Yuval Wigderson

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Research interests

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

Affiliations

Tel Aviv University 2022–present
Postdoctoral fellow
Hosted by Michael Krivelevich, Wojciech Samotij, and Asaf Shapira
Stanford University 2016–2022
PhD candidate in Mathematics, advised by Jacob Fox
Princeton University 2012–2016
A.B. in Mathematics, graduated *summa cum laude*

Selected fellowships and awards

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–present
Financial officer of the program	2018–present

Canada/USA Mathcamp

Academic Coordinator	2020
Graduate student instructor	2017
Undergraduate counselor	2013, 2015, 2016

Publications

- Yuval Wigderson, Ramsey numbers upon vertex deletion, preprint (2022).
- Jacob Fox and Yuval Wigderson, Ramsey multiplicity and the Turán coloring, preprint (2022).
- Yinan Li, Youming Qiao, Avi Wigderson, Yuval Wigderson, and Chuanqi Zhang, Connections between graphs and matrix spaces, preprint (2022).
- David Conlon, Jacob Fox, and Yuval Wigderson, Three early problems on size Ramsey numbers, preprint (2021).
- David Conlon, Jacob Fox, and Yuval Wigderson, Off-diagonal book Ramsey numbers, preprint (2021).
- Jacob Fox, Xiaoyu He, and Yuval Wigderson, Ramsey goodness of books revisited, to appear in *Adv. Comb.* (2022).
- Jacob Fox and Yuval Wigderson, Minimum degree and the graph removal lemma, to appear in *J. Graph. Theory* (2022).
- Jacob Fox, Xiaoyu He, and Yuval Wigderson, Ramsey numbers of sparse digraphs, to appear in *Israel J. Math.* (2022).
- Lisa Sauermann and Yuval Wigderson, Polynomials that vanish to high order on most of the hypercube, to appear in *J. Lond. Math. Soc.* (2022).
- Yuval Wigderson, An improved lower bound on multicolor Ramsey numbers, *Proc. Amer. Math. Soc.* **149** (2021), 2371–2374.
- Avi Wigderson and Yuval Wigderson, The uncertainty principle: variations on a theme, *Bull. Amer. Math. Soc.* **58** (2021), 225–261.
- 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.
- David Conlon, Jacob Fox, and Yuval Wigderson, Ramsey numbers of books and quasirandomness, *Combinatorica* **42** (2022), 309–363.
- Jacob Fox, Sammy Luo, and Yuval Wigderson, Extremal and Ramsey results on graph blowups, *J. Comb.* **12** (2021), 1–15.
- Xiaoyu He and Yuval Wigderson, Multicolor Ramsey numbers via pseudorandom graphs, *Electron. J. Combin.* **27** (2020), Paper No. 1.32, 8 pp.
- Xiaoyu He and Yuval Wigderson, Hedetniemi's conjecture is asymptotically false, *J. Combin. Theory Ser. B* **146** (2021), 485–494.

- Jacob Fox, Xiaoyu He, and Yuval Wigderson, Ramsey, Paper, Scissors, *Random Structures Algorithms* **57** (2020), 1157–1173.
- Yuval Wigderson, Algebraic properties of tensor product matrices, with applications to coding, not intended for publication (2016).
- Yuval Wigderson, The Bar-Natan theory splits, *J. Knot Theory Ramifications* **25** (2016), 19 pp.
- Emmanuel Abbe and Yuval Wigderson, High-girth matrices and polarization, *2015 IEEE International Symposium on Information Theory* (2015), 2461–2465.

Other professional experience

Reviewer for Math Reviews	2021–present
Co-organizer of Stanford's Combinatorics Reading Seminar	2019–present
Chaired a hiring committee for Canada/USA Mathcamp	2021–2022
Member of ten hiring committees for Canada/USA Mathcamp	2016–present

Referee for:

Bulletin of the LMS; Combinatorial Theory; Commentationes Mathematicae Universitatis Carolinae; Communications of the AMS; Discrete Applied Mathematics; Discete Mathematics; Electronic Journal of Combinatorics; European Journal of Combinatorics; Israel Journal of Mathematics; Journal of Combinatorial Theory, Series A; Journal of Combinatorial Theory, Series B; Journal of Algebra; Journal of Graph Theory; Journal of the LMS; Random Structures & Algorithms; SIAM Journal on Discrete Mathematics; Symposium on Discrete Algorithms; Transactions on Computation Theory

Invited talks

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