

# Ben Lund

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## Education

Ph.D., Rutgers University, 2017. Adviser: Shubhangi Saraf.

M.S., University of Cincinnati, 2012. Adviser: George Purdy.

## Experience

RTG postdoc, University of Georgia, Sept. 2017-present. Adviser: Giorgis Petridis.

Renyi Institute, Sept.-Dec., 2015. Adviser: Imre Bárány.

IPAM, Algebraic Techniques for Computational and Combinatorial Geometry, Mar.-Jun., 2014.

## Publications

### *Submitted*

1. Convex cones, integral zonotopes, limit shape (with I Bárány, J Bureaux), *arXiv:1610.06400*.
2. Finite field Kakeya and Nikodym sets in three dimensions (with S Saraf, C Wolf), *arXiv:1609.01048*.
3. A refined energy bound for perpendicular bisectors, *arXiv:1604.02059*.
4. Two theorems on point-flat incidences, *arXiv:1708.00039*.

### *Accepted*

5. Essential dimension and the flats spanned by a point set, *arXiv:1602.08002*. Online first, *Combinatorica*.
6. Distinct spreads in vector spaces over finite fields (with T Pham, L A Vinh), accepted to *Discrete and Applied Mathematics*. *arXiv:1611.05768*.
7. An improved bound on  $(A + A)/(A + A)$ , *The Electronic Journal of Combinatorics* 23-3 (2016).
8. The sign-sequence constant of the plane (with A Magazinov), *arXiv:1510.04536*. *Acta Mathematica Hungarica* 151 (1), 117-123 (2017).
9. Elementary methods for incidence problems in finite fields (with J Cilleruelo, A Iosevich, O Roche-Newton, M Rudnev), *Acta Arithmetica* 177, 133-142 (2017).
10. Incidence bounds for block designs (with S Saraf), *SIAM Journal of Discrete Mathematics* 30-4, (2016).

11. On distinct perpendicular bisectors and pinned distances in finite fields (with B Hanson, O Roche-Newton), *Finite Fields and Their Applications* 37, 240-264 (2016).
12. Bisector energy and few distinct distances (with A Sheffer, F de Zeeuw), *Discrete & Computational Geometry* 56,337 (2016). Conference version: *31st International Symposium on Computational Geometry* 2015.
13. A Pseudoline Counterexample to the Strong Dirac Conjecture (with G Purdy, J Smith), *The Electronic Journal of Combinatorics*, 21-2 (2014).
14. Collinearities in Kinetic Point sets (with G Purdy, J Smith, C Tóth), *Canadian Conference on Computational Geometry* 2011.
15. A Bichromatic Incidence Bound and an Application (with G Purdy, J Smith), 2011, *Discrete & Computational Geometry*, 46-4, 611-625 (2012).

## Awards and distinctions

Heidelberg Laureate Forum delegate, 2015.

Rizvi family prize (awarded by computer science department of Rutgers), 2015.

Top Coder Open 2nd place, Design track, 2007.

## Teaching

Instructor, Calculus 3, University of Georgia, Fall 2017

Instructor, Discrete Structures 1, Rutgers, Summer 2016.

TA for Bahman Kalantari, Algorithms, Rutgers, Spring 2015, 2016, 2017

## Talks and presentations

2017

Oberwolfach workshop on discrete geometry 1715 (Invited speaker)

University of Georgia, Analysis and Combinatorics Seminar, Spring and Fall (Invited speaker)

University of Georgia, Number Theory Seminar, Spring and Fall (Invited speaker)

University of Georgia, Geometry Seminar, Fall (Invited speaker)

2016

University of Rochester combinatorics seminar (Invited speaker)

First Vietnam Workshop on Graph Theory and Discrete Geometry (Invited speaker)

California Institute of Technology combinatorics seminar (Invited speaker)

Kent State Informal Analysis Seminar (Poster presentation)

Courant Institute geometry seminar (Invited speaker)

2015

Renyi Institute extremal combinatorics seminar (Invited speaker)

Renyi Institute geometry seminar (Invited speaker)

31st International Symposium on Computational Geometry (Accepted contribution)

Courant Institute geometry seminar (Invited speaker)

2014

Princeton discrete math seminar (Invited speaker)

IPAM Algebraic techniques for combinatorial and computational geometry culminating workshop (Invited speaker)

IPAM Algebraic techniques for combinatorial and computational geometry seminar series (Invited speaker)

2011: Oberwolfach workshop on discrete geometry 1136 (Invited speaker)

## Service

Regular participant and speaker in departmental seminars and informal reading groups

Referee for Discrete & Computational Geometry, The Electronic Journal of Combinatorics, Combinatorica, Discrete Mathematics, Foundations of Computer Science (FOCS), Symposium on Computational Geometry (SoCG), Discrete Analysis

Last updated: December 31, 2017  
<http://www.cs.rutgers.edu/~bd141/CV>