Xiaoyu Chen

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Nanjing, Jiangsu Province, China

Research Interests   Randomized algorithms, MCMC methods, Statistical physics phase transitions

Education

Ph.D. student in Computer Science (2020 — **Present**)   Nanjing University
Advisor: Professor Yitong Yin

B.Eng. in Computer Science (2016 — 2020)   University of Electronic Science
Advisor: Professor Mingyu Xiao & Yi Zhou   and Technology of China

Honors and Awards

National Scholarship	MOE of PRC	2021
Outstanding Graduate Student	UESTC	2020
Rank 8 of IEEEXtreme 12.0 Programming Competition	IEEE	2018
Silver Medal of The ACM-ICPC Asia Regional Contest, Beijing Site	ACM	2017

Publications

10   Rapid Mixing at the Uniqueness Threshold   STOC 2025
with Zongchen Chen, Yitong Yin, Xinyuan Zhang

9   Optimal Mixing for Randomly Sampling Edge Colorings on Trees Down to the Max Degree   SODA 2025
with Charlie Carlson, Weiming Feng, Eric Vigoda

8   Spectral Independence Beyond Total Influence on Trees and Related Graphs   SODA 2025
with Xiongxin Yang, Yitong Yin, Xinyuan Zhang

7   Near-linear time samplers for matroid independent sets with applications   RANDOM 2024
with Heng Guo, Xinyuan Zhang, Zongrui Zou

6   Uniqueness and rapid mixing in the bipartite hardcore model   FOCS 2023
with Jingcheng Liu, Yitong Yin

5   A near-linear time sampler for the Ising model with external field   SODA 2023
with Xinyuan Zhang

4   Optimal mixing for two-state anti-ferromagnetic spin systems   FOCS 2022
with Weiming Feng, Yitong Yin, Xinyuan Zhang

3   Rapid mixing of Glauber dynamics via spectral independence for all degrees   FOCS 2021
with Weiming Feng, Yitong Yin, Xinyuan Zhang   invited to SICOMP special issue

2   Exact algorithms for maximum weighted independent set on sparse graphs   COCOON 2021
with Sen Huang, Mingyu Xiao

1   Computing maximum k-defective cliques in massive graphs
with Yi Zhou, Jin-Kao Hao, Mingyu Xiao   Comput. Oper. Res. 127 (2021)

Manuscript

5   Faster mixing of the Jerrum-Sinclair chain
    with Weiming Feng, Zhe Ju, Tianshun Miao, Yitong Yin, Xinyuan Zhang   arXiv:2504.02740

4   Rapid Mixing on Random Regular Graphs beyond Uniqueness
    with Zejia Chen, Zongchen Chen, Yitong Yin, Xinyuan Zhang   arXiv:2504.03406

3   Deterministic counting from coupling independence
    with Weiming Feng, Heng Guo, Xinyuan Zhang, Zongrui Zou   arXiv:2410.23225

2   Rapid Mixing via Coupling Independence for Spin Systems with Unbounded Degree
    with Weiming Feng   arXiv:2407.04672

1   Optimal mixing time for the Ising model in the uniqueness regime
    with Weiming Feng, Yitong Yin, Xinyuan Zhang   arXiv:2111.03034

Talks

Near-linear time samplers for matroid independent sets with applications
    RANDOM, 2024

Analyzing Mixing Time of Random Walks via High-dimensional Expander
    Summer School, The Beauty of Theoretical Computer Science, 2024

Uniqueness and rapid mixing in the bipartite hardcore model.
    Markov Chain Monte Carlo 2.0 (NII Shonan meeting No.186), 2023
    FOCS, 2023
    Seminar Talk, UCSB, 2023
    Seminar Talk, SCMS Student Seminar, 2023

Field dynamics: A new algorithmic tool for fast Gibbs sampling without degree restriction.
    CCF TCS PhD Forum, online, 2022

Teaching Assistantships

Computation Method   Nanjing University   Spring 2022, Spring 2023
Instructor: Jingcheng Liu

Advanced Algorithms   Nanjing University   Fall 2021
Instructor: Yitong Yin

Service

External reviewer for: RANDOM 2022, SODA 2024, STOC 2025, COCOON 2025