

Yuval Wigderson

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Research interests

Extremal combinatorics, Ramsey theory, algebraic and probabilistic techniques in combinatorics, extremal graph theory, and applications to theoretical computer science.

Affiliations

ETH Zürich Junior Fellow at the Institute for Theoretical Studies Hosted by Benny Sudakov	2023–present
Tel Aviv University Postdoctoral fellow Hosted by Michael Krivelevich, Wojciech Samotij, and Asaf Shapira	2022–2023
Stanford University PhD candidate in Mathematics, advised by Jacob Fox	2016–2022
Princeton University A.B. in Mathematics, graduated <i>summa cum laude</i>	2012–2016

Selected fellowships and awards

<i>Discrete Mathematics</i> Outstanding Reviewer Award	2022
George Pólya Teaching Fellow Award	2022
NSF Graduate Research Fellowship	2017–2021
Hertz Fellowship Finalist	2017
Barry Goldwater Scholarship	2015–2016
NSF Center for Science of Information Research Fellowship	2015–2016
George B. Wood Legacy Junior Prize	2015
Middleton Miller '29 Prize	2016
Princeton's PACM Director's Fellowship	2014

Teaching and mentorship

Stanford University teaching assistant Math 101 (Math Discovery Lab)	Winter 2022
Math 61DM (Modern Mathematics: Discrete Methods)	Fall 2021
Math 61DM (Modern Mathematics: Discrete Methods)	Fall 2019
Stanford University course assistant Math 205B (Real Analysis)	Winter 2020
Math 163/Classics 136 (The Greek Invention of Mathematics)	Fall 2017

Math 104 (Applied Matrix Theory)	Winter 2017
Math 175 (Elementary Functional Analysis)	Fall 2016
Stanford University Directed Reading Program	
Mentored nine undergraduate reading projects over several years	2017-2022
Financial officer of the program	2018-2022
Canada/USA Mathcamp	
Academic Coordinator	2020
Graduate student instructor	2017, 2022
Undergraduate counselor	2013, 2015, 2016

Other professional experience

Program Committee member for STOC 2024	2023
Reviewer for Math Reviews	2021-present
Co-organizer of Stanford's Combinatorics Reading Seminar	2019-2022
Chaired two hiring committees for Canada/USA Mathcamp	2021-2023
Member of ten hiring committees for Canada/USA Mathcamp	2016-present
Referee for over 20 journals, including: <i>Annals of Mathematics; Bulletin of the LMS; Communications of the AMS; Israel Journal of Mathematics; Journal of the LMS</i>	

Publications

- J. Fox, X. He, and Y. Wigderson, Ramsey numbers of sparse digraphs, *Israel J. Math.* (2024), to appear. Preprint available at arXiv:2105.02383.
- D. Conlon, J. Fox, and Y. Wigderson, Off-diagonal book Ramsey numbers, *Combin. Probab. Comput.* **32** (2023), 516-545.
- D. Conlon, J. Fox, and Y. Wigderson, Three early problems on size Ramsey numbers, *Combinatorica* **43** (2023), 743-768.
- J. Fox, X. He, and Y. Wigderson, Ramsey goodness of books revisited, *Adv. Comb.* (2023), Paper No. 4, 21pp.
- J. Fox and Y. Wigderson, Minimum degree and the graph removal lemma, *J. Graph Theory* **102** (2023), 648-665.
- J. Fox and Y. Wigderson, Ramsey multiplicity and the Turán coloring, *Adv. Comb.* (2023), Paper No. 2, 39pp.
- L. Gishboliner, A. Shapira, and Y. Wigderson, An efficient asymmetric removal lemma and its limitations, 2023. Preprint available at arXiv:2301.07693.
- E. Kuperwasser, W. Samotij, and Y. Wigderson, On the Kohayakawa-Kreuter conjecture, 2023. Preprint available at arXiv:2307.16611.
- Y. Li, Y. Qiao, A. Wigderson, Y. Wigderson, and C. Zhang, Connections between graphs and matrix spaces, *Israel J. Math.* **256** (2023), 513-580.

- D. Conlon, J. Fox, and Y. Wigderson, Ramsey numbers of books and quasirandomness, *Combinatorica* **42** (2022), 309–363.
- Y. Li, Y. Qiao, A. Wigderson, Y. Wigderson, and C. Zhang, On linear-algebraic notions of expansion, 2022. Preprint available at arXiv:2212.13154.
- L. Saueremann and Y. Wigderson, Polynomials that vanish to high order on most of the hypercube, *J. Lond. Math. Soc. (2)* **106** (2022), 2379–2402.
- Y. Wigderson, Ramsey numbers upon vertex deletion, 2022. Preprint available at arXiv:2208.11181.
- J. Fox, S. Luo, and Y. Wigderson, Extremal and Ramsey results on graph blowups, *J. Comb.* **12** (2021), 1–15.
- X. He and Y. Wigderson, Hedetniemi’s conjecture is asymptotically false, *J. Combin. Theory Ser. B* **146** (2021), 485–494.
- A. Wigderson and Y. Wigderson, The uncertainty principle: variations on a theme, *Bull. Amer. Math. Soc. (N.S.)* **58** (2021), 225–261.
- Y. Wigderson, An improved lower bound on multicolor Ramsey numbers, *Proc. Amer. Math. Soc.* **149** (2021), 2371–2374.
- J. Fox, X. He, and Y. Wigderson, Ramsey, paper, scissors, *Random Structures Algorithms* **57** (2020), 1157–1173.
- J. Fox, Y. Wigderson, and Y. Zhao, A short proof of the canonical polynomial van der Waerden theorem, *C. R. Math. Acad. Sci. Paris* **358** (2020), 957–959.
- X. He and Y. Wigderson, Multicolor Ramsey numbers via pseudorandom graphs, *Electron. J. Combin.* **27** (2020), Paper No. 1.32, 8pp.
- Y. Wigderson, The Bar-Natan theory splits, *J. Knot Theory Ramifications* **25** (2016), 1650014, 19pp.
- E. Abbe and Y. Wigderson, High-girth matrices and polarization, in *2015 IEEE International Symposium on Information Theory (ISIT)*, 2015, 2461–2465.

Invited talks

IST Austria combinatorics, geometry, and topology seminar	2023
ETH-ITS Fellows' Seminar	2023
TU Graz combinatorics seminar	2023
Oxford University combinatorial theory seminar	2023
Bar-Ilan University combinatorics seminar	2022
Technion combinatorics seminar	2022
CRM workshop on tensors, quantum information, complexity, and combinatorics	2022
Hebrew University combinatorics seminar	2022
Tel Aviv University combinatorics seminar	2022
National University of Singapore combinatorics and graph theory seminar	2022
2022 SIAM conference on Discrete Mathematics	2022
MIT-Harvard-MSR combinatorics seminar	2022
Stanford combinatorics seminar	2021
Moscow Conference on Combinatorics and Applications	2021
Hebrew University combinatorics seminar	2021
University of Massachusetts, Amherst discrete math seminar	2021
Moscow Institute of Physics and Technology geometry and combinatorics seminar	2021
Banach spaces webinar	2021
Princeton discrete math seminar	2021
University of Wisconsin, Madison analysis seminar	2020
Stanford combinatorics seminar	2020
19th International Conference on Random Structures and Algorithms	2019
Princeton Science of Information Day	2015
IEEE International Symposium on Information Theory	2015