

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** **26. Decomposition of Cliques into k-Star-Forests (With Y. Ren and H. Wu)**  
*Submitted. [arxiv](#).*

**25. Maximum in-general-position set in a random subset of  $\mathbb{F}_q^d$  (With Y. Chen, J. Yu and W. Zhang)**  
*Submitted. [arxiv](#).*

**24. Evasive sets, twisted varieties, and container-clique trees (With J. Lim and J. Zeng)**  
*Submitted. [arxiv](#).*

**23. Off-Diagonal Ramsey Numbers for Linear Hypergraphs (With X. He, Y. Wigderson and H. Yu)**  
*Submitted. [arxiv](#).*

**22. Generalized Erdős-Rogers problems for hypergraphs (With X. He)**  
*Submitted. [arxiv](#).*

**21. Supersaturation of odd linear cycles (With L. Deng, J. Han and S. Spiro)**

*Submitted. [arxiv](#).*

**20. Random Turán Problems for  $K_{s,t}$  Expansions (With S. Spiro)**

*Submitted. [arxiv](#).*

**19. Random Turán Problems for Hypergraph Expansions. (With S. Spiro)**

*Submitted. [arxiv](#).*

## Publications

**18. On the Matching Problem in Random Hypergraphs (With P. Frankl and J. Wang)**

*To appear on Discrete Mathematics. [arxiv](#).*

**17. On tight tree-complete hypergraph Ramsey numbers**

*To appear on Journal of Graph Theory. [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)**

*To appear on Journal of Graph Theory. [arxiv](#).*

**15. Random Turán theorem for expansions of spanning subgraphs of tight trees.**

*To appear on SIAM Journal on Discrete Mathematics. [arxiv](#).*

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

*To appear on Combinatorial Theory. [arxiv](#).*

**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:

4032 - Combinatorial Analysis

Spring 2025

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

Co-orgarnizing the [GaTech Combinatorics Seminar](#)

Co-orgarnizing the [SCMS Combinatorics Seminar](#)

Served as referee for the following journals:

Forum of Mathematics Sigma, Journal of London Mathematical Society, 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.