

# Sammy Luo

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## Education

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<b>Stanford University</b> Candidate for Ph.D. in Mathematics. Advisor: Jacob Fox	Stanford, CA 2018 – present
<b>Massachusetts Institute of Technology (MIT)</b> B.S. in Mathematics (Theoretical)	Cambridge, MA 2014 – 2018

## Selected Awards and Honors

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NSF Graduate Research Fellowship	2018 – present
MIT Jon A. Bucsela Prize in Mathematics	2018
William Lowell Putnam Mathematical Competition: N1 (rank 10 and 7)	2015, 2016
International Mathematical Olympiad: Gold Medal (rank 36)	2014

## Research Interests

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Combinatorics (Additive, extremal, probabilistic, graph theory)

## Teaching and Mentorship

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### *Stanford Teaching*

Course Assistant for Math 108 (Introduction to Combinatorics)	Spring 2021
Teaching Assistant for Math 53 (Ordinary Differential Equations with Linear Algebra)	Winter 2021
Course Assistant for Math 104 (Applied Matrix Theory)	Fall 2019, Spring 2020

### *Other Teaching and Mentorship*

**Stanford Math Department Directed Reading Program:** Mentor (2021 – present)  
**Contest Math Tutoring:** Olympiad Math Tutor (2018 – 2019)  
**Math Olympiad Summer Program (MOP):** Grader (2015); Head Grader / Lead TA (2018)  
**Art of Problem Solving:** TA for Worldwide Online Olympiad Training (WOOT) class (2014 – 2017)

## Publications

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13. Lyuben Lichev and Sammy Luo,  
Large monochromatic components in colorings of complete hypergraphs,  
[arXiv:2302.04487](#)
12. Jacob Fox, Sammy Luo, Huy Tuan Pham, and Yunkun Zhou,  
Small subsets with large sumset: Beyond the Cauchy–Davenport bound,  
[arXiv:2210.07196](#)
11. Jacob Fox, Sammy Luo, and Huy Tuan Pham,  
On random irregular subgraphs, [arXiv:2207.13651](#)

10. David Conlon, Sammy Luo, and Mykhaylo Tyomkyn,  
Monochromatic components with many edges,  
To appear in *Journal of Combinatorics*. arXiv:2204.11360
9. Sammy Luo,  
On connected components with many edges,  
To appear in *SIAM Journal on Discrete Mathematics*. arXiv:2111.13342
8. Jacob Fox, Xiaoyu He, Sammy Luo, and Max Wenqiang Xu,  
Multicolor list Ramsey numbers grow exponentially,  
*Journal of Graph Theory* 101 (2022), 389–396. arXiv:2103.15175
7. Jacob Fox, Sammy Luo, and Yuval Wigderson,  
Extremal and Ramsey results on graph blowups,  
*Journal of Combinatorics* 12.1 (2021), 1–15. arXiv:1912.08328
6. Ian Le and Sammy Luo,  
Generalized Minors and Tensor Invariants,  
To appear in *International Mathematics Research Notices*. arXiv:1901.09855
5. Hong Liu, Sammy Luo, Peter Nelson, and Kazuhiro Nomoto,  
Stability and exact Turan numbers for matroids,  
*Journal of Combinatorial Theory Series B* 143 (2020), 29–41. arXiv:1710.03815
4. Ryan Alweiss and Sammy Luo,  
Bounded gaps between primes in short intervals,  
*Research in Number Theory* 4.2 (2018), 1–27. arXiv:1707.05437
3. Sammy Luo, A counting lemma for binary matroids and applications to extremal problems,  
*Journal of Combinatorial Theory Series B* 136 (2019), 329–359. arXiv:1610.09587
2. Sammy Luo, Short zero-sum sequences over abelian  $p$ -groups of large exponent,  
*Journal of Number Theory* 177 (2017), 28–36. arXiv:1608.05157
1. Sammy Luo and Mark Sellke,  
The Saxl conjecture for fourth powers via the semigroup property,  
*Journal of Algebraic Combinatorics* 45.1 (2017), 33–80. arXiv:1511.02387

## Other Work Experience

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Problem Czar for the <b>Harvard-MIT Math Tournament (HMMT)</b>	2014–2016
Assistant Trader at <b>Jane Street Capital</b>	Jan. 2015
Concept Map Designer at <b>ExpII, Inc.</b> , an online crowdsourced education platform	2014–2015
Referee for:	
Discrete & Computational Geometry; Journal of Combinatorial Theory, Series A;	
Mathematische Annalen; Research in the Mathematical Sciences	

## Presentations

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### Invited Talks

UCSD Workshop on Ramsey Theory	Feb 2023
AMS Fall Western Sectional Meeting, Special Session on Extremal Graph Theory	Oct 2022
AMS Fall Eastern Sectional Meeting, Special Session on Ramsey Theory	Oct 2022
SIAM Conference on Discrete Mathematics, Minisymposium on Probabilistic Methods and Combinatorics	June 2022
Stanford Combinatorics Seminar	May 2022

### *Other Talks*

Stanford Combinatorics Reading Seminar	2019, 2021, 2022
Stanford Student Probability Seminar	2022
MIT-Stanford Combinatorics Reading Seminar	2020
Joint Math Meetings	2016, 2017

### **Languages**

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American English – Fluent  
Mandarin Chinese – Native  
German – Conversational  
Spanish – Conversational