Chengyue He

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Education

Columbia University, New York, NY, USA
Ph.D. in Operations Research, 2021-present
Advisors: Yuri Faenza & Jay Sethuraman

Columbia University, New York, NY, USA
M.S. in Operations Research, 2019-2020

Zhejiang University, Hangzhou, China
B.S. in Mathematics, 2015-2019
Thesis: Almost everywhere convergence on the Schrödinger maximal function.

Research Interests

Theory: Mechanism design, matching markets, combinatorial optimization, complexity of linear programming and fixed-point computation.
Applications: Stable matchings, school choice, kidney exchange programs.

Publications and Preprints

Authors listed in alphabetical order.

1. Yuri Faenza, Ayoub Foussoul and Chengyue He. Minimum Cut Representability of Stable Matching Problems. Major revision in *Operations Research* (2025).
   - Honorable mention in the INFORMS Optimization Society's 2025 Student Paper Prize.
2. Itai Feigenbaum, Chengyue He. Managing Self-Interested Behavior in Failure-Aware Kidney Exchange. Major revision in *Mathematics of Operations Research* (2025).
3. Yuri Faenza, Chengyue He and Jay Sethuraman. Scarf's Algorithm and Stable Marriages. *Mathematics of Operations Research* (2025).
4. Karthekeyan Chandrasekaran, Yuri Faenza, Chengyue He and Jay Sethuraman. Scarf's Algorithm on Arborescence Hypergraphs. *Proceedings of The 52nd EATCS International Colloquium on Automata, Languages, and Programming (ICALP)* (2025).
5. Yuri Faenza, Ayoub Foussoul and Chengyue He. Two-stage Stochastic Stable Matching. *Proceedings of The 25th Conference on Integer Programming and Combinatorial Optimization (IPCO)* (2024).

Ongoing Works

1. Yuri Faenza, Chengyue He and Jay Sethuraman. Two-sided Tiered Random Matching Markets.
2. Yuri Faenza, Chengyue He and Jay Sethuraman. Scarf's algorithm and Stable Partitions. *Manuscript available upon request.*
3. Itai Feigenbaum, Chengyue He. Non Position-indexed Integer Program in Kidney Exchange with Cancellations.

Invited Talks

Minimum Cut Representability of Stable Matching Problems. INFORMS Annual Meeting, Atlanta. (October 2025)

Scarf's Algorithm on Arborescence Hypergraphs. The 52nd EATCS International Colloquium on Automata, Languages, and Programming (ICALP 2025), Aarhus University. (July 2025)

Linear Programming and Polyhedral Geometry. PhD Tutorial Seminar at Columbia IEOR. (October 2024)

A Geometric Algorithm for Stable Matching Problems. INFORMS Annual Meeting, Phoenix. (October 2023)

Scarf's Algorithm and Stable Matchings. Modeling and Optimization: Theory and Applications (MOPTA) 2023, Lehigh University. (August 2023)

PPAD Hardness: The Complexity of Nash Equilibrium. Seminar at ICERM, Brown University. (March 2023)

Teaching Experience

Instructor of Science Honors Program (SHP) at Columbia Engineering

- Graph Theory by Example: Fall 2021, Spring 2022.
- PhDs and postdocs in the sciences and mathematical disciplines teach courses in their area of study aimed at high school students.

Teaching Assistant

- IEOR 3609 Advanced Optimization (including recitation lectures): Spring 2025.
- IEOR 6613 Optimization (PhD level): Fall 2023, Fall 2024.

Visits

Spring 2023: Semester Program on Discrete Optimization: Mathematics, Algorithms, and Computation, ICERM, Brown University.

Fall 2018, Spring 2019: Undergraduate exchange program at UC Berkeley.

References

Yuri Faenza, Associate Professor
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Jay Sethuraman, Professor
Department of Industrial Engineering and Operations Research
Columbia University
(+1) 212-854-4931, jay@ieor.columbia.edu

Itai Feigenbaum, Associate Professor
Department of Computer Science
Lehman College, City University of New York
(+1) 609-802-9025, itai@itaifeigenbaum.com