

Aaron Potechin

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POSITIONS

Current position: Assistant Professor at the University of Chicago
Postdoc at Kungliga Tekniska Högskolan (KTH) 2017-2018
Joint postdoc between the Simons Collaboration on Algorithms and Geometry at Cornell
and the Institute for Advanced Study 2015-2017

EDUCATION

Massachusetts Institute of Technology 2015
Ph.D. in Mathematics
Dissertation: "Analyzing Monotone Space Complexity Via the Switching Network Model"

University of Cambridge (Part III of the Math Tripos) 2010
Master of Advanced Study

Princeton 2009
B.A. in Mathematics (summa cum laude with high honors)
Dissertation: "Bounds on Monotone Switching Networks for Directed Connectivity"

HONORS/AWARDS

Machtey award for best student paper at FOCS 2010 2010
NSF Graduate Research Fellowship 2010
George B. Covington Prize (Outstanding Senior Research in Mathematics) 2009
Churchill Scholarship 2009
Barry M. Goldwater Scholarship 2008
Class of 1861 Prize (highest scoring sophomore on the Putnam examination) 2007

JOURNAL PAPERS

S. Hopkins, P. Kothari, A. Potechin, P. Raghavendra, T. Schramm. On the Integrality Gap of Degree-4 Sum of Squares for Planted Clique. ACM Transactions on Algorithms (TALG) - Special Issue on SODA'16 and Regular Papers. Volume 14 Issue 3, Article No. 28. 2018

S. Chan, A. Potechin. Tight Bounds for Monotone Switching Networks Via Fourier Analysis. Theory of Computing Vol. 10 Article 15, p. 389-419. 2014

A Potechin. Bounds on Monotone Switching Networks for Directed Connectivity. Journal of the ACM (JACM) Volume 64, Issue 4, Article No. 29. 2017

A. Berget, A. Manion, M. Maxwell, A. Potechin, V. Reiner. The Critical Group of a Line Graph. Annals of Combinatorics Volume 16, Issue 3, p.449-488. 2012

A Potechin. Maximal Caps in AG(6,3). Designs, Codes, and Cryptography, Volume 36, Issue 3, p.243-259. 2008

CONFERENCE PAPERS

- A. Potechin. On the Approximation Resistance of Balanced Linear Threshold Functions. STOC 2019
- A. Potechin. Sum of squares lower bounds from symmetry and a good story. ITCS 2019
- S. Hopkins, P. Kothari, A. Potechin, P. Raghavendra, T. Schramm, D. Steurer. The Power of Sum-of-Squares for Detecting Hidden Structures. FOCS 2017
- A. Potechin, D. Steurer. Exact Tensor Completion with Sum of Squares. COLT 2017
- A. Potechin. A Note on Amortized Branching Program Complexity. CCC 2017
- B. Barak, S. Hopkins, J. Kelner, P. Kothari, A. Moitra, A. Potechin. A Nearly Tight Sum-of-Squares Lower Bound for the Planted Clique Problem. FOCS 2016
- D. Medarametla, A. Potechin. Bounds on the Norms of Uniform Low Degree Graph Matrices. RANDOM 2016
- R. Meka, A. Potechin, A. Wigderson. Sum of Squares Lower Bounds for Planted Clique. STOC 2015

PREPRINTS

- A. Potechin. Sum of squares bounds for the total ordering principle. arXiv 1812.01163
- A. Potechin, L. Yang. A Note on Property Testing Sum of Squares and Multivariate Polynomial Interpolation. arXiv 1709.03198
- A. Potechin. A Note on a Problem of Erdős and Rothschild (2014) arXiv 1412.1838
- A. Potechin. Improved Upper and Lower Bound Techniques for Monotone Switching Networks for Directed Connectivity (2013) arXiv 1302.3726
- J Brakensiek, A Potechin. Bounds on the Size of Sound Monotone Switching Networks Accepting Permutation Sets of Directed Trees. (2013) arXiv 1301.3780
- K Carde, J Loubert, A Potechin, A Sanborn. Proof of Han's Hook Expansion Conjecture (2008) arXiv 0808.0928

RESEARCH MENTORING

PRIMES student: Dhruv Medarametla (Intel semifinalist)

RSI students: Joshua Brakensiek (won a Davidson fellowship), Gil Goldshlager (Intel semifinalist), Eric Mannes (Intel semifinalist), Jessica Ohrlein

OTHER MENTORING

MITxplore mentor

2012-2015