

**Kiril Bangachev**  
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## EDUCATION

**MIT, Cambridge, MA**

PhD Candidate in Electrical Engineering and Computer Science, advised by Guy Bresler.

September 2022 -

**Princeton University, Princeton, NJ**

Bachelor of Arts, Mathematics, advised by Matt Weinberg for junior and senior independent work.

September 2018-May 2022

## RESEARCH

### Conference Publications

1. "On the Fourier Coefficients of High-Dimensional Random Geometric Graphs" K. Bangachev, G. Bresler. STOC 2024.
2. "Detection of  $L_\infty$  Geometry in Random Geometric Graphs: Suboptimality of Triangles and Cluster Expansion", K. Bangachev, G. Bresler. COLT 2024.

### Journal Publications

3. "Enumerative and Structural Aspects of Anagrams Without Fixed Letters" K. Bangachev, ECA 3:2 (2023) Article #S2R9.
4. "On the Asymmetric Generalizations of Two Extremal Questions on Friends-And-Strangers Graphs" K. Bangachev, European J. Combin., 104 (2022)

### Preprints

5. "From Dense to Sparse: Near-Optimal Time-Sparsity Trade-Offs for Solving Noisy Linear Equations" K. Bangachev, G. Bresler, S. Tiegel, V. Vaikuntanathan. To appear soon.
6. "Sandwiching Random Geometric Graphs and Erdos-Renyi with Applications: Sharp Thresholds, Robust Testing, and Enumeration" K. Bangachev, G. Bresler. arXiv: <https://arxiv.org/abs/2408.00995>.
7. "Random Algebraic Graphs and Their Convergence to Erdos-Renyi" K. Bangachev, G. Bresler. arXiv: <https://arxiv.org/abs/2305.04802>. *Under Review*
8. "Exploring the Space Between Subadditive and Fractionally Subadditive Valuations" K. Bangachev, S. M. Weinberg, arXiv: <https://arxiv.org/pdf/2304.01451>.

## REVIEWING

STOC2024, ICALP2024, STACS 2025, European Journal of Combinatorics, Combinatorial Theory, Discussiones Mathematicae Graph Theory, Discrete Mathematics.

## TEACHING

1. Teaching Fellow for "Discrete Probability and Stochastic Processes" taught by Guy Bresler. Spring 2024
2. Course Grader for "Economics and Computing" taught by Matt Weinberg. Spring 2021 and Spring 2022

## SELECTED HONORS AND AWARDS

### Carlton E. Tucker Teaching Award

Awarded for excellence in departmental teaching at MIT EECS.

2024

### Siebel Scholarship

### George B. Covington Prize in Mathematics

Awarded for excellence in mathematics at Princeton University.

2024

2022

### Andrew H. Brown Prize

Awarded to the outstanding juniors in mathematics at Princeton University.

2021

### The Class of 1861 Prize

Awarded to the sophomore at Princeton University with the best record on the Putnam Examination.

2020

### Freshman First Honor Prize

Awarded to the sophomore at Princeton University who achieved highest in the freshman year.

2019

## Shapiro Prize for Academic Excellence

2019 and 2020

Awarded for outstanding academic achievement by Princeton students in their first or second years.

## TALKS AND POSTERS

1. “Detection of  $L_\infty$  Geometry in Random Geometric Graphs: Suboptimality of Triangles and Cluster Expansion”. COLT 2024. Edmonton, Alberta, Canada. Joint work with Guy Bresler. Talk.
2. “On the Fourier Coefficients of High-Dimensional Random Geometric Graphs”. STOC 2024. Vancouver, BC, Canada. Joint work with Guy Bresler. Talk.
3. “On the Fourier Coefficients of High-Dimensional Random Geometric Graphs”. BIRS Workshop on Computational Complexity of Statistical Inference, 2024. Banff, BC, Canada. Joint work with Guy Bresler. Talk.  
<https://www.birs.ca/events/2024/5-day-workshops/24w5214/videos/watch/202402292041-Bangachev.html>
4. “Random Algebraic Graphs and Their Convergence to Erdos-Renyi”. SPA 2023. Lisbon, Portugal. Poster.
5. “Random Algebraic Graphs and Their Convergence to Erdos-Renyi”. NASIT 2023. Philadelphia, PA, USA. Poster.
6. “Random Algebraic Graphs and Their Convergence to Erdos-Renyi”. FODSI 2023. Cambridge, MA, USA. Poster.
7. “Hamiltonicity of Generalized Derangement Graphs,” CROPS 2022. New Brunswick, NJ, USA. Online Talk. Slides: <https://stoyandimitrov.net/CROPS/HamiltonicitySlidesRutgers.pdf>.
8. “On the Asymmetric Generalizations of Two Extremal Questions on Friends-And-Strangers Graphs.” JMM 2022. Virtual. Poster.

## REFERENCE

Guy Bresler. [guy@mit.edu](mailto:guy@mit.edu), +1 (217)721-7132. PhD advisor.