# Zeyu Zheng

My Homepage

zeyuzheng19@fudan.edu.cn or zeyu.zheng@rutgers.edu


## EDUCATION

**Rutgers University** — New Brunswick, New Jersey, USA
*B.S. in Mathematics, with a minor in Computer Science* — *May 2022 - present*

**Budapest Semesters in Mathematics** — Budapest, Hungary, EU
*with Highest Honors* — *Jan 2022 - present*

**Fudan University** — Shanghai, Mainland China
*B.S. in Mathematics, 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*

**Core courses:**
Combinatorial Optimization (A-), Graph Theory (A), Advanced Combinatorics (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+), Research Opportunities (A+)

## PUBLICATIONS

1. Chaoliang Tang, Hehui Wu, Shengtong Zhang, and Zeyu Zheng, "Note on the Turán number of the linear 3−graph $C_{13}$", *submitted*, arXiv:2109.10520v3, 5 pages (2021).

## 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. (arXiv:2109.10520v3)

**Shannon Capacity of Graphs** — Oct 2021 - present
**Advisor:** Hehui Wu — *Shanghai Center for Mathematical Sciences, Fudan University*
• We are currently working on the Shannon Capacity of odd cycles. Our approach is to find a bound of the independence number of the strong product of $k$ $(2n+1)$-cycles.

**Planar Turán Number** — Jan 2022 - present
**Advisor:** Ervin Győri — *Alfréd Rényi Institute of Mathematics & Budapest Semesters in Mathematics*
• We have 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 are currently working on 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.

## 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
- Eastern China Cup Mathematical Contest in Modeling, 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