

Quentin Dubroff

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RESEARCH INTERESTS

- Extremal and probabilistic combinatorics.
- Discrete probability and related areas in statistical physics.
- Metric geometry.

EDUCATION

- **PhD in Mathematics**, Rutgers University, 2018–2024 (expected).
Supervised by Jeff Kahn and Bhargav Narayanan.
- **BS in Mathematics**, University of Delaware, 2013–2017.
Magna cum laude.

POSITIONS

- **Researcher**, École Polytechnique Fédérale de Lausanne, 2017–2018.
Member of the discrete and computational geometry group of János Pach.

AWARDS & PRIZES

- TA Teaching Excellence Award, Rutgers, 2021.
- ThinkSwiss Research Scholarship, 2017.
- William Clark Prize, University of Delaware, 2017.
Presented only when a senior majoring in mathematics has, in the opinion of the department, unusual ability in the area.
- Rees Scholarship, University of Delaware, 2016.

PUBLICATIONS

Links to publications may be found at sites.math.rutgers.edu/~qcd2/publications.

- *Reverse discrepancy and almost zero-sum stars*, **preprint**.
This paper improves upon a result on József Balogh and Clifford Smyth which says that any balanced function on the edges of a hypergraph must be close to balanced on the set of edges incident to some vertex.
- *Linear cover time is exponentially unlikely*, **submitted**. With J. Kahn.
This paper proves a conjecture of Itai Benjamini on the cover time of random walks on graphs.
- *New stepping-up constructions for multicoloured hypergraphs*, **submitted**. With A. Girão, E. Hurley, and C. Yap.
This paper constructs a family of hypergraphs with arbitrarily large tower height gaps between the 2-colour and q -colour Ramsey numbers, answering a question of David Conlon, Jacob Fox, and Vojtěch Rödl.
- *A note on the Erdős distinct subset sums problem*, **SIAM journal on Discrete Mathematics**, 35 (2021).
With J. Fox and M. W. Xu.
This paper gives two proofs of the best known lower bound on the maximum element of a subset of n positive integers with distinct subset-sums.
- *A better bound for ordinary triangles*, **arXiv**.
This paper studies a generalization of the Sylvester-Gallai problem of finding ordinary lines within configurations of points on the plane.

MENTORING

- **Directed Reading Program Mentor (undergraduate reading program)**: Rajeev Atla (random walks on graphs, 2021), Girish Ganesan (computational geometry, 2021).
- **DIMACS 2020 REU**: On Whether a Monochromatic Initial State is Optimal for a Monochromatic Final State in a Systematic Scan Order Glauber Dynamics for a Generalized Three-Color Potts Model.

SERVICE

- Journal referee.
- Organizer for the graduate student combinatorics seminar, 2020–2021.
- Member of the graduate student liaison committee, 2019–present.

INVITED TALKS

- (upcoming) *Linear cover time is exponentially unlikely*, CS-DM Seminar, IAS, Princeton, 3/2022.
- *Linear cover time is exponentially unlikely*, Discrete Math Seminar, Princeton University, 2/2022.
- *Linear cover time is exponentially unlikely*, Combinatorics and Probability Seminar, Ohio State University, 1/2022.
- *Linear cover time is exponentially unlikely*, Discrete Mathematics Seminar, Rutgers University, 11/2020.
- *Linear cover time is exponentially unlikely*, ACO Seminar, Carnegie Mellon University, 11/2021.
- *Linear cover time is exponentially unlikely*, Discrete Math Seminar, University of Delaware, 10/2021.
- *Ordinary Configurations in Point-Line Arrangements*, NYC Geometry Seminar, CUNY Graduate Center, 12/2019.

OTHER TALKS

- Graduate Combinatorics Seminar, Rutgers University, six talks.
- Pizza Seminar, Rutgers University, two talks.
- Combinatorics Reading Seminar, Rutgers University, six talks.

TEACHING

- (upcoming) Linear Algebra (primary instructor), Rutgers University, 2021–2022.
- Introduction to Real Analysis (recitation instructor), Rutgers University, 2021–2022.
- Linear Algebra (TA at large), Rutgers University, 2020–2021.
- Mathematical Theory of Probability, Rutgers University (TA at large), 2019–2020.
- Calculus I for the life and social sciences (recitation instructor), Rutgers University, 2019–2020.