Zichao Dong　董子超

Curriculum Vitae

Carnegie Mellon University

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Last update: January 2024

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.

- **Rainbow even cycles**
  - With Zijian Xu, arXiv:2211.09530.

- **Convex polytopes in restricted point sets in $\mathbb{R}^d$**
  - With Boris Bukh, arXiv:2204.02487.

- **A simple proof of the Gan–Loh–Sudakov conjecture**
  - With Ting-Wei Chao, arXiv:2201.05181.
  - Appeared in Electronic J. of Combinatorics, vol. 29(3), P3.59, 2022.

- **On the stability of graph independence number**
  - With Zhuo Wu, arXiv:2102.13306.
  - Appeared in SIAM J. Discrete Math., vol. 36(1), 2022.

- **Longest common subsequences between words of very unequal length**
  - With Boris Bukh, arXiv:2009.05689.

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 Rigions Math League (ARML).
  - – Served as an instructor, gave lectures on combinatorics and number theory.