

Research interests

Extremal combinatorics and graph theory, algebraic and probabilistic methods, discrete geometry, combinatorial number theory.

Employment

- **Research fellow**, Institute of Basic Sciences 01/2024–now
 - Mentor: Hong Liu
- **Research fellow**, Alfréd Rényi Institute of Mathematics 09/2023–12/2023
 - Mentor: János Pach

Education

- **PhD in Mathematics**, Carnegie Mellon University 09/2018–05/2023
 - Advisor: Boris Bukh
 - Thesis: “Several problems in extremal combinatorics”
- **BS in Mathematics**, Peking University 09/2014–07/2018
 - Advisor: Chunwei Song
 - Thesis: “Three proofs of Roth’s theorem”
- **Middle and High School**, Beijing National Day School 09/2008–07/2014

Academic positions

- **Teaching assistant at CMU** 09/2018–present
 - 21-325 Probability, grading Spring 2023
 - 21-228 Discrete Mathematics, grading and recitations Spring 2022
 - 21-301 Combinatorics, grading Fall 2021
 - 21-623 Complex Analysis (graduate), grading Spring 2021
 - 21-295 Putnam Seminar, grading Fall 2020
 - 21-325 Probability, grading Spring 2020
 - 21-701 Discrete Mathematics (graduate), grading Fall 2019

- 21-325 Probability, grading Spring 2019
- 21-371 Algebraic Structures, grading Fall 2018
- 21-341 Linear Algebra, grading Fall 2018
- **Teaching assistant at PKU** 09/2017–01/2018
 - Calculus (college of engineering), grading and recitations Fall 2017

Publications

- **Saturation results around the Erdős–Szekeres problem**
 - With Gabór Damásdi, Manfred Scheucher and Ji Zeng, [arXiv:2312.01223](https://arxiv.org/abs/2312.01223).
- **Rainbow even cycles**
 - With Zijian Xu, [arXiv:2211.09530](https://arxiv.org/abs/2211.09530).
- **Convex polytopes in restricted point sets in \mathbb{R}^d**
 - With Boris Bukh, [arXiv:2204.02487](https://arxiv.org/abs/2204.02487).
- **A simple proof of the Gan–Loh–Sudakov conjecture**
 - With Ting-Wei Chao, [arXiv:2201.05181](https://arxiv.org/abs/2201.05181).
 - Appeared in [Electronic J. of Combinatorics](https://doi.org/10.1017/S0959268822000033), vol. 29(3), P3.59, 2022.
- **On the stability of graph independence number**
 - With Zhuo Wu, [arXiv:2102.13306](https://arxiv.org/abs/2102.13306).
 - Appeared in [SIAM J. Discrete Math.](https://doi.org/10.1137/22M1361001), vol. 36(1), 2022.
- **Longest common subsequences between words of very unequal length**
 - With Boris Bukh, [arXiv:2009.05869](https://arxiv.org/abs/2009.05869).

Presentations

- **Convex polytopes in non-elongated point sets in \mathbb{R}^d**
 - Erdős Center Seminar at the Rényi Institute, Oct. 2023.
- **Rainbow even cycles**
 - AMS Spring Southeastern Sectional Meeting at GIT, Atlanta, Mar. 2023.
- **A simple proof of the Gan–Loh–Sudakov conjecture**
 - Graduate students seminar at CMU, Feb. 2023.
- **On the Stability of Graph Independence Number**

- SIAM Conference on Discrete Mathematics (DM22) at CMU, Pittsburgh, Jun. 2022.
- **Convex polytopes in non-elongated point sets in \mathbb{R}^d**
 - ACO seminar at CMU, Apr. 2022.
- **Convex independence and convex holes**
 - Graduate students seminar at CMU, Oct. 2019.
- **Random permutations and extremal set problems**
 - Graduate students seminar at CMU, Feb. 2019.
- **Domino Tilings of Aztec Diamonds**
 - Graduate students seminar at CMU, Oct. 2018.

Services

- Math Olympiad Summer Program (MOP) Summer 2022
 - Training for the USA team at the International Math Olympiad (IMO).
 - Served as an instructor, gave lectures under directions of Po-Shen Loh.
- Western PA ARML 2019–2022
 - Training for the Western Pennsylvania Team at American Regions Math League (ARML).
 - Served as an instructor, gave lectures on combinatorics and number theory.