

Yufei Zhao

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MIT Department of Mathematics
77 Massachusetts Ave, Room 2-271
Cambridge, MA 02139, USA

Department of Mathematics, Massachusetts Institute of Technology

Associate Professor

Class of 1956 Career Development Assistant Professor

Assistant Professor

Cambridge, MA

2022—

2018—2021

2017—2022

Previous and Visiting Academic Positions

Department of Mathematics, Stanford University

Visiting Assistant Professor

Stanford, CA

Spring 2020

Simons Institute for the Theory of Computing, UC Berkeley

Simons-Berkeley Research Fellow

Berkeley, CA

Spring 2017

New College, University of Oxford

Esmée Fairbairn Junior Research Fellow in Mathematics

Oxford, UK

2015—2017

Education

Massachusetts Institute of Technology

Ph.D. Mathematics. Advisor: Jacob Fox

Cambridge, MA

2011—2015

University of Cambridge

M.A.St. Mathematics with Distinction

Cambridge, UK

2010—2011

Massachusetts Institute of Technology

S.B. Mathematics, with minor in Economics

S.B. Computer Science and Engineering

Cambridge, MA

2006—2010

Selected Awards and Honors

Edmund F. Kelly Research Award, MIT Mathematics, 2022

NSF CAREER Award, 2021

UROP Outstanding Mentor Award for Faculty, MIT, 2020

First Year Advisor Award—Innovative Seminar, MIT, 2019

Sloan Research Fellowship, 2019

Future of Science Award, MIT, 2018

SIAM Dénes König Prize, 2018

Johnson Prize, MIT Mathematics, 2015

Microsoft Research PhD Fellowship, 2013–2015

Morgan Prize Honorable Mention, 2011

Gates Cambridge Scholarship, 2010–2011

Jon A. Bucsela Prize in Mathematics, MIT Mathematics, 2010

Putnam Math Competition: Three-time Putnam Fellow (top five rank) 2006, 2008, 2009; 7th Place 2007

International Mathematical Olympiad: Gold Medal 2005, Silver Medal 2006, Bronze Medal 2004

Research Interests

Combinatorics

extremal, probabilistic, and additive combinatorics;
graph theory; discrete geometry; applications to computer science

Grants

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|-------------------------------------|-----------|
| NSF CAREER award DMS-2044606 | 2021—2026 |
| Sloan Research Fellowship | 2019—2021 |
| MIT Solomon Buchsbaum Research Fund | 2018 |
| NSF award DMS-1764176 | 2018—2021 |
| NSF award DMS-1362326 | 2017—2018 |

Research Internships

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|---------------------------------|--------------------------------|
| Microsoft Research New England | Cambridge, MA |
| Mentor: Henry Cohn | Summers 2010, 2011, 2013, 2014 |
| Microsoft Research Theory Group | Redmond, WA |
| Mentor: Eyal Lubetzky | Summer 2012 |

Editorial Activities

Editor, Research in the Mathematical Sciences, 2023–
Associate Editor, Advances in Mathematics, 2023–
Editorial Advisory Board Member, Springer Graduate Texts in Mathematics, 2022–

Advising and Mentoring

Undergraduate Researchers Supervised

[Name & graduation year (period supervised), *honors* → post-graduation programs]

Yang Liu '18 (2018), *DoD-NDSEG* → Stanford Math PhD
Ryan Alweiss '18 (2018), *NSF-GRFP* → Princeton Math PhD
Yunkun Zhou '19 (2018–2019), *NSF-GRFP, Bucsel* → Stanford Math PhD
Mehtaab Sawhney '20 (2018–2020), *Morgan, NSF-GRFP, Churchill* → MIT Math PhD
Ashwin Sah '20 (2018–2020) *Morgan, NSF-GRFP, Soros* → MIT Math PhD
Cynthia (David) Stoner '19 Harvard (2018–2019), *Morgan Hon. Mention, NSF-GRFP* → Stanford Math PhD
Yuan Yao '21 (2019–2020) → MIT Math PhD
Shengtong Zhang '22 (2019–2021), *Bucsel* → Stanford Math PhD
Hung-Hsun Yu '21 (2019–2021) → Cambridge Math MAST → Princeton Math PhD
Mihir Singhal '22 (2019), *NSF-GRFP* → Berkeley CS PhD
Zachary Chroman '21 (2019) → Cambridge Math MAST → Industry
Carl Schildkraut '23 (2020–2023), *NSF-GRFP, Bucsel* → Stanford Math PhD
Milan Haiman '23 (2020–2021), *NSF-GRFP* → Rutgers Math PhD
Anqi Li '23 (2021–2023), *Schafer Runner Up, Bucsel* → Cambridge Math MAST → Stanford Math PhD

Dain Kim '23 (2021) → MIT Math PhD
 Mingyang Deng '24 (2022–2023)
 Tomasz Slusarczyk '25 (2022)
 Aleksandre Saatashvili '23 (2022–2023) → CMU Math PhD
 Saba Lepsveridze '24 (2022–2023)
 Honglin Zhu '25 (2023)
 Pitchayut (Mark) Saengrungrongka '26 (2023)
 Sanjana Das '25 (2023)

Current PhD Students

[Name (period of supervision), *honors*]

Dingding Dong (2020–, Harvard), *Jane Street Hon. Mention*
 Ashwin Sah (2020–), *NSF-GRFP, Soros, Johnson*
 Mehtaab Sawhney (2020–), *NSF-GRFP, Churchill, Johnson*
 Travis Dillon (2021–, co-advised with Henry Cohn), *NSF-GRFP*
 Nitya Mani (2021–, co-advised with Pablo Parrilo), *Hertz, NSF-GRFP*

Former PhD Students

[Name, degree (period of supervision), *honors*

thesis title

→ post-graduation and current positions]

Benjamin Gunby, PhD '21 Harvard (2017–2021), *DoD-NDSEG*
 Thesis: Upper tails of subgraph counts in sparse regular graphs
 → Rutgers Hill Assistant Professor
 Jonathan Tidor, PhD '22 MIT (2017–2022), *NSF-GRFP, Johnson*
 Thesis: Higher-order Fourier analysis with applications to additive combinatorics and theoretical computer science
 → Stanford Science Fellow
 Aaron Berger, PhD '23 MIT (2018–2023), *NSF-GRFP*
 Thesis: Three applications of the regularity method in combinatorics
 → Industry

Postdoctoral Researchers Supervised

[Name, title (years) → current position]

Zilin Jiang, Instructor (2018–2020) → Assistant Professor at Arizona State University
 László Miklós Lovász, Instructor (2018–2020) → Industry

Professional Services and Activities

MIT Activities:

MIT Presidential Committee for Distinguished Fellowships, member 2023–
 Faculty Advisory Committee, MIT OpenCourseWare, member 2022–
 Richard P. Stanley Seminar in Combinatorics, co-organizer 2017–
 MIT team for the Putnam Competition, organizer 2017–
 Undergraduate first-year advisor, 2017–

Conference organization:

MSRI Workshop: Algebraic and Analytic Methods in Combinatorics, 2025
 AIM Workshop: High-dimensional Phenomena in Discrete Analysis, 2024
 CanaDAM 2021 Mini-symposium: Discrete Geometry

Other Activities:

AMS–Simons Travel Grants Committee Member, 2021–2024
 Scientific Board Member, Prague Summer School on Discrete Mathematics, 2021–
 Organizer and Chief Coordinator of Cyberspace Mathematical Competition (CMC) 2020

Book

Yufei Zhao, *Graph Theory and Additive Combinatorics—Exploring Structure and Randomness*
 Cambridge University Press, 2023. xvii+316 pp. <https://yufeizhao.com/gtacbook/>

Papers

67. Mingyang Deng, Jonathan Tidor, Yufei Zhao,
 Uniform sets with few progressions via colorings. [arXiv:2307.06914](#)
66. David Conlon, Jacob Fox, Huy Tuan Pham, and Yufei Zhao,
 Set-coloring Ramsey numbers and error-correcting codes near the zero-rate threshold,
IEEE Trans. Inform. Theory, to appear. [arXiv:2305.14132](#)
65. József Balogh, Dingding Dong, Bernard Lidický, Nitya Mani, and Yufei Zhao,
 Nearly all k -SAT functions are unate,
ACM Symposium on Theory of Computing (STOC 2023) [arXiv:2209.04894](#)
64. Assaf Naor, Ashwin Sah, Mehtaab Sawhney, and Yufei Zhao,
 Cayley graphs that have a quantum ergodic eigenbasis,
Israel J. Math. 256 (2023), 599–617. [arXiv:2207.05527](#)
63. Dingding Dong, Nitya Mani, and Yufei Zhao,
 On the number of error correcting codes,
Combin. Probab. Comput., to appear. [arXiv:2205.12363](#)
62. Michael Magee, Joe Thomas, and Yufei Zhao,
 Quantum Unique Ergodicity for Cayley graphs of quasirandom groups,
Comm. Math. Phys. 402 (2023), 3021–3044. [arXiv:2204.10642](#)
61. Yufei Zhao, Exploring a planet, revisited,
Amer. Math. Monthly 129 (2022), 678–680. [arXiv:2110.04376](#)
60. Milan Haiman, Carl Schildkraut, Shengtong Zhang, and Yufei Zhao,
 Graphs with high second eigenvalue multiplicity,
Bull. Lond. Math. Soc. 54 (2022), 1630–1652. [arXiv:2109.13131](#)
59. Dingding Dong, Nitya Mani, and Yufei Zhao,
 Enumerating k -SAT functions,
ACM-SIAM Symposium on Discrete Algorithms (SODA 2022). [arXiv:2107.09233](#)
58. David Conlon, Jacob Fox, Benny Sudakov, and Yufei Zhao,
 Which graphs can be counted in C_4 -free graphs?
Pure Appl. Math. Q. 18 (2022), 2413–2432. [arXiv:2106.03261](#)

57. Jacob Fox and Yufei Zhao,
Removal lemmas and approximate homomorphisms,
Combin. Probab. Comput., to appear. [arXiv:2104.11626](#)
56. Aaron Berger and Yufei Zhao,
 K_4 -intersecting families of graphs,
J. Combin. Theory Ser. B, to appear. [arXiv:2103.12671](#)
55. Ashwin Sah, Mehtaab Sawhney, Yufei Zhao,
The cylindrical width of transitive sets,
Israel J. Math., 253 (2023), 647–672. [arXiv:2101.11207](#)
54. Ashwin Sah, Mehtaab Sawhney, Yufei Zhao,
Paths of given length in tournaments,
Comb. Theory, to appear. [arXiv:2012.00262](#)
53. Jonathan Tidor, Hung-Hsun Hans Yu, and Yufei Zhao,
Joints of varieties,
Geom. Funct. Anal. 32 (2022) 302–339. [arXiv:2008.01610](#)
52. Matthew Kwan, Lisa Sauermann, and Yufei Zhao,
Extension complexity of low-dimensional polytopes,
Trans. Amer. Math. Soc. 375 (2022), 4209–4250. [arXiv:2006.08836](#)
51. Zilin Jiang, Jonathan Tidor, Yuan Yao, Shengtong Zhang, and Yufei Zhao,
Spherical two-distance sets and eigenvalues of signed graphs,
Combinatorica 43 (2023), 203–232. [arXiv:2006.06633](#)
50. Ashwin Sah, Mehtaab Sawhney, and Yufei Zhao,
Cayley graphs without a bounded eigenbasis,
Int. Math. Res. Not. IMRN 2022 (2022), 6157–6185. [arXiv:2005.04502](#)
49. Jacob Fox, Yuval Wigderson, and Yufei Zhao,
A short proof of the canonical polynomial van der Waerden theorem,
C. R. Math. Acad. Sci. Paris 358 (2020), 957–959. [arXiv:2005.04135](#)
48. Jacob Fox, Huy Tuan Pham, and Yufei Zhao,
Tower-type bounds for Roth’s theorem with popular differences.
J. Eur. Math. Soc. (JEMS), to appear. [arXiv:2004.13690](#)
47. David Conlon, Jacob Fox, Benny Sudakov, and Yufei Zhao,
The regularity method for graphs with few 4-cycles,
J. Lond. Math. Soc. 104 (2021), 2376–2401. [arXiv:2004.10180](#)
46. Ashwin Sah, Mehtaab Sawhney, and Yufei Zhao,
Patterns without a popular difference,
Discrete Anal., 2021:8, 30 pp. [arXiv:2004.07722](#)
45. Ashwin Sah, Mehtaab Sawhney, Jonathan Tidor, and Yufei Zhao,
A counterexample to the Bollobás-Riordan conjectures on sparse graph limits,
Combin. Probab. Comput. 30 (2021), 796–799. [arXiv:2003.05272](#)
44. Hung-Hsun Hans Yu and Yufei Zhao,
Joints tightened,
Amer. J. Math. 145 (2023), 569–583. [arXiv:1911.08605](#)
43. Jonathan Tidor and Yufei Zhao,
Testing linear-invariant properties,
IEEE Symposium on Foundations of Computer Science (FOCS 2020), and
SIAM J. Comput. 51 (2022), 1230–1279. [arXiv:1911.06793](#)

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42. Jacob Fox, Jonathan Tidor, and Yufei Zhao,
Induced arithmetic removal: complexity 1 patterns over finite fields,
Israel J. Math. 248 (2022), 1–38. [arXiv:1911.03427](#)
 41. Jacob Fox, Huy Tuan Pham, and Yufei Zhao,
Common and Sidorenko linear equations,
Q. J. Math. 72 (2021), 1223–1234. [arXiv:1910.06436](#)
 40. Yang Liu and Yufei Zhao,
On the upper tail problem for random hypergraphs,
Random Structures Algorithms 58 (2021), 179–220. [arXiv:1910.02916](#)
 39. Zilin Jiang, Jonathan Tidor, Yuan Yao, Shengtong Zhang, and Yufei Zhao,
Equiangular lines with a fixed angle,
Ann. of Math. 194 (2021), 729–743. [arXiv:1907.12466](#)
 38. Yufei Zhao and Yunkun Zhou,
Impartial digraphs,
Combinatorica 40 (2020), 875–896. [arXiv:1906.10482](#)
 37. Ashwin Sah, Mehtaab Sawhney, David Stoner, and Yufei Zhao,
Exponential improvements for superball packing upper bounds,
Adv. Math. 365 (2020), 107056. [arXiv:1904.11462](#)
 36. Jacob Fox, Ashwin Sah, Mehtaab Sawhney, David Stoner, and Yufei Zhao,
Triforce and corners,
Math. Proc. Cambridge Philos. Soc. 169 (2020), 209–223. [arXiv:1903.04863](#)
 35. Ashwin Sah, Mehtaab Sawhney, David Stoner, and Yufei Zhao,
A reverse Sidorenko inequality,
Invent. Math. 221 (2020), 665–711. [arXiv:1809.09462](#)
 34. David Conlon, Jonathan Tidor, and Yufei Zhao,
Hypergraph expanders of all uniformities from Cayley graphs,
Proc. Lond. Math. Soc. 121 (2020), 1311–1336. [arXiv:1809.06342](#)
 33. Asaf Ferber, Vishesh Jain, and Yufei Zhao,
On the number of Hadamard matrices via anti-concentration,
Combin. Probab. Comput. 31 (2022), 455–477. [arXiv:1808.07222](#)
 32. Ashwin Sah, Mehtaab Sawhney, David Stoner, and Yufei Zhao,
The number of independent sets in an irregular graph,
J. Combin. Theory Ser. B 138 (2019), 172–195. [arXiv:1805.04021](#).
 31. Jacob Fox, László Miklós Lovász, and Yufei Zhao,
A fast new algorithm for weak graph regularity,
Combin. Probab. Comput. 28 (2019), 777–790. [arXiv:1801.05037](#)
 30. Noga Alon, Jacob Fox, and Yufei Zhao,
Efficient arithmetic regularity and removal lemmas for induced bipartite patterns,
Discrete Anal. 2019:3, 14 pp. [arXiv:1801.04675](#)
 29. Yufei Zhao, Group representations that resist worst-case sampling. [arXiv:1705.04675](#)
 28. Yufei Zhao, Extremal regular graphs: independent sets and graph homomorphisms,
Amer. Math. Monthly 124 (2017), 827–843. [arXiv:1610.09210](#)
 27. Bhaswar B. Bhattacharya, Shirshendu Ganguly, Xuancheng Shao, and Yufei Zhao,
Upper tails for arithmetic progressions in a random set,
Int. Math. Res. Not. IMRN 2020, 167–213. [arXiv:1605.02994](#)

26. Jacob Fox, László Miklós Lovász, and Yufei Zhao,
On regularity lemmas and their algorithmic applications,
Combin. Probab. Comput. 26 (2017), 481–505. [arXiv:1604.00733](#)
25. David Conlon and Yufei Zhao,
Quasirandom Cayley graphs,
Discrete Anal. 2017:6, 14 pp. [arXiv:1603.03025](#)
24. Bhaswar B. Bhattacharya, Shirshendu Ganguly, Eyal Lubetzky, and Yufei Zhao,
Upper tails and independence polynomials in random graphs,
Adv. Math. 319 (2017), 313–347. [arXiv:1507.04074](#)
23. László Miklós Lovász and Yufei Zhao,
On derivatives of graphon parameters,
J. Combin. Theory Ser. A 145 (2017), 364–368. [arXiv:1505.07448](#)
22. Yufei Zhao, On the lower tail variational problem for random graphs,
Combin. Probab. Comput. 26 (2017), 301–320. [arXiv:1502.00867](#)
21. Christian Borgs, Jennifer T. Chayes, Henry Cohn, and Yufei Zhao,
An L^p theory of sparse graph convergence II: LD convergence, quotients, and right convergence,
Ann. Probab. 46 (2018), 337–396. [arXiv:1408.0744](#)
20. David Conlon, Jacob Fox, and Yufei Zhao,
The Green-Tao theorem: an exposition,
EMS Surv. Math. Sci. 1 (2014), 249–282. [arXiv:1403.2957](#)
19. Eyal Lubetzky and Yufei Zhao,
On the variational problem for upper tails in sparse random graphs,
Random Structures Algorithms 50 (2017), 420–436. [arXiv:1402.6011](#)
18. Christian Borgs, Jennifer T. Chayes, Henry Cohn, and Yufei Zhao,
An L^p theory of sparse graph convergence I: limits, sparse random graph models, and power law distributions,
Trans. Amer. Math. Soc. 372 (2019), 3019–3062. [arXiv:1401.2906](#)
17. Yufei Zhao, An arithmetic transference proof of a relative Szemerédi theorem,
Math. Proc. Cambridge Philos. Soc. 156 (2014), 255–261. [arXiv:1307.4959](#)
16. Jacob Fox and Yufei Zhao,
A short proof of the multidimensional Szemerédi theorem in the primes,
Amer. J. Math. 137 (2015), 1139–1145. [arXiv:1307.4679](#)
15. David Conlon, Jacob Fox, and Yufei Zhao,
A relative Szemerédi theorem,
Geom. Funct. Anal. 25 (2015), 733–762. [arXiv:1305.5440](#)
14. Yufei Zhao, Hypergraph limits: a regularity approach,
Random Structures Algorithms 47 (2015), 205–226. [arXiv:1302.1634](#)
13. Henry Cohn and Yufei Zhao,
Sphere packing bounds via spherical codes,
Duke Math. J. 163 (2014), 1965–2002. [arXiv:1212.5966](#)
12. Henry Cohn and Yufei Zhao,
Universally optimal error-correcting codes,
IEEE Trans. Inform. Theory 60 (2014), 7442–7450. [arXiv:1212.1913](#)
11. Eyal Lubetzky and Yufei Zhao,
On replica symmetry of large deviations in random graphs,
Random Structures Algorithms 47 (2015) 109–146. [arXiv:1210.7013](#)

10. Jacob Fox, Po-Shen Loh, and Yufei Zhao,
The critical window for the classical Ramsey-Turán problem,
Combinatorica 35 (2015) 435–476. [arXiv:1208.3276](#)
9. David Conlon, Jacob Fox, and Yufei Zhao,
Extremal results in sparse pseudorandom graphs,
Adv. Math. 256 (2014), 206–290. [arXiv:1204.6645](#)
8. Yufei Zhao, The bipartite swapping trick on graph homomorphisms,
SIAM J. Discrete Math. 25 (2011), 660–680. [arXiv:1104.3704](#)
7. Yufei Zhao, Sets characterized by the number of missing sums and differences,
J. Number Theory 11 (2011), 2107–2134. [arXiv:0911.2292](#)
6. David Galvin and Yufei Zhao,
The number of independent sets in graphs with small maximum degree,
Graphs Combin. 27 (2011), 177–186. [arXiv:1007.4803](#)
5. Yufei Zhao, Counting MSTD sets in finite abelian groups,
J. Number Theory 130 (2010), 2308–2322. [arXiv:0911.2288](#)
4. Yufei Zhao, Constructing numerical semigroups of a given genus,
Semigroup Forum 80 (2010), 242–254. [arXiv:0910.2075](#)
3. Yufei Zhao, Constructing MSTD sets using bidirectional ballot sequences,
J. Number Theory 130 (2010), 1212–1220. [arXiv:0908.4442](#)
2. Yufei Zhao, The number of independent sets in a regular graph,
Combin. Probab. Comput. 19 (2010), 315–320. [arXiv:0909.3354](#)
1. Yufei Zhao, The coefficients of a truncated Fibonacci power series,
Fibonacci Quart. 46/47 (2009), 53–55.

Invited Talks

Selected talk videos and slides can be found on my homepage: <https://yufeizhao.com>

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| 2023 MIT Applied Math Colloquium | Cambridge, MA |
| Workshop on Local Algorithms (WOLA 2023) | Cambridge, MA |
| GallianFest: Number Theory and Combinatorics in Duluth | Duluth, MN |
| Simons Institute workshop: Structural Results | Berkeley, CA |
| Sphere packings, coverings, and spherical codes (SPCSC2023) | Sofia, Bulgaria / Online |
| Cumberland Conference: Plenary Speaker | Murfreesboro, TN |
| IAS Special Year Seminar | Princeton, NJ |
| Oberwolfach workshop: Combinatorics | Oberwolfach, Germany |
| 2022 TILOS and OPTML++ Seminar | Online |
| U. Washington-PIMS Mathematics Colloquium | Seattle, WA |
| TU Graz Combinatorics Seminar | Online |
| Waterloo Algebraic Graph Theory seminar | Online |
| Conference on Random Structures & Algorithms (RS&A): Plenary Speaker | Gniezno, Poland |
| International Congress of Chinese Mathematicians (ICCM): Plenary Speaker | Nanjing, China/Online |
| Shandong University Mathematics seminar | Online |

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| | Workshop on Critical and Collective Effects in Graphs and Networks (CCEGN-V) | Falmouth, MA |
| | Oberwolfach workshop: Combinatorics, Probability and Computing | Oberwolfach, Germany |
| | U. of Chicago Mathematics Colloquium | Chicago, IL |
| | U. of Chicago Combinatorics and Theoretical Computer Science Seminar | Chicago, IL |
| | Johns Hopkins Applied Mathematics and Statistics Colloquium | Online |
| | Vrije Universiteit in Amsterdam General Mathematics Colloquium | Online |
| 2021 | AIM workshop on Spectral graph and hypergraph theory: connections and applications | Online |
| | Ohio State University Mathematics Colloquium | Columbus, OH |
| | Ohio State University Combinatorics & Probability Seminar | Columbus, OH |
| | National University of Singapore (NUS) Young Mathematician Lecture Series | Online |
| | Canadian Discrete and Algorithmic Math Conference (CanaDAM): Plenary Lecture | Online |
| | Workshop on Extremal and Algorithmic Aspects of Partition Functions | Online |
| | Copenhagen–Jerusalem Combinatorics Seminar | Online |
| | Simons Collaboration: Algorithms & Geometry Monthly Meeting | Online |
| | Caltech/UCLA Joint Analysis Seminar | Online |
| | Joint Math Meetings MAA Invited Paper Session “Coding Theory and Geometry” | Online |
| 2020 | Warwick Centre for Discrete Mathematics and its Applications seminar | Online |
| | Virtual Harmonic Analysis Seminar | Online |
| | University of Wisconsin Number Theory / Representation Theory Seminar | Online |
| | Princeton Discrete Mathematics Seminar | Online |
| | Big Seminar by Laboratory of Combinatorial and Geometric Structures | Online |
| | SCMS Combinatorics Seminar | Online |
| | Cumberland Conference Plenary speaker (Canceled due to COVID-19) | Williamsburg, VA |
| | Simons Collaboration: Algorithms & Geometry Annual Conference Plenary Lecture (Canceled due to COVID-19) | New York, NY |
| | Webinar in Additive Combinatorics | Online |
| | Stanford Online Combinatorics Seminar | Online |
| | Stanford Math Department Colloquium | Stanford, CA |
| | Oberwolfach workshop: Combinatorics | Oberwolfach, Germany |
| 2019 | Shanghai Center for Mathematical Sciences (Fudan) Discrete Math. Seminar | Shanghai, China |
| | Conference on Graph Theory and its Applications: A Tribute to Prof. Fan Chung | Sanya, China |
| | Atlanta Lectures Series in Combinatorics and Graph Theory at Emory | Atlanta, GA |
| | Princeton Discrete Mathematics Seminar | Princeton, NJ |
| | Banff workshop: Probabilistic and Extremal Combinatorics | Banff, AB |
| | ETH Zurich Theory of Combinatorial Algorithms Mittagseminar | Zürich, Switzerland |
| | Oberwolfach workshop: Combinatorics, Probability and Computing | Oberwolfach, Germany |
| | Rutgers Discrete Math Seminar | Piscataway, NJ |

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| | Yale Combinatorics Seminar | New Haven, CT |
| | Stanford Combinatorics Seminar | Stanford, CA |
| 2018 | Clay Math Institute workshop: Recent Advances in Extremal Combinatorics | Oxford, UK |
| | ICM satellite workshop — Combinatorics: Extremal, Probabilistic and Additive | São Paulo, Brazil |
| | Simons Institute workshop: Pseudorandomness Reunion | Berkeley, CA |
| | MIT Workshop on Local Algorithms (WOLA 2018) | Cambridge, MA |
| | MIT workshop on Sublinear Algorithms: bootcamp tutorial | Cambridge, MA |
| | SIAM Conference on Discrete Mathematics: minisymposium | Denver, CO |
| | SIAM Conference on Discrete Mathematics: Dénes König Prize Lecture | Denver, CO |
| | Georgia Tech workshop: Algorithms and Randomness | Atlanta, GA |
| | Northeastern U. Network Science Institute Talk | Boston, MA |
| | AMS Sectional Meeting at Northeastern University | Boston, MA |
| | Rutgers Discrete Math Seminar | Piscataway, NJ |
| | Tsinghua YMSC minicourse | Beijing, China |
| | CMU ACO Seminar | Pittsburgh, PA |
| | Harvard CMSA workshop: Probabilistic and Extremal Combinatorics | Cambridge, MA |
| | UCLA Combinatorics Seminar | Los Angeles, CA |
| 2017 | Harvard CMSA workshop: Additive Combinatorics | Cambridge, MA |
| | Birmingham workshop: Interactions with Combinatorics | Birmingham, UK |
| | BGSMath workshop: Random Discrete Structures and Beyond | Barcelona, Spain |
| | SFSU: ACG Seminar | San Francisco, CA |
| | Stanford Math Department Colloquium | Stanford, CA |
| | Simons Institute workshop: Structure and Randomness | Berkeley, CA |
| | MIT Combinatorics Seminar | Cambridge, MA |
| | UC Berkeley Combinatorics Seminar | Berkeley, CA |
| | Simons Institute workshop: Pseudorandomness Boot Camp | Berkeley, CA |
| | Stanford Combinatorics Seminar | Stanford, CA |
| | Oberwolfach workshop: Combinatorics | Oberwolfach, Germany |
| 2016 | Turing Institute workshop: Large-scale structures in random graphs | London, UK |
| | Birmingham Combinatorics Seminar | Birmingham, UK |
| | IHÉS Seminar | Bures-sur-Yvette, France |
| | Warwick DIMAP Seminar | Coventry, UK |
| | LSE/Queen Mary Colloquia in Combinatorics | London, UK |
| | Oberwolfach workshop: Combinatorics, Probability and Computing | Oberwolfach, Germany |
| | Simons Symposium: Analysis of Boolean Functions | Krün, Germany |
| | British Mathematical Colloquium: Combinatorics Workshop | Bristol, UK |
| | Oxford Mathematical Institute North meets South Colloquium | Oxford, UK |

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| | AMS-MAA Joint Mtgs: AMS Spec. Session on Pseudorandomness and Its Applications | Seattle, WA |
| 2015 | London School of Economics Discrete Mathematics and Game Theory Seminar | London, UK |
| | Queen Mary Combinatorics Seminar | London, UK |
| | Warwick Combinatorics Seminar | Coventry, UK |
| | Oxford Combinatorial Theory Seminar | Oxford, UK |
| | Northeastern U. workshop: Random Graphs, Simplicial Complexes, and their Appl'ns | Boston, MA |
| | U. of Chicago Combinatorics and Theoretical Computer Science Seminar | Chicago, IL |
| | Rutgers Discrete Math Seminar | Piscataway, NJ |
| | ICERM workshop: Crystals, Quasicrystals and Random Networks | Providence, RI |
| 2014 | Atlanta Lectures Series in Combinatorics and Graph Theory at Emory | Atlanta, GA |
| | GSU Colloquium | Atlanta, GA |
| | CRM workshop: New Topics in Additive Combinatorics | Montreal, QC |
| | IMA workshop: Additive and Analytic Combinatorics | Minneapolis, MN |
| | Clay Math Institute workshop: Extremal and Probabilistic Combinatorics | Oxford, UK |
| | Georgia Tech Combinatorics Seminar | Atlanta, GA |
| | IAS Computer Science/Discrete Mathematics Seminar | Princeton, NJ |
| | Oxford Combinatorial Theory Seminar | Oxford, UK |
| | London School of Economics Discrete Mathematics and Game Theory Seminar | London, UK |
| | Eurandom: Minicourse on Graph Limits (6-hour minicourse co-taught with Christian Borgs) | Eindhoven, Netherlands |
| | Oberwolfach workshop: Combinatorics | Oberwolfach, Germany |
| 2013 | Simons Institute workshop: Neo-Classical Methods in Discrete Analysis | Berkeley, CA |
| | Rutgers Discrete Math Seminar | Piscataway, NJ |
| | MIT Combinatorics Seminar | Cambridge, MA |
| | Yale Combinatorics and Probability Seminar | New Haven, CT |
| | Microsoft Research Theory Reading Group | Cambridge, MA |
| | Oberwolfach workshop: Combinatorics and Probability | Oberwolfach, Germany |
| 2012 | MIT Combinatorics Seminar | Cambridge, MA |
| | SIAM Conference on Discrete Mathematics | Halifax, NS |
| 2009 | MIT Combinatorics Seminar | Cambridge, MA |

Teaching

Graph Theory and Additive Combinatorics (graduate, MIT)

Lecture videos available through MIT OpenCourseWare: <https://yufeizhao.com/gtacbook/>

| Term | Enrollment (credit + listener) | Instructor evaluation (max 7) |
|-----------|-----------------------------------|----------------------------------|
| Fall 2023 | | |
| Fall 2021 | 36 + 9 | 6.7 |
| Fall 2019 | 30 + 14 | 6.9 |
| Fall 2017 | 31 + 17 | 7.0 |

Probabilistic Methods in Combinatorics (graduate, MIT)

Lecture notes: <https://yufeizhao.com/pm/>

| | | |
|-------------|---------|------------------------|
| Fall 2022 | 54 + 12 | 6.9 |
| Fall 2020 | 25 + 16 | Not rated due to COVID |
| Spring 2019 | 47 + 25 | 6.9 |

Combinatorial Analysis (undergraduate, MIT)

| | | |
|-----------|--------|-----|
| Fall 2018 | 22 + 7 | 6.8 |
|-----------|--------|-----|

Mathematical Problem Solving: Putnam Seminar (undergrad first-year seminar, MIT)

| | | |
|-----------|----|------------------------|
| Fall 2022 | 21 | 6.4 |
| Fall 2021 | 26 | 6.7 |
| Fall 2020 | 16 | Not rated due to COVID |
| Fall 2019 | 22 | 6.3 |
| Fall 2018 | 18 | 6.4 |
| Fall 2017 | 10 | 6.3 |

Previous teaching:

Polynomial Method in Combinatorics, graduate-level, Oxford, 2016

Undergraduate tutorials in geometry, Oxford, 2016

Other Experiences and Activities

Quantitative Research Intern, D. E. Shaw & Co., New York

MIT Lusztig PRIMES Mentor

Research Experience for Undergraduates at Duluth participant (mentor: Joe Gallian)

Deputy Leader for Canadian IMO Team

Instructor at Canadian IMO Training Camps

Mentor at AwesomeMath Summer Program, Dallas

Trainer at US Math Olympiad Summer Program (MOP), Lincoln, Nebraska

Teacher at Spirit of Math Schools, Toronto