

Zijie Zhuang

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Education

University of Pennsylvania	2021–2026 (expected)
Ph.D. student in Statistics	
Advisors: Jian Ding and Xin Sun	
Peking University	2017–2021
B.S. in Mathematics	

Research interests

Probability theory with focus on statistical mechanics and random geometry.

Publications

1. **Backbone exponent and annulus crossing probability for planar percolation**, with Pierre Nolin, Wei Qian and Xin Sun. *Phys. Rev. Lett.*, 134(11), p.117101, 2025.
2. **Boundary touching probability and nested-path exponent for non-simple CLE**, with Morris Ang, Xin Sun and Pu Yu. *Ann. Probab.*, 53(3) 797–847, 2025.
3. **Sharp asymptotics for arm probabilities in critical planar percolation**, with Hang Du, Yifan Gao and Xinyi Li. *Comm. Math. Phys.*, 405(8):Paper No. 182, 51, 2024.
4. **On large deviations and intersection of random interlacements**, with Xinyi Li. *Bernoulli*, 30(3):2102–2126, 2024.
5. **Long range order for random field Ising and Potts models**, with Jian Ding. *Comm. Pure Appl. Math.*, 77(1):37–51, 2024.
6. **On the percolative properties of the intersection of two independent interlacements**. *ALEA Lat. Am. J. Probab. Math. Stat.*, 18, 1061-1084 (2021).

Preprints

1. **Three-point connectivity constant for q -state Potts spin clusters**, with Gefei Cai, Haoyu Liu and Baojun Wu. Preprint, arXiv:2510.05850.
2. **Schramm-Loewner evolution contains a topological Sierpiński carpet when κ is close to 8**, with Haoyu Liu. Preprint, arXiv:2506.09609.
3. **Bounds on the distance exponent for higher-dimensional Liouville first passage percolation**, with Andres A. Contreras Hip. Preprint, arXiv:2504.09141.
4. **Mixing rate exponent of planar Fortuin-Kasteleyn percolation**, with Haoyu Liu and Baojun Wu. Preprint, arXiv:2502.09950.
5. **Percolation of thick points of the log-correlated Gaussian field in high dimensions**, with Jian Ding and Ewain Gwynne. Preprint, arXiv:2410.22075.
6. **Dynamical random field Ising model at zero temperature**, with Jian Ding and Peng Yang. Preprint, arXiv:2410.20457.

7. **The bulk one-arm exponent for the $\text{CLE}_{\kappa'}$ percolations**, with Haoyu Liu, Xin Sun and Pu Yu.
Preprint, arXiv:2410.12724.
8. **Annulus crossing formulae for critical planar percolation**, with Xin Sun and Shengjing Xu.
Preprint, arXiv:2410.04767.
9. **Tightness of exponential metrics for log-correlated Gaussian fields in arbitrary dimension**,
with Jian Ding and Ewain Gwynne. Preprint, arXiv:2310.03996.
10. **Backbone exponent for two-dimensional percolation**, with Pierre Nolin, Wei Qian and Xin Sun.
Preprint, arXiv:2309.05050.

Talks

1. CFT program at Institut Pascal	10/2025
2. International Conference for Young Chinese Probabilists	8/2025
3. PKU Probability Seminar	6/2025
4. MIT Probability Seminar	4/2025
5. Two-Dimensional Random Geometry Workshop	7/2024
6. UW Madison Probability Seminar	4/2024
7. KPZ meets KPZ Workshop	3/2024
8. UChicago Probability Seminar	2/2024
9. Percolation Today Webinar	11/2023
10. BICMR Summer School on Probability	6/2023
11. Random Geometry and Statistical Physics Workshop	10/2022
12. Penn Local Probability Seminar	4/2022
13. THU-PKU-BNU Joint Probability Webinar	12/2021
14. Percolation Today Webinar	10/2021

(Last updated: Oct 8, 2025)