

Publication List

Xin Sun

Articles published at peer-reviewed journals

1. **Liouville quantum gravity: from random planar maps to conformal field theory**, Nina Holden and Xin Sun. *Proceedings of ICM 2026*, to appear.
2. **Quantum triangles and imaginary geometry flow lines**, Morris Ang, Xin Sun, and Pu Yu. *Ann. Inst. Henri Poincaré Probab. Stat.*, to appear.
3. **Joint scaling limit of a bipolar-oriented triangulation and its dual in the peanosphere sense**, Ewain Gwynne, Nina Holden and Xin Sun. *Acta Mathematica Sinica, English Series*, to appear.
4. **The moduli of annuli in random conformal geometry**, Morris Ang, Guillaume Remy and Xin Sun. *Ann. Sci. Éc. Norm. Supér.*, **58** (4), no. 4, 1037–1087 (2026).
5. **Permutons, meanders, and SLE-decorated Liouville quantum gravity**, Jacopo Borga, Ewain Gwynne, and Xin Sun. *Journal of the European Mathematical Society*, online (2025).
6. **Conformal welding of quantum disks and multiple SLE: the non-simple case**, Morris Ang, Nina Holden, Xin Sun, and Pu Yu. *Probab. Theory Relat. Fields*, online (2025).
7. **Backbone exponent and annulus crossing probability for planar percolation**, Pierre Nolin, Wei Qian, Xin Sun, and Zijie Zhuang. *Physical Review Letters.*, **134**, 117101 (2025).
8. **FZZ formula of boundary Liouville CFT via conformal welding**, Morris Ang, Guillaume Remy and Xin Sun. *Journal of the European Mathematical Society*, **27**, 1209–1266 (2025).
9. **Boundary touching probability and nested-path exponent for non-simple CLE**, Morris Ang, Xin Sun, Pu Yu, and Zijie Zhuang. *Annals of Probability*, **53**(3): 797-847 (2025).

10. **Integrability of SLE via conformal welding of random surfaces**, Morris Ang, Nina Holden and Xin Sun. *Communications on Pure and Applied Mathematics*, **77** (2024), no. 5, 2651–2707.
11. **Probabilistic conformal blocks for Liouville CFT on the torus**, Promit Ghosal, Guillaume Remy, Xin Sun and Yi Sun. *Duke Math. J.*, **173** (2024), no. 6, 1085–1175.
12. **Schnyder woods, SLE_{16} and Liouville quantum gravity**, Yiting Li, Xin Sun and Samuel Watson. *Trans. Amer. Math. Soc.*, **377** (2024), no. 4, 2439–2493.
13. **Convergence of uniform triangulations under the Cardy embedding**, Nina Holden and Xin Sun. *Acta Mathematica*, Vol. 230, No. 6, 93–203 (2023).
14. **Bootstrap, Markov Chain Monte Carlo, and LP/SDP Hierarchy for the Lattice Ising Model**, Minjae Cho and Xin Sun. *Journal of High Energy Physics*, no. 11, Paper No. 47, 25 pp. (2023)
15. **Percolation on triangulations: a bijective path to Liouville quantum gravity**, Olivier Bernardi, Nina Holden and Xin Sun. *Mem. Amer. Math. Soc.*, Vol. 289, No. 1440 (2023).
16. **Baxter permuton and Liouville quantum gravity**, Jacopo Borga, Nina Holden, Xin Sun and Pu Yu *Probab. Theory Relat. Fields* (2023).
17. **Mating of trees for random planar maps and Liouville quantum gravity: a survey**, Ewain Gwynne, Nina Holden and Xin Sun. *Panoramas et Synthèses*, Vol. 59 *Soc. Math. France, Paris*, 2023.
18. **Conformal welding of quantum disks**, Morris Ang, Nina Holden and Xin Sun. *Electronic Journal of Probability*, Vol. 28, 1–50 (2023).
19. **The SLE loop via conformal welding of quantum disks**, Morris Ang, Nina Holden and Xin Sun. *Electronic Journal of Probability*, Vol. 28, 1–20 (2023).
20. **Equivalence of Liouville measure and Gaussian free field**, Nathanael Berestycki, Scott Sheffield and Xin Sun. *Ann. Inst. Henri Poincaré Probab. Stat.*, Vol. 59, No. 2, 795–816 (2023).
21. **Brownian half-plane excursion and critical Liouville quantum gravity**, Juhan Aru, Nina Holden, Ellen Powell and Xin Sun. *Journal of the London Mathematical Society*, 107(1), 441–509 (2023).

22. **Natural parametrization of percolation interface and pivotal points**, Nina Holden, Xinyi Li and Xin Sun. *Ann. Inst. Henri Poincaré Probab. Stat.*, Vol. 58, No. 1, 7-25 (2022).
23. **Minkowski content of Brownian cut points**, Nina Holden, Greg Lawler, Xinyi Li and Xin Sun. *Ann. Inst. Henri Poincaré Probab. Stat.*, Vol. 58, No. 1, 455-488 (2022).
24. **Liouville dynamical percolation**, Christophe Garban, Nina Holden, Avelio Sepúlveda and Xin Sun. *Probab. Theory Relat. Fields* (2021).
25. **Joint scaling limit of site percolation on random triangulations in the metric and peanosphere sense**, Ewain Gwynne, Nina Holden and Xin Sun. *Electronic Journal of Probability*, Vol. 26, 1-58, (2021).
26. **Volume of metric balls in Liouville quantum gravity**, Morris Ang, Hugo Falconet and Xin Sun. *Electronic Journal of Probability*, 25 (2020), no. 169, 1-50.
27. **Scaling limit of large triangulations of polygons**, Marie Albenque, Nina Holden and Xin Sun. *Electronic Journal of Probability*, 25 (2020), no. 135, 1-43.
28. **Weak LQG metrics and Liouville first passage percolation**, Julien Dubédat, Hugo Falconet, Ewain Gwynne, Joshua Pfeffer and Xin Sun. *Probab. Theory Relat. Fields*, Vol. 178, 369–436 (2020).
29. **A mating-of-trees approach for graph distances in random planar maps**, Ewain Gwynne, Nina Holden and Xin Sun. *Probab. Theory Relat. Fields*, Vol. 177, 1043–1102 (2020).
30. **Induced graphs of uniform spanning forests**, Russell Lyons, Yuval Peres, and Xin Sun. *Ann. Inst. Henri Poincaré Probab. Stat.*, Vol. 56, No. 4, 2732-2744 (2020).
31. **Occupation measure of random walks and wired spanning forests in balls of Cayley graphs**, Russell Lyons, Yuval Peres, Xin Sun and Tianyi Zheng. *Annales de la Faculté des Sciences de Toulouse*, (2020) no. 1, pp. 97-109.
32. **Four-dimensional loop-erased random walk**, Gregory Lawler, Xin Sun and Wei Wu. *Annals of Probability*, Vol. 47, No. 6, 3866-3910 (2019).

33. **A distance exponent for Liouville quantum gravity**, Ewain Gwynne, Nina Holden and Xin Sun. *Probab. Theory Relat. Fields*, Vol. 173, 931-997 (2019).
34. **Scaling limits for the critical Fortuin-Kasteleyn model on a random planar map I: cone times**, Ewain Gwynne, Cheng Mao and Xin Sun. *Ann. Inst. Henri Poincaré Probab. Stat.*, Vol. 55, No. 1, 1-60 (2019).
35. **Random planar geometry through the lens of uniform spanning tree**, Xin Sun. *Bernoulli News*, Vol. 26, No. 2, 10–13 (2019).
36. **Almost sure multifractal spectrum of SLE**, Ewain Gwynne, Jason Miller and Xin Sun. *Duke Math. J.*, Vol. 167, No. 6, 1099-1237 (2018).
37. **SLE as a mating of trees in Euclidean geometry**, Nina Holden and Xin Sun. *Commun. Math. Phys.*, 364, 171-201 (2018).
38. **Negative moments for Gaussian multiplicative chaos on fractal sets**, Christophe Garban, Nina Holden, Avelio Sepúlveda and Xin Sun. *Electronic Communications in Probability*, 23 (2018), no. 100, 1-10.
39. **Brownian motion correlation in the peanosphere for $\kappa > 8$** , Ewain Gwynne, Nina Holden, Jason Miller and Xin Sun. *Ann. Inst. Henri Poincaré Probab. Stat.*, Vol. 53, No. 4, 1866-1889 (2017).
40. **Two perspectives of the unit area quantum sphere and their equivalence**, Juhan Aru, Yichao Huang and Xin Sun. *Commun. Math. Phys.*, 356, 261-283 (2017).
41. **Deep Learning with Coherent Nanophotonic Circuits**, Yichen Shen, Nicholas C. Harris, Scott Skirlo, Mihika Prabhu, Tom Baehr-Jones, Micheal Hochberg, Xin Sun, Shijie Zhao, Hugo Larochelle, Dirk Englund and Marin Soljačić. *Nature Photonics*. Vol. 11, Issue 7, 441-446 (2017).
42. **Scaling limits for the critical Fortuin-Kasteleyn model on a random planar map II: local estimates and empty reduced word exponent**, Ewain Gwynne and Xin Sun. *Electronic Journal of Probability*, 22 (2017), no. 45, 1-56.
43. **Fractional Gaussian field: a survey**, Asad Lodhia, Scott Sheffield, Xin Sun and Samuel Watson. *Probability Surveys*, Vol. 13 (2016), 1-56.
44. **Sandpiles and unicycles on random planar maps**, David Wilson and Xin Sun. *Electronic Communications in Probability*, 21 (2016), no. 57, 1-12.

45. **On fluctuations for random band Toeplitz matrices**, Yiting Li and Xin Sun. *Random Matrices: Theory and Applications*, Vol. 4, No.2 (2015).
46. **Ergodicity of the Airy line ensemble**, Ivan Corwin and Xin Sun. *Electronic Communications in Probability*, 19 (2014), no. 49, 1-11.
47. **Fluctuations of eigenvalues for random Toeplitz and related matrices**, Dangzheng Liu, Xin Sun and Zhengdong Wang. *Electronic Journal of Probability*, 17 (2012), no. 95, 1-22.
48. **A note on eigenvalues of random block Toeplitz matrices with slowly growing bandwidth**, Yiting Li, Dangzheng Liu, Xin Sun and Zhengdong Wang. *Statistics and Probability Letters*, 08/2011; 81 (12).

Selected preprints

1. **The p - θ relation in mating of trees**, Morris Ang, Xin Sun, and Pu Yu. *ArXiv e-prints*, Oct 2025.
2. **Disconnection probability of Brownian motion on an annulus**, Gefei Cai, Xuesong Fu, Xin Sun, and Zhuoyan Xie. *ArXiv e-prints*, Sep 2025.
3. **Turaev-Viro invariant from the modular double of $U_q\mathfrak{sl}(2, \mathbb{R})$** , Tianyue Liu, Shuang Ming, Xin Sun, Baojun Wu, and Tian Yang. *ArXiv e-prints*, Aug 2025.
4. **The bulk one-arm exponent for the $CLE_{\kappa'}$ percolations**, Haoyu Liu, Xin Sun, Pu Yu, and Zijie Zhuang. *ArXiv e-prints*, Oct 2024.
5. **Annulus crossing formulae for critical planar percolation**, Xin Sun, Shengjing Xu, and Zijie Zhuang. *ArXiv e-prints*, Oct 2024.
6. **Integrability of Conformal Loop Ensemble: Imaginary DOZZ Formula and Beyond**, Morris Ang, Gefei Cai, Xin Sun, and Baojun Wu. *ArXiv e-prints*, Sep 2024.
7. **Backbone exponent for two-dimensional percolation**, Pierre Nolin, Wei Qian, Xin Sun, and Zijie Zhuang. *ArXiv e-prints*, Sep 2023.
8. **Derivation of all structure constants for boundary Liouville CFT**, Morris Ang, Guillaume Remy, Xin Sun, and Tunan Zhu. *ArXiv e-prints*, May 2023.

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