundation* 2024
- C.V. Starr Membership, *C.V. Starr Foundation* 2023
- NeurIPS Scholar Award, *Neural Information Processing Systems Foundation* 2022
- First-year Graduate Fellowship, *Massachusetts Institute of Technology* 2017
- Physical Sciences Division Tuition Award, *University of Chicago* 2016
- George Eugene Uhlenbeck Award, *University of Michigan* 2016
- Division of Particle and Fields Travel Award, *American Physical Society* 2016
- Division of Gravitational Physics Travel Award, *American Physical Society* 2016
- Otto Graf Scholarship, *University of Michigan* 2015
- James B. Angell Scholar, *University of Michigan* 2015

TEACHING EXPERIENCE

- Teaching assistant for MIT graduate physics course Statistical Physics in Biology (8.592) 2021
- Teaching assistant for various MIT undergraduate physics course (8.01-8.03) 2018-2020