

## EDUCATION / EXPERIENCE

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<b>University of Pennsylvania</b> Postdoctoral researcher	Philadelphia, PA 2023–current
<b>Stanford University</b> Ph.D. in Statistics, Advisor: Andrea Montanari Ph.D. Minor in Management Science and Engineering M.S. in Statistics	Stanford, CA 2018–2023 2020–2023 2021–2022
<b>Tsinghua University</b> B.S. in Mathematics, GPA: 3.92/4.00, Rank: 2/96	Beijing, China 2014–2018

## RESEARCH INTERESTS

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- Diffusion model
- High-dimensional statistics
- Deep learning theory
- Information theory

## PUBLICATIONS AND PREPRINTS

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- [1] S. Mei and **Y. Wu**, “Deep networks as denoising algorithms: Sample-efficient learning of diffusion models in high-dimensional graphical models”, *arXiv preprint arXiv:2309.11420*, 2023.
- [2] A. Montanari and **Y. Wu**, “Adversarial examples in random neural networks with general activations”, *Mathematical Statistics and Learning*, vol. 6, no. 1, pp. 143–200, 2023.
- [3] A. Montanari and **Y. Wu**, “Posterior sampling from the spiked models via diffusion processes”, *arXiv preprint arXiv:2304.11449*, 2023.
- [4] **Y. Wu** and K. Zhou, “Lower bounds for the convergence of tensor power iteration on random overcomplete models”, in *The Thirty Sixth Annual Conference on Learning Theory*, PMLR, 2023, pp. 3783–3820.
- [5] A. Montanari and **Y. Wu**, “Fundamental limits of low-rank matrix estimation with diverging aspect ratios”, *arXiv preprint arxiv:2211.00488*, 2022.
- [6] A. Montanari and **Y. Wu**, “Statistically optimal first order algorithms: A proof via orthogonalization”, *arXiv preprint arXiv:2201.05101*, 2022.
- [7] Z. Wei, M. Verma, **Y. Wu**, S. Alam, B. Anderson, D. Ho, and J. Suckale, “Attributing sources of surface water pollutants in the maumee river basin using network modeling”, in *AGU Fall Meeting 2021*, AGU, 2021.
- [8] **Y. Wu**, J. Tardos, M. Bateni, A. Linhares, F. M. Goncalves de Almeida, A. Montanari, and A. Norouzi-Fard, “Streaming belief propagation for community detection”, *Advances in Neural Information Processing Systems*, vol. 34, 2021.
- [9] M. Celentano, A. Montanari, and **Y. Wu**, “The estimation error of general first order methods”, in *Conference on Learning Theory*, PMLR, 2020, pp. 1078–1141.

\* Author names are ordered alphabetically for most of my papers

## SCHOLARSHIPS AND AWARDS

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- ICSA China Conference Travel Award 2023
- SIAM Student Travel Award 2022
- National Scholarship, Tsinghua University 2015–2017
- Chinese Mathematical Olympiad, Second prize 2014
- Chinese Girls' Mathematical Olympiad, 3rd place 2013

## TALKS AND PRESENTATIONS

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1. Posterior Sampling from the Spiked Models via Diffusion Processes (poster)  
*Measure Transport, Diffusion Processes and Sampling Workshop, Flatiron Institute* December, 2023
2. Fundamental Limits of Low-Rank Matrix Estimation: Information-Theoretic and Computational Perspectives  
*Professor Tom Berrett and Professor Yi Yu's group meeting, University of Warwick* November, 2023
3. Posterior Sampling from the Spiked Models via Diffusion Processes  
*IMS Young Mathematical Scientists Forum, University of Singapore* November, 2023
4. Fundamental Limits of Low-Rank Matrix Estimation: Information-Theoretic and Computational Perspectives  
*Wharton lunch seminar* November, 2023
5. Fundamental Limits of Low-Rank Matrix Estimation: Information-Theoretic and Computational Perspectives  
*Penn/Tempel Probability Seminar* October, 2023
6. Posterior Sampling from the Spiked Models via Diffusion Processes  
*INFORMS Annual Meeting* October, 2023
7. Fundamental Limits of Low-Rank Matrix Estimation: Information-Theoretic and Computational Perspectives  
*University of the Chinese Academy of Sciences* October, 2023
8. Posterior Sampling from the Spiked Models via Diffusion Processes (poster)  
*Mathematical and Scientific Foundations of Deep Learning Annual Meeting* September, 2023
9. Posterior Sampling from the Spiked Models via Diffusion Processes  
*Theory lunch, Stanford University* August, 2023
10. Posterior Sampling from the Spiked Models via Diffusion Processes  
*University of Science and Technology of China* July, 2023
11. Fundamental Limits of Low-Rank Matrix Estimation: Information-Theoretic and Computational Perspectives  
*Zhongnan University of Economics and Law* July, 2023
12. Lower Bounds for the Convergence of Tensor Power Iteration on Random Overcomplete Models  
*Conference on Learning Theory 2023* July, 2023
13. Posterior Sampling from the Spiked Models via Diffusion Processes  
*ICSA 2023 China Conference* July, 2023
14. Fundamental Limits of Low-Rank Matrix Estimation: Information-Theoretic and Computational Perspectives  
*Shenzhen Conference on Random Matrix Theory and Applications* June, 2023
15. Fundamental Limits of Low-Rank Matrix Estimation: Information-Theoretic and Computational Perspectives  
*Yuxin Chen's group meeting* May, 2023

16. Fundamental Limits of Low-Rank Matrix Estimation: Information-Theoretic and Computational Perspectives  
*Ryan Tibshirani's group meeting* *April, 2023*
17. Fundamental Limits of Low-Rank Matrix Estimation: Information-Theoretic and Computational Perspectives  
*MoDL meeting* *March, 2023*
18. Fundamental Limits of Low-Rank Matrix Estimation with Diverging Aspect Ratios  
*Liza Levina and Ji Zhu's group meeting, University of Michigan* *January 2023*
19. Fundamental Limits of Low-Rank Matrix Estimation: Information-Theoretic and Computational Perspectives  
*Institute for the Foundations of Data Science, Yale University* *December 2022*
20. Fundamental Limits of Low-Rank Matrix Estimation with Diverging Aspect Ratios  
*Information Systems Laboratory Colloquium at Stanford University* *December 2022*
21. Fundamental Limits of Low-Rank Matrix Estimation with Diverging Aspect Ratios  
*Stanford Berkeley Joint Colloquium* *November 2022*
22. Adversarial Examples in Random Neural Networks with General Activations  
*SIAM Conference on Mathematics of Data Science* *September 2022*
23. Adversarial Examples in Random Neural Networks with General Activations  
*TBSI Workshop on Learning Theory, Young Researchers' Forum session* *August 2022*
24. Adversarial Examples in Random Neural Networks with General Activations  
*2022 ICSC China Conference* *July 2022*
25. Streaming Belief Propagation for Community Detection  
*AI TIME PhD, Tsinghua University* *February 2022*
26. Streaming Belief Propagation for Community Detection  
*Yuling Jiao's group meeting, Wuhan University* *January 2022*
27. Streaming Belief Propagation for Community Detection  
*Conference on Neural Information Processing Systems* *December 2021*
28. Asymmetric Estimation of Low-Rank Matrix: Statistical and Computational Limits  
*No-retreat day student seminar, Department of Statistics, Stanford University* *November 2021*
29. Asymmetric Estimation of Low-Rank Matrix: Statistical and Computational Limits  
*2021 Joint Statistical Meetings, speed presentation* *August 2021*
30. The Estimation Error of General First Order Methods  
*Conference on Learning Theory* *July 2020*

## TEACHING

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As a teaching assistant at Stanford University:

- STATS 200 - Statistical Inference Autumn 2018-2019, 2020-2021
- STATS 216 - Introduction to Statistical Learning Winter 2018-2019
- STATS 60 - Introduction to Statistical Methods Summer 2018-2019, 2019-2020, 2021-2022
- Math 230A / Stat 310A - Theory of Probability Autumn 2019-2020
- STATS 218 - Introduction to Stochastic Processes II Spring 2019-2020
- Math 230B / Stat 310B - Theory of Probability Winter 2020-2021
- Math 230C / Stat 310C - Theory of Probability Spring 2020-2021
- STATS 214 / CS 229M - Machine Learning Theory Autumn 2021-2022

- STATS 217 - Introduction to Stochastic Processes I Winter 2021-2022
- STATS 203 - Introduction to Regression Models and Analysis of Variance Spring 2021-2022
- STATS 305B - Applied Statistics II Winter 2022-2023

## VISITING EXPERIENCE

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- Visiting graduate student at Simons Institute  
*Program: Geometric Methods in Optimization and Sampling* Fall 2021
- Visiting graduate student at the Institute for Advanced Study December 2022

## PROFESSIONAL SERVICE

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Reviewer for Conference on Learning Theory (2023), International Colloquium on Automata, Languages and Programming (2023), IEEE International Symposium on Information Theory (2023) IEEE Transactions on Information Theory, Neurips (2023), IEEE Transactions on Big Data, International Conference on Algorithmic Learning Theory (2024), International Conference on Learning Representations (2024), International Conference on Artificial Intelligence and Statistics (2024), Journal of Statistical Physics, SIAM Journal on Mathematics of Data Science.

## SKILLS

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- Languages: Mandarin (native), English (advanced)
  - 112 in Tofel IBT test, November 2016
  - 165 (verbal) + 170 (quantity) + 4 in GRE test, October 2016
- Programming: Python, R, Matlab, C++