

Mehtaab SAWHNEY

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ACADEMIC POSITIONS

JULY 2024 –	Department of Mathematics, Columbia University , New York City, NY. ASSISTANT PROFESSOR.
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EDUCATION

SEPT 2020 – MAY 2024	Massachusetts Institute of Technology , Cambridge, MA. PHD STUDENT IN MATHEMATICS. Advised by Yufei Zhao Research interests: combinatorics, probability, theoretical computer science
OCT 2022 – JUN 2023	Cambridge University , Cambridge, UK. VISITING PHD STUDENT IN MATHEMATICS. Advised by Timothy Gowers
SEP 2017 – FEB 2020	Massachusetts Institute of Technology , Cambridge, MA. B.S. MATHEMATICS. GPA 5.0/5.0.
SEP 2016 – JUN 2017	University of Pennsylvania , Philadelphia, PA. PURSUED B.S.E. COMPUTER SCIENCE. GPA 4.0/4.0, Transferred to MIT.

SELECTED HONORS

2025	Packard Fellow.
2024	Clay Research Fellow.
2020	Churchill Scholar.
2021	Frank and Brennie Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student.
2025	Best Paper Award at Foundations of Computer Science (FOCS).
2021	Best Student Paper Award at Symposium on Theory of Computing (STOC).
2022	Best Student Paper Award at Innovations in Theoretical Computer Science (ITCS).
2022	Charles W. and Jennifer C. Johnson Prize.
2023	Hartley Rogers Jr. Prize.
2020	NSF Graduate Fellowship.
2016, 2018, 2019	Honorable Mention. Putnam Competition

SELECTED PUBLICATIONS AND PREPRINTS

15. **Quasipolynomial bounds for the corners theorem**
Michael Jaber, Yang P. Liu, Shachar Lovett, Anthony Ostuni, Mehtaab Sawhney. preprint 2025. [arXiv:2504.07006](#)
14. **New bounds for the Furstenberg–Sárközy theorem**
Ben Green, Mehtaab Sawhney. preprint 2024. [arXiv:2411.17448](#)
13. **Primes of the form $p^2 + nq^2$**
Ben Green, Mehtaab Sawhney. *Acta Mathematica*, to appear [arXiv:2410.04189](#)
12. **On the Spielman–Teng Conjecture**
Ashwin Sah, Julian Sahasrabudhe, Mehtaab Sawhney. *Geometric and Functional Analysis*, to appear [arXiv:2405.20308](#)
11. **Improved Bounds for Szemerédi’s Theorem**
James Leng, Ashwin Sah, Mehtaab Sawhney. preprint 2024. [arXiv:2402.17995](#)
10. **Quasipolynomial bounds on the inverse theorem for the Gowers $U^{s+1}[N]$ -norm**

James Leng, Ashwin Sah, Mehtaab Sawhney. preprint 2024. [arXiv:2402.17994](#)

9. **The limiting spectral law for sparse iid matrices**
Ashwin Sah, Julian Sahasrabudhe, Mehtaab Sawhney. *Forum of Mathematics, Pi*, to appear [arXiv:2310.17635](#)
8. **The existence of subspace designs**
Peter Keevash, Ashwin Sah, Mehtaab Sawhney. *Proceedings of the London Mathematical Society*, to appear [arXiv:2212.00870](#)
7. **Anticoncentration in Ramsey graphs and a proof of the Erdős-McKay conjecture**
Matthew Kwan, Ashwin Sah, Lisa Sauermann, Mehtaab Sawhney. *Forum of Mathematics, Pi*, (2023) Vol. 11:e21 1–74. [arXiv:2208.02874](#)
6. **Threshold for Steiner triple systems**
Ashwin Sah, Mehtaab Sawhney, Michael Simkin. *Geometric and Functional Analysis*, 33(4) (2023), 1141–1172. [arXiv:2204.03964](#)
5. **High-Girth Steiner Triple Systems**
Matthew Kwan, Ashwin Sah, Mehtaab Sawhney, Michael Simkin. *Annals of Mathematics*, to appear [arXiv:2201.04554](#)
4. **Singularity of the k -core of a random graph**
Asaf Ferber, Matthew Kwan, Ashwin Sah, Mehtaab Sawhney. *Duke Mathematical Journal*, 172(7) (2023), 1293–1332. [arXiv:2106.05719](#)
3. **Singularity of discrete random matrices**
Vishesh Jain, Ashwin Sah, Mehtaab Sawhney. *Geometric and Functional Analysis*, 31(5) (2021), 1160–1218. [arXiv:2010.06554](#)
2. **Discrepancy Minimization via a Self-Balancing Walk.**
Ryan Alweiss, Yang Liu, Mehtaab Sawhney. *Symposium on Theory of Computing (STOC) 2021*. **Best Student Paper.** [arXiv:2006.14009](#)
1. **A reverse Sidorenko inequality**
Ashwin Sah, Mehtaab Sawhney, David Stoner, Yufei Zhao. *Inventiones Mathematicae*, 221 (2020), 665–711. [arXiv:1809.09462](#)

POPULAR SCIENTIFIC COVERAGE

- Mathematicians Uncover a New Way to Count Prime Numbers [Quanta](#)
- Mathematicians have found a new way to identify prime numbers [New Scientist](#)
- Grad Students Find Inevitable Patterns in Big Sets of Numbers [Quanta](#)
- 2024’s Biggest Breakthroughs in Math [Quanta](#)
- Mathematicians Find Hidden Structure in a Common Type of Space [Quanta](#)
- Hypergraphs Reveal Solution to 50-Year-Old Problem [Quanta](#)

INVITED TALKS

OCTOBER 2025	Quasipolynomial bounds for the corners theorem Online Analysis Research Seminar
SEPTEMBER 2025	Quasipolynomial bounds for the corners theorem Oberwolfach 2358
AUGUST 2025	Quasipolynomial bounds for the corners theorem Simons Symposium on New Frontiers in Combinatorics & Computer Science
AUGUST 2025	Local limit theorems in combinatorics and applications Plenary Talk at 22nd Random Structures and Algorithms
JUNE 2025	New Bounds for the Furstenberg–Sárközy Theorem Erdős Lectures III
JUNE 2025	Quasipolynomial bounds for the corners theorem Erdős Lectures II
JUNE 2025	Improved Bounds for Szemerédi’s Theorem Erdős Lectures I

MAY 2025	Primes of the form $p^2 + nq^2$ Automorphic Forms and Arithmetic Seminar
APR 2025	Hitting time for the random transposition walk Graph expansion and its applications
APR 2025	On tricks near thresholds and hitting times Discrete Mathematics Seminar at University of Passau
APR 2025	Quasipolynomial bounds for the corners theorem MIT Combinatorics Seminar
APR 2025	Hypercontractivity, Global Hypercontractivity and applications to Additive Combinatorics Lake Michigan Workshop on Combinatorics and Graph Theory
MAR 2025	New Bounds for the Furstenberg-Sárközy Theorem MSRI Workshop on Algebraic and Analytic Methods in Combinatorics
FEB 2025	Improved Bounds for Szemerédi's Theorem Stanford Department Colloquium
FEB 2025	Primes of the form $p^2 + nq^2$ Stanford Number Theory Seminar
FEB 2025	Primes of the form $p^2 + nq^2$ Online Ergodic Theory & Analysis Seminar
JAN 2025	The limiting spectral distribution of iid matrices Stanford Probability Seminar
JAN 2025	On tricks near thresholds and hitting times New Frontiers in Extremal and Probabilistic Combinatorics
JAN 2025	On a Conjecture of Spielman-Teng UChicago Probability Seminar
JAN 2025	Improved Bounds for Szemerédi's Theorem UChicago Department Colloquium
DEC 2024	On a Conjecture of Spielman-Teng Probability and the City Seminar
NOV 2024	On Perfectly Friendly Bisections of Random Graphs Rutgers Discrete Math Seminar
OCT 2024	Improved Bounds for Szemerédi's Theorem Clay Research Conference
SEP 2024	Improved Bounds for Szemerédi's Theorem Princeton Department Colloquium
SEP 2024	Primes of the form $x^2 + ny^2$ Number Theory Web Seminar
AUG 2024	Improved Bounds for Szemerédi's Theorem Synergies of combinatorics and theoretical computer science
JUL 2024	Improved bounds for the Gowers $U^{s+1}[N]$ inverse Theorem, Part II ICMS Workshop, Additive Combinatorics
MAY 2024	On a Conjecture of Spielman-Teng ICERM Hot Topics Workshop, Random Matrices and Applications
MAY 2024	Effective Bounds for the Gowers $U^{s+1}[N]$-Inverse Theorem AIM Workshop – High-dimensional phenomena in discrete analysis
APR 2024	Improved Bounds for Szemerédi's Theorem Atlanta Discrete Analysis Seminar
APR 2024	Improved Bounds for Szemerédi's Theorem The ACO Seminar, CMU
JAN 2024	High Girth Steiner Triple Systems and Subspace Designs EPFL Seminar in Mathematics
JAN 2024	High Girth Steiner Triple Systems and Subspace Designs Columbia Special Colloquium
NOV 2023	Distribution of the threshold for the symmetric perceptron Foundations of Computer Science (FOCS) 2023
OCT 2023	The limiting spectral distribution of iid matrices Princeton Discrete Mathematics Seminar
OCT 2023	High Girth Steiner Triple Systems and Subspace Designs

	UCLA Colloquium
SEP 2023	The limiting spectral distribution of iid matrices MIT Probability Seminar
SEP 2023	Spectrum of directed Erdős-Rényi graphs of constant average degree Columbia Probability Seminar
JUN 2023	On Perfectly Friendly Bisections of Random Graphs Beyond the Boolean Cube Workshop, Simons Institute for the Theory of Computing
MAY 2023	Anticoncentration in Ramsey graphs and a proof of the Erdős-McKay conjecture Canadian Discrete and Algorithmic Mathematics conference (CANADAM) 2023
MAY 2023	On Perfectly Friendly Bisections of Random Graphs One-Day Meeting in Combinatorics at University of Oxford
MAR 2023	The intransitive dice kernel University College London Combinatorics Seminar
FEB 2023	The existence of subspace designs Warwick Combinatorics Seminar
FEB 2023	Spencer's theorem in near input-sparsity time Oxford Algorithms and Complexity Seminar
JAN 2023	Spencer's theorem in near input-sparsity time Symposium on Discrete Algorithms (SODA) 2023
JAN 2023	Anticoncentration in Ramsey graphs and a proof of the Erdős-McKay conjecture Oberwolfach 2301
NOV 2022	Anticoncentration in Ramsey graphs and a proof of the Erdős-McKay conjecture Georgia Tech Graph Theory Seminar
OCT 2022	Anticoncentration in Ramsey graphs and a proof of the Erdős-McKay conjecture Cambridge Combinatorics Seminar
OCT 2022	Anticoncentration in Ramsey graphs and a proof of the Erdős-McKay conjecture National University of Singapore Combinatorics and Graph Theory Seminar
SEP 2022	Anticoncentration in Ramsey graphs and a proof of the Erdős-McKay conjecture IBS Discrete Mathematics Group, Virtual Discrete Mathematics Colloquium
SEP 2022	Online Edge Coloring via Sparsification and Tree Recurrences IST Austria, Combinatorics, geometry and topology seminar
AUG 2022	On low-degree dependencies for sparse random graphs Copenhagen-Jerusalem Combinatorics Seminar
JUN 2022	Approximate counting and sampling via local central limit theorems Symposium on Theory of Computing (STOC) 2022
JUN 2022	Popular Differences for Matrix Patterns SIAM DM Minisymposium on Additive Combinatorics
JUN 2022	Friendly Bisections of Random Graphs SIAM DM Minisymposium on Additive Combinatorics
JUN 2022	Online Vector Balancing Highlights in Algorithms (HALG)
MAY 2022	Threshold for Steiner Triple Systems Oxford Discrete Mathematics and Probability Seminar
APR 2022	Threshold for Steiner Triple Systems Oberwolfach 2217
MAR 2022	Enumerating Coprime Permutations Shandong University Number Theory and Combinatorics Seminar
APR 2022	Threshold for Steiner Triple Systems MIT Combinatorics Seminar
APR 2022	On low-degree dependencies for sparse random graphs Stanford Probability Seminar
APR 2022	Threshold for Steiner Triple Systems Stanford Combinatorics Seminar
FEB 2022	High Girth Steiner Triple Systems Combinatorial Mathematics Society of Australasia Seminar
FEB 2022	On the real Davies' conjecture Abu Dhabi Stochastics Seminar
JAN 2022	Enumerating Matroids and Linear Spaces

	Graphs and Matroids Seminar
SEP 2021	Approximate counting and sampling via local central limit theorems USC Probability and Statistics Seminar
JUN 2021	Discrepancy Minimization via a Self-Balancing Walk Symposium on Theory of Computing (STOC) 2021
MAY 2021	Friendly Bisections of Random Graphs Canadian Discrete and Algorithmic Mathematics conference (CANADAM) 2021
APR 2021	Every distribution on the sphere has a sub-Gaussian orthonormal basis Simons Collaboration on Algorithms and Geometry
APR 2021	Local Limit Theorem for Subgraph Counts UIC Combinatorics and Probability Seminar
NOV 2020	Discrepancy Minimization via a Self-Balancing Random Walk ETH Algorithms and Complexity Seminar
OCT 2020	Singularity of discrete random matrices UBC Probability Seminar
AUG 2020	Local limit theorems for subgraph counts Extremal and Probabilistic Combinatorics Webinar
MAR 2020	Local limit theorems for subgraph counts MIT Combinatorics Webinar
MAY 2019	A Reverse Sidorenko Inequality MIT Combinatorics Webinar

REMAINING PUBLICATIONS AND PREPRINTS

66. **On random matrices with large corank**
Zach Hunter, Matthew Kwan, Lisa Sauermann, Mehtaab Sawhney. preprint 2025. [arXiv:2510.12933](#)
65. **Parities in random Latin squares**
Matthew Kwan, Kalina Petrova, Mehtaab Sawhney. preprint 2025. [arXiv:2509.13125](#)
64. **Convergent points for random power series on the unit circle**
Marcus Michelen, Mehtaab Sawhney. preprint 2025. [arXiv:2509.02729](#)
63. **On polynomial progressions via transference**
Daniel Altman, Mehtaab Sawhney. preprint 2025. [arXiv:2506.13010](#)
62. **The random graph process is globally synchronizing**
Vishesh Jain, Clayton Mizgerd, Mehtaab Sawhney. preprint 2025. [arXiv:2501.12205](#)
61. **Local limit theorem for joint subgraph counts**
Ashwin Sah, Mehtaab Sawhney, Daniel G. Zhu. preprint 2024. [arXiv:2412.09535](#)
60. **Hitting time mixing for the transposition walk**
Vishesh Jain, Mehtaab Sawhney. preprint 2024. [arXiv:2410.23944](#)
59. **Vinogradov's theorem for primes with restricted digits**
James Leng, Mehtaab Sawhney. *International Mathematics Research Notices*, to appear [arXiv:2409.06894](#)
58. **Free Energy Universality of Spherical Spin Glasses**
Mehtaab Sawhney, Mark Sellke. preprint 2024. [arXiv:2408.13701](#)
57. **An explicit economical additive basis**
Vishesh Jain, Huy Tuan Pham, Mehtaab Sawhney, Dmitrii Zakharov. *Combinatorics, Computing and Probability*, to appear [arXiv:2405.08650](#)
56. **On further questions regarding unit fractions**
Yang P. Liu, Mehtaab Sawhney. preprint 2024. [arXiv:2404.07113](#)
55. **A central limit theorem for the matching number of a sparse random graph**
Margarit Glasgow, Matthew Kwan, Ashwin Sah, Mehtaab Sawhney. *Journal of the London Mathematical Society*, to appear [arXiv:2402.05851](#)
54. **Improved bounds for five-term arithmetic progressions**
James Leng, Ashwin Sah, Mehtaab Sawhney. *Mathematical Proceedings of the Cambridge Philosophical Society*, to appear [arXiv:2312.10776](#)

53. **The sparse circular law, revisited**
Ashwin Sah, Julian Sahasrabudhe, Mehtaab Sawhney. *Bulletin of London Mathematical Society*, to appear [arXiv:2310.17600](#)
52. **Effective bounds for Roth's theorem with shifted square common difference**
Sarah Peluse, Ashwin Sah, Mehtaab Sawhney. *American Journal of Mathematics*, to appear [arXiv:2309.08359](#)
51. **On Perfectly Friendly Bisections of Random Graphs**
Dor Minzer, Ashwin Sah, Mehtaab Sawhney. *Annals of Probability*, to appear [arXiv:2305.03543](#)
50. **The Exact Rank of Sparse Random Graphs**
Margalit Glasgow, Matthew Kwan, Ashwin Sah, Mehtaab Sawhney. *Journal of the European Mathematical Society*, to appear [arXiv:2303.05435](#)
49. **The intransitive dice kernel:** $\frac{\mathbb{1}_{x \geq y} - \mathbb{1}_{y \geq x}}{4} - \frac{3(x-y)(1+xy)}{8}$
Ashwin Sah, Mehtaab Sawhney. *Probability Theory and Related Fields*, to appear [arXiv:2302.11293](#)
48. **Distribution of the threshold for the symmetric perceptron**
Ashwin Sah, Mehtaab Sawhney. *Foundations of Computer Science (FOCS) 2023*. [arXiv:2301.10701](#)
47. **A Toolkit for Robust Thresholds**
Huy Tuan Pham, Ashwin Sah, Mehtaab Sawhney, Michael Simkin. preprint 2022. [arXiv:2210.03064](#)
46. **Subgraph distributions in dense random regular graphs**
Ashwin Sah, Mehtaab Sawhney. *Compositio Mathematica*, 159 (2023) 2125–2148. [arXiv:2209.00734](#)
45. **Cayley graphs that have a quantum ergodic eigenbasis**
Assaf Naor, Ashwin Sah, Mehtaab Sawhney, Yufei Zhao. *Israel Journal of Mathematics*, 256 (2023), 599–617. [arXiv:2207.05527](#)
44. **Spencer's theorem in nearly input-sparsity time**
Vishesh Jain, Ashwin Sah, Mehtaab Sawhney. *Symposium on Discrete Algorithms (SODA) 2023*. [arXiv:2206.04549](#)
43. **Optimal minimization of the covariance loss**
Vishesh Jain, Ashwin Sah, Mehtaab Sawhney. *IEEE Transactions in Information Theory*, 69(2) (2023), 813–818. [arXiv:2205.01773](#)
42. **Enumerating coprime permutations**
Ashwin Sah, Mehtaab Sawhney. *Mathematika*, 68(4) (2022), 1120–1134. [arXiv:2203.06268](#)
41. **Sparse recovery properties of discrete random matrices**
Asaf Ferber, Ashwin Sah, Mehtaab Sawhney, Yizhe Zhu. *Combinatorics, Probability and Computing*, 32(2) (2023), 316–325. [arXiv:2203.06115](#)
40. **Substructures in Latin squares**
Matthew Kwan, Ashwin Sah, Mehtaab Sawhney, Michael Simkin. *Israel Journal of Mathematics*, 256 (2023), 363–416. [arXiv:2202.05088](#)
39. **Enumerating Matroids and Linear Spaces**
Matthew Kwan, Ashwin Sah, Mehtaab Sawhney. *Comptes Rendus Mathématique*, 361 (2023), 565–575. [arXiv:2112.03788](#)
38. **Online Edge Coloring via Tree Recurrences and Correlation Decay**
Janardhan Kulkarni, Yang P. Liu, Ashwin Sah, Mehtaab Sawhney, Jakub Tarnawski. *STOC 2022* [arXiv:2111.00721](#)
37. **Approximate counting and sampling via local central limit theorems**
Vishesh Jain, Will Perkins, Ashwin Sah, Mehtaab Sawhney. *Symposium on Theory of Computing (STOC) 2022*. [arXiv:2108.01161](#)
36. **Non-classical polynomials and the inverse theorem**
Aaron Berger, Ashwin Sah, Mehtaab Sawhney, Jonathan Tidor. *Mathematical Proceedings of the Cambridge Philosophical Society* 173 (2022), 525–537. [arXiv:2107.07495](#)

35. **Large deviations in random Latin squares**
Matthew Kwan, Ashwin Sah, Mehtaab Sawhney. *Bulletin of the London Mathematical Society*, 54(4) (2022), 1420–1438. [arXiv:2106.11932](#)
34. **Random symmetric matrices: rank distribution and irreducibility of the characteristic polynomial**
Asaf Ferber, Vishesh Jain, Ashwin Sah, Mehtaab Sawhney. *Mathematical Proceedings of the Cambridge Philosophical Society*, 174(2) (2023), 233–246. [arXiv:2106.04049](#)
33. **Friendly bisections of random graphs**
Asaf Ferber, Matthew Kwan, Bhargav Narayanan, Ashwin Sah, Mehtaab Sawhney. *Communications of the American Mathematical Society*, 2 (2022), 380–416. [arXiv:2105.13337](#)
32. **Majority Dynamics: The Power of One**
Ashwin Sah, Mehtaab Sawhney. *Israel Journal of Mathematics*, to appear. [arXiv:2105.13301](#)
31. **A Gaussian fixed point random walk**
Yang P. Liu, Ashwin Sah, Mehtaab Sawhney. *Innovations in Theoretical Computer Science (ITCS) 2022*. [arXiv:2104.07009](#)
30. **Rank deficiency of random matrices**
Vishesh Jain, Ashwin Sah, Mehtaab Sawhney. *Electronic Communications in Probability*, 27 (2022), 1–9. [arXiv:2103.02467](#)
29. **Popular differences for matrix patterns**
Aaron Berger, Ashwin Sah, Mehtaab Sawhney, Jonathan Tidor. *Transactions of the American Mathematical Society*, 375 (2022), 2677–2704. [arXiv:2102.01684](#)
28. **The cylindrical width of transitive sets**
Ashwin Sah, Mehtaab Sawhney, Yufei Zhao. *Israel Journal of Mathematics*, 253 (2) (2023), 647–672. [arXiv:2101.11207](#)
27. **Anticoncentration versus the number of subset sums**
Vishesh Jain, Ashwin Sah, Mehtaab Sawhney. *Advances in Combinatorics*, 2021:6. [arXiv:2101.07726](#)
26. **Paths of given length in tournaments**
Ashwin Sah, Mehtaab Sawhney, Yufei Zhao. *Combinatorial Theory*, 3 (2)(2023), #5. [arXiv:2012.00262](#)
25. **Optimal and algorithmic norm regularization of random matrices**
Vishesh Jain, Ashwin Sah, Mehtaab Sawhney. *Proceedings of the American Mathematical Society*, 150(10) (2022), 4503–4518. [arXiv:2012.00175](#)
24. **On the smallest singular value of symmetric random matrices**
Vishesh Jain, Ashwin Sah, Mehtaab Sawhney. *Combinatorics, Probability and Computing*, 31(4) (2022), 662–683. [arXiv:2011.02344](#)
23. **On the smoothed analysis of the smallest singular value with discrete noise**
Vishesh Jain, Ashwin Sah, Mehtaab Sawhney. *Bulletin of the London Mathematical Society*, 54(2) (2022), 369–388. [arXiv:2009.01699](#)
22. **The smallest singular value of dense random regular digraphs**
Vishesh Jain, Ashwin Sah, Mehtaab Sawhney. *International Mathematics Research Notices*, 24 (2022), 19300–19334. [arXiv:2008.04755](#)
21. **Perfectly Sampling $k \geq (8/3 + o(1))\Delta$ -Colorings in Colors**
Vishesh Jain, Ashwin Sah, Mehtaab Sawhney. *Symposium on Theory of Computing (STOC) 2021*. [arXiv:2007.06360](#)
20. **Local limit theorems for subgraph counts**
Ashwin Sah, Mehtaab Sawhney. *Journal of the London Mathematical Society*, 105(2) (2022), 950–1011. [arXiv:2006.11369](#)
19. **On the real Davies’ conjecture**
Vishesh Jain, Ashwin Sah, Mehtaab Sawhney. *Annals of Probability*, 49(6) (2021), 3011–3031. [arXiv:2005.08908](#)

18. **Cayley graphs without a bounded eigenbasis**
Ashwin Sah, Mehtaab Sawhney, Yufei Zhao. *International Mathematics Research Notices*, 2022(8), 6157-6185. [arXiv:2005.04502](#)
17. **Patterns without a popular difference**
Ashwin Sah, Mehtaab Sawhney, Yufei Zhao. *Discrete Analysis*, Paper No. 8, 30 (2021) [arXiv:2005.04502](#)
16. **Fast and memory-optimal dimension reduction using Kac's walk**
Vishesh Jain, Natesh S. Pillai, Ashwin Sah, Mehtaab Sawhney, Aaron Smith. *Annals of Applied Probability*, 32(5) (2022), 4038-4064. [arXiv:2003.10069](#)
15. **A counterexample to the Bollobás-Riordan conjectures on sparse graph limits**
Ashwin Sah, Mehtaab Sawhney, Jonathan Tidor, Yufei Zhao. *Combinatorics, Probability and Computing*, 30 (5) (2021), 796-799. [arXiv:2003.05272](#)
14. **Bounded Degree Spanners of the Hypercube**
Rajko Nenadov, Mehtaab Sawhney, Benny Sudakov, Adam Zsolt Wagner. *Electronic Journal of Combinatorics*, 27 (2020), P3.3. [arXiv:1910.09868](#)
13. **Number of arithmetic progressions in dense random subsets of $\mathbb{Z}/n\mathbb{Z}$**
Ross Berkowitz, Ashwin Sah, Mehtaab Sawhney. *Israel Journal of Mathematics*, 244 (2021), 589–620. [arXiv:1907.11807](#)
12. **Exponential improvements for superball packing upper bounds.**
Ashwin Sah, Mehtaab Sawhney, David Stoner, Yufei Zhao. *Advances in Mathematics*, 365 (2020), 107056. [arXiv:1904.11462](#)
11. **Triforce and Corners**
Jacob Fox, Ashwin Sah, Mehtaab Sawhney, David Stoner, Yufei Zhao. *Mathematical Proceedings of the Cambridge Philosophical Society*, 169 (2020), 209–223. [arXiv:1903.04863](#)
10. **The number of independent sets in an irregular graph**
Ashwin Sah, Mehtaab Sawhney, David Stoner, Yufei Zhao. *Journal of Combinatorial Theory, Series B*, 138 (2019), 172-195. [arXiv:1805.04021](#)
9. **Hypercube Packings and Coverings with Higher Dimensional Rooks**
Mehtaab Sawhney, David Stoner. *Australasian Journal of Combinatorics*, 77 (2020), 9–34. [arXiv:1801.10607](#)
8. **Properties of non-symmetric Macdonald polynomials at $q = 1$ and $q = 0$.**
Per Alexandersson, Mehtaab Sawhney. *Annals of Combinatorics*, 23, No.2 (2019), 219–239. [arXiv:1801.04550](#)
7. **On the Discrepancy Between Two Zagreb Indices.**
Ashwin Sah, Mehtaab Sawhney. *Discrete Mathematics*, 341 (2018), 2575–2589. [arXiv:1801.02532](#)
6. **Characters of Independent Stanley Sequences.**
Richard Moy, Mehtaab Sawhney, David Stoner. *European Journal of Combinatorics*, 70 (2018), 354–363. [arXiv:1708.01849](#)
5. **On a conjecture regarding permutations which destroy arithmetic progressions**
Mehtaab Sawhney, David Stoner. *Electronic Journal of Combinatorics*, 25 (2018), P2.42. [arXiv:1708.00144](#)
4. **On Symmetric But Not Cyclotomic Numerical Semigroups**
Mehtaab Sawhney, David Stoner. *SIAM Journal of Discrete Mathematics*, 32 (2018), 1296–1304. [arXiv:1707.00782](#)
3. **A major-index preserving map on fillings**
Per Alexandersson, Mehtaab Sawhney. *Electronic Journal of Combinatorics*, 24, No.4, 2017. [arXiv:1703.03088](#)
2. **Further Results on Bar and Arc k -Visibility Graph.**
Mehtaab Sawhney, Jonathan Weed. *Minnesota Journal of Undergraduate Mathematics*, Volume 3 (2018). [arXiv:1601.01231](#)
1. **Two classes of modular p -Stanley sequences.**
Mehtaab Sawhney, Jonathan Tidor. *Journal of Combinatorics*, 11 (2020), 127–140. [arXiv:1506.07941](#)

SERVICE

JUNE 2023 –	Summer Program in Undergraduate Research (SPUR) Mentor, MASSACHUSETTS INSTITUTE OF TECHNOLOGY
JULY 2023	Mentored students Saba Lepsveridze and Yihang Sun on project regarding sum-free sets of $[n]^d$
JUNE 2022 –	Undergraduate Research Opportunities Program (UROP+) Mentor, MASSACHUSETTS INSTITUTE OF TECHNOLOGY
JULY 2022	Mentored students Holden Mui and Tomasz Slusarczyk on project regarding upper tails of cycle-counts in sparse random graphs
2018 –	Problem Writer for AMC and AIME Contests
2020	Wrote problems for the AMC and AIME contests in 2018, 2019, and 2020

EXPERIENCES AND ACTIVITIES

SUMMER 2021	Microsoft Research Redmond Algorithms Groups. Research Intern. Supervisor: Sivakanth Gopi.
SUMMER 2019	Old Mission Capital. Quantitative Trading Intern.
WINTER 2019	Tech Square Trading. Quantitative Research Intern.
SUMMER 2018	Vatic Investments. Intern.
SUMMER 2017	Duluth REU. Supervisor: Joe Gallian.