

Email: jnie47@gatech.edu

Research interests My research interests lie mainly in extremal combinatorics and probabilistic combinatorics, but I keep my brain open for any interesting math problems.

Positions **Visiting Assistant Professor,** Georgia Institute of Technology
Supervisor: Xiaoyu He 2024 August – present

Postdoctoral Researcher, Shanghai Center for Mathematical Sciences
Supervisor: Hehui Wu 2022 September – 2024 July

Short-term postdoc, Max Planck Institute for Mathematics in the Sciences
Supervisor: Raffaella Mulas 2022 May-August

Education **Ph.D. in Mathematics,** University of California, San Diego 2016 – 2022
Advisor: Jacques Verstraëte. GPA: 4.00/4.00

B.S. in Mathematics, Nankai University 2012 – 2016
GPA: 90.41/100

Exchange Semester, University of California, Berkeley 2014 Fall
GPA: 4.00/4.00

Preprints **19. On tight tree-complete hypergraph Ramsey numbers**
Submitted. [arxiv](#).

18. Random Turán Problems for $K_{s,t}$ Expansions (With S. Spiro)
Submitted. [arxiv](#).

17. On the Matching Problem in Random Hypergraphs (With P. Frankl and J. Wang)
Submitted. [arxiv](#).

16. On odd covers of cliques and disjoint unions. (with C. Buchanan, A. Clifton, E. Culver, P. Frankl, K. Ozeki, P. Rombach, and M. Yin)
Submitted. [arxiv](#).

15. Random Turán Problems for Hypergraph Expansions. (With S. Spiro)
Submitted. [arxiv](#).

14. Sidorenko Hypergraphs and Random Turán Numbers. (With S. Spiro)

Submitted. [arxiv](#).

12. Random Turán theorem for expansions of spanning subgraphs of tight trees.

Submitted. [arxiv](#).

Publications

13. Random Turán and counting results for general position sets over finite fields. (with Y. Chen, X. Liu, and J. Zeng)

SCIENCE CHINA: Mathematics (2025). [arxiv](#).

12. The Number of Edge Colorings with Small Independence Number and No Monochromatic H . (with X. Hu and Q. Lin)

The Electronic Journal of Combinatorics 32.1 (2025). [arxiv](#).

11. Off-diagonal Ramsey number for slowly growing hypergraphs (with S. Mattheus, D. Mubayi and J. Verstraëte)

Random Structures & Algorithms 66.1 (2025): e21284. [arxiv](#).

10. Turán theorems for even cycles in random hypergraph.

Journal of Combinatorial Theory, Series B 167 (2024): 23-54. [arxiv](#).

9. On asymptotic local Turán problems. (with P. Frankl)

The Moscow Journal of Combinatorics and Number Theory, 2023, 12(4): 273-286. [arxiv](#).

8. On asymptotic packing of convex geometric and ordered graphs. (with E. Surya, and J. Zeng)

Journal of Graph Theory (2023), 1–15. [arxiv](#).

7. Odd Covers of Graphs. (with C. Buchanan, A. Clifton, E. Culver, J. O'Neill, P. Rombach, and M. Yin)

Journal of Graph Theory (2023), 104: 420–439. [arxiv](#).

6. On Turán numbers for disconnected hypergraphs. (with R. Mulas)

Acta Mathematica Hungarica 170, 168–182 (2023). [arxiv](#).

5. On Asymptotic Packing of Geometric Graphs. (with D. Cranston, J. Verstraëte, and A. Wesolek)

Discrete Applied Mathematics 322 (2022): 142-152. [arxiv](#).

4. Maximal independent sets in clique-free graphs. (with X. He, and S. Spiro)

European Journal of Combinatorics 106 (2022): 103575. [arxiv](#).

3. Ramsey Numbers for Non-trivial Berge Cycles. (with J. Verstraëte)

SIAM Journal on Discrete Mathematics 36.1 (2022): 103-113. [arxiv](#).

2. Triangle-free Subgraphs of Hypergraphs. (with S. Spiro, and J. Verstraëte)

Graphs and Combinatorics 37 (2021): 2555-2570. [arxiv](#).

1. Randomized greedy algorithm for independent sets in regular uniform hypergraphs with large girth. (with J. Verstraëte)

Random Structures & Algorithms 59.1 (2021): 79-95. [arxiv](#).

Teaching

As Instructor

at Georgia Institute of Technology:

3012 - Applied Combinatorics Fall 2024

at Fudan University:

Graph Theory Fall 2023

at UCSD

MATH 20C - Calculus&Analyt Geom/Sci&Engnr Summer I 2021

As Teaching Assistant at UCSD

MATH 154 - Discrete Math & Graph Theory Winter 2022

MATH 154 - Discrete Math & Graph Theory Winter 2021

MATH 154 - Discrete Math & Graph Theory Fall 2020

MATH 20E - Vector Calculus Summer II 2020

MATH 154 - Discrete Math & Graph Theory Spring 2020

MATH 154 - Discrete Math & Graph Theory Winter 2020

MATH 170A - Intro Numerical Analys/Linear Fall 2019

MATH 220C - Complex Analysis Spring 2019

MATH 18 - Linear Algebra Spring 2019

MATH 170B - Intro/Numerical Analy/Approxim Winter 2019

MATH 170A - Intro Numerical Analys/Linear Fall 2018

MATH 142A - Introduction to Analysis I Summer I 2018

MATH 184A - Combinatorics Spring 2018

MATH 184A - Combinatorics Winter 2018

MATH 184A - Combinatorics Fall 2017

MATH 20B - Calculus/Science & Engineering Winter 2017

MATH 20A - Calculus/Science & Engineering Fall 2016

Service

Served as referee for the following journals:

Journal of Combinatorial Theory Series B, Combinatorica, Random Structures & Algorithms, SIAM Journal of Discrete Mathematics, Journal of Graph Theory, European Journal of combinatorics, Discrete Applied Mathematics, Australasian Journal of Combinatorics, Journal of Combinatorial Optimization, Discrete Mathematics.