Zeyu Zheng

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EDUCATION

Rutgers University New Brunswick, New Jersey, USA
major in Pure Math, with a minor in Computer Science *May 2022 - present*
Budapest Semesters in Mathematics Budapest, Hungary, EU
with Highest Honors *Jan 2022 - Aug 2022*
Fudan University Shanghai, Mainland China
major in Computational Math, Buqing Su Top-notch Talent Program in Mathematics *Sep 2019 - present*
Alfréd Rényi Institute of Mathematics Budapest, Hungary, EU
Semester on Large Networks and their Limits *May 2022 - Jun 2022*
University of Illinois at Urbana-Champaign Urbana, Illinois, USA
Summer School on Flag Algebras, online *Jun 2021 - Jul 2021*

Major courses:
Combinatorics I (A+) , Advanced Combinatorics (A) , Combinatorial Optimization (A-) , Graph Theory (A), Number Theory (A+) , Calculus (A) , Complex Analysis (A-) , Real Analysis (A-) , Fourier Analysis (A+), Linear Algebra (A) , Abstract Algebra (B+) , Galois Theory (A+) , Analytic Geometry (A) , Discrete and Convex Geometry (A+) , Topology (A) , Algebraic Topology (B+) , Mathematical Modeling (A) , Mathematical Modeling and Practice (A), Theory of Computing (A+), Conjecture and Proof (A), Research Opportunities (A+), Research Opportunities II (A)

RESEARCH WORKS

1. Chaoliang Tang, Hehui Wu, Shengtong Zhang, and Zeyu Zheng, "On the Turán number of the linear 3−graph C_{13}", *Electronic Journal of Combinatorics* Volume 29, Issue 3 (2022), P3.46. arXiv Journal version
2. Logan Post and Zeyu Zheng, "Common kings of a chain of cycles in a strong tournament", *under review.* arXiv
3. Tibor Jordán, Henry Simmons, Kaylee Weatherspoon and Zeyu Zheng, "Regular graphs with extremal rigidity properties", *submitted.* PDF
4. Ervin Győri, Xianzhi Wang and Zeyu Zheng, "Extremal planar graphs with no cycles of particular lengths", *under review.* arXiv
5. Robin Huang, Tibor Jordán and Zeyu Zheng, "On strongly minimally 3-vertex rigid graphs", *manuscript.*

RESEARCH EXPERIENCE

Turán Number of Linear 3-Graphs Dec 2020 - Oct 2021
Advisor: Hehui Wu *Shanghai Center for Mathematical Sciences, Fudan University*
- We introduced a new approach to this kind of problems. By this new method, we proved and strengthened a conjecture of András Gyárfás about the Turán number of a linear 3-graph.

Planar Turán Number Jan 2022 - present
Advisor: Ervin Győri *Alfréd Rényi Institute of Mathematics & Budapest Semesters in Mathematics*
- We found a new approach to find the planar Turán number of C_5, i.e. to partition the graph into triangular blocks and do local calculations. We've also found a better extremal construction.
- We proved tight bounds for the maximum number of edges in a C_6/C_8-free planar bipartite/triangle-free planar graph with some restrictions of small degree vertices.

Rigidity Properties of Graphs Jan 2022 - present
Advisor: Tibor Jordán *Eötvös Loránd University & Budapest Semesters in Mathematics*
- We fully characterized the the minimal 2-vertex globally rigid graphs. We proved some properties of 2-vertex globally rigid graphs and established some equivalences of 2-edge globally rigid graphs under different conditions.
- We extended a classic result about 2-vertex rigid graphs. Using our new result, we found a recursive construction showing sharpness of a lower bound for the minimum number of edges in 3-vertex rigid graphs.

TEACHING EXPERIENCE

- Fall 2021: TA for Linear Algebra at FDU

HONORS AND AWARDS

- Hungarian BME Mathematical Contest for university students, second place 2022
- Scholarship for Outstanding Students, FDU 2020-2021 & 2019-2020
- East China Cup Mathematical Modeling Contest, outstanding winner 2021
- The Chinese Mathematics Competition for college students, first prize 2020
- National High School Mathematical Contest, first prize 2018

TALKS

1. 11th Cross-strait Conference on Graph Theory and Combinatorics Aug 2021
2. Fudan SCMS Combinatorics Student Seminar Sep 2022