

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

IST Austria	2026–
Assistant Professor	
ETH Zürich	2023–2026
Junior Fellow at the Institute for Theoretical Studies	
Hosted by Benny Sudakov	
Tel Aviv University	2022–2023
Postdoctoral fellow	
Hosted by Michael Krivelevich, Wojciech Samotij, and Asaf Shapira	
Stanford University	2016–2022
PhD in Mathematics, advised by Jacob Fox	
Princeton University	2012–2016
A.B. in Mathematics, graduated <i>summa cum laude</i>	

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

Preprints

D. Bradač, P. Morawski, B. Sudakov, and Y. Wigderson, Ramsey numbers of digraphs with local edge structure, 2025. Preprint available at [arXiv:2509.05055](https://arxiv.org/abs/2509.05055).

L. Gishboliner, E. Hurley, and Y. Wigderson, Asymmetric results about graph homomorphisms, 2025. Preprint available at [arXiv:2502.20278](https://arxiv.org/abs/2502.20278).

- L. Gishboliner, A. Shapira, and Y. Wigderson, Is it easy to regularize a hypergraph with easy links?, 2025. Preprint available at arXiv:2506.15582.
- L. Gishboliner, A. Shapira, and Y. Wigderson, Regularity for hypergraphs with bounded vc_2 dimension, 2025. Preprint available at arXiv:2508.09969.
- X. He, J. Nie, Y. Wigderson, and H.-H. H. Yu, Off-diagonal Ramsey numbers for linear hypergraphs, 2025. Preprint available at arXiv:2507.05641.
- A. Girão, Z. Hunter, and Y. Wigderson, Blowups of triangle-free graphs, 2024. Preprint available at arXiv:2408.12913.

Publications

- D. Bradač, P. Morawski, B. Sudakov, and Y. Wigderson, Ordered Ramsey numbers of graphs with m edges, *Proc. Amer. Math. Soc.* (2025), to appear. Preprint available at arXiv:2412.17599.
- D. Bradač, B. Sudakov, and Y. Wigderson, Counting subgraphs in locally dense graphs, *Israel J. Math.* (2025), to appear. Preprint available at arXiv:2406.12418.
- M. Christoph, A. Martinsson, R. Steiner, and Y. Wigderson, Resolution of the Kohayakawa-Kreuter conjecture, *Proc. Lond. Math. Soc.* (3) **130** (2025), Paper No. e70013, 34.
- L. Gishboliner, A. Milojević, B. Sudakov, and Y. Wigderson, Canonical Ramsey Numbers of Sparse Graphs, *SIAM J. Discrete Math.* **39** (2025), 1491–1519.
- L. Gishboliner, A. Shapira, and Y. Wigderson, An efficient asymmetric removal lemma and its limitations, *Forum Math. Sigma* **13** (2025), Paper No. e38, 17pp.
- I. Haviv, S. Mattheus, A. Milojević, and Y. Wigderson, Larger nearly orthogonal sets over finite fields, *Discrete Math.* **348** (2025), Paper No. 114373, 9pp.
- E. Kuperwasser, W. Samotij, and Y. Wigderson, On the Kohayakawa-Kreuter conjecture, *Math. Proc. Cambridge Philos. Soc.* **178** (2025), 293–320.
- Y. Li, Y. Qiao, A. Wigderson, Y. Wigderson, and C. Zhang, On linear-algebraic notions of expansion, *Theory Comput.* **21** (2025), Paper No. 1, 28.
- Y. Wigderson, Infinitely many minimally non-Ramsey size-linear graphs, *European J. Combin.* **128** (2025), Paper No. 104175, 3.
- Y. Wigderson, Upper bounds on diagonal Ramsey numbers [after Campos, Griffiths, Morris, and Sahasrabudhe], *Astérisque* (2025), to appear. Preprint available at arXiv:2411.09321.
- J. Fox, X. He, and Y. Wigderson, Ramsey numbers of sparse digraphs, *Israel J. Math.* **263** (2024), 1–48.
- M. Kwan and Y. Wigderson, The inertia bound is far from tight, *Bull. Lond. Math. Soc.* **56** (2024), 3196–3208.
- Y. Wigderson, Ramsey numbers upon vertex deletion, *J. Graph Theory* **106** (2024), 663–675.

- 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.
- 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.
- L. Sauermann and Y. Wigderson, Polynomials that vanish to high order on most of the hypercube, *J. Lond. Math. Soc. (2)* **106** (2022), 2379–2402.
- 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.

Teaching and mentorship

Park City Mathematics Institute

Undergraduate Summer School on Extremal combinatorics Summer 2025

ETH Zürich lead instructor

Ramsey theory Spring 2024

ETH Zürich MSc advisor

Advised three Master's students on theses and semester projects 2023-present

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 163/Classics 136 (The Greek Invention of Mathematics) Spring 2022

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

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

Financial Officer for Stanford's Graduate Math Outreach Organization 2018-2022

Member of ten hiring committees for Canada/USA Mathcamp 2016-present

Refereed over 60 papers for over 25 journals, including:

Advances in Mathematics; Annals of Mathematics; Israel Journal of Mathematics; Journal of the LMS; Transactions of the AMS

Invited talks

BIMSA seminar in Discrete Mathematics 2025

Sparse Graphs Coalition Workshop: Topics in Ramsey theory 2025

Park City Mathematics Institute RP seminar 2025

One-day meeting in combinatorics at Oxford 2025

EPFL Discrete Mathematics seminar 2025

Brazilian School of Combinatorics (plenary speaker)	2025
SLMath Extremal Combinatorics seminar	2025
Workshop on New Frontiers in Extremal and Probabilistic Combinatorics	2025
Heidelberg University TCS and discrete mathematics seminar	2024
UMass Amherst Mathematics colloquium	2024
IBS ECOPRO Workshop on developments in combinatorics	2024
Bourbaki seminar	2024
Georgia Tech combinatorics seminar	2024
Atlanta Lecture Series in Combinatorics XXIX	2024
Carnegie Mellon University ACO seminar	2024
Rutgers University discrete math seminar	2024
Princeton University discrete math seminar	2024
Simons Institute Workshop on Sublinear Graph Simplification	2024
Algebraic graph theory online seminar	2024
Tel Aviv University combinatorics seminar	2024
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 University 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