Stanford

Jacob Fox

Professor of Mathematics

Bio

ACADEMIC APPOINTMENTS

- Professor, Mathematics

Teaching

COURSES

2026-27

- Modern Mathematics: Discrete Methods: MATH 62DM (Win)
- Topics in Combinatorics: MATH 233B (Win)

2025-26

- Modern Mathematics: Discrete Methods: MATH 62DM (Win)

2024-25

- Graph Theory: MATH 107 (Aut)

2023-24

- Modern Mathematics: Discrete Methods: MATH 61DM (Aut)
- Topics in Combinatorics: MATH 233C (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Nathan Tung

Doctoral Dissertation Advisor (AC)

Carl Schildkraut, Shengtong Zhang

Doctoral (Program)

Richard Ueltzen

Publications

PUBLICATIONS

- **Triangle Ramsey numbers of complete graphs** *JOURNAL OF COMBINATORIAL THEORY SERIES B*
  Fox, J., Tidor, J., Zhang, S.
  2026; 176: 268-286
- **WHEN ARE OFF-DIAGONAL HYPERGRAPH RAMSEY NUMBERS POLYNOMIAL?** *PROCEEDINGS OF THE AMERICAN MATHEMATICAL SOCIETY*
  Conlon, D., Fox, J., Gunby, B., He, X., Mubayi, D., Suk, A., Verstraete, J., Yu, H.

2025

- **A note on directed analogues of the Sidorenko and forcing conjectures** *ELECTRONIC JOURNAL OF COMBINATORICS*
  Fox, J., Himwich, Z., Mani, N., Zhou, Y.
  2025; 32 (3)
- **A structure theorem for pseudosegments and its applications** *JOURNAL OF COMBINATORIAL THEORY SERIES B*
  Fox, J., Pach, J., Suk, A.
  2025; 174: 99-132
- **On Off-Diagonal Hypergraph Ramsey Numbers** *INTERNATIONAL MATHEMATICS RESEARCH NOTICES*
  Conlon, D., Fox, J., Gunby, B., He, X., Mubayi, D., Suk, A., Verstrate, J.
  2025; 2025 (11)
- **Induced subgraph density. II. Sparse and dense sets in cographs** *EUROPEAN JOURNAL OF COMBINATORICS*
  Fox, J., Nguyen, T., Scott, A., Seymour, P.
  2025; 124
- **Ramsey numbers of hypergraphs with a given size** *MATHEMATICAL PROCEEDINGS OF THE CAMBRIDGE PHILOSOPHICAL SOCIETY*
  Bradac, D., Fox, J., Sudakov, B.
  2025
- **The growth rate of multicolor Ramsey numbers of 3-graphs.** *Research in the mathematical sciences*
  Bradač, D., Fox, J., Sudakov, B.
  2024; 11 (3): 52
- **Set-Coloring Ramsey Numbers and Error-Correcting Codes Near the Zero-Rate Threshold** *IEEE TRANSACTIONS ON INFORMATION THEORY*
  Conlon, D., Fox, J., Pham, H., Zhao, Y.
  2024; 70 (6): 4074-4078
- **Quasiplanar graphs, string graphs, and the Erdos-Gallai problem** *EUROPEAN JOURNAL OF COMBINATORICS*
  Fox, J., Pach, J., Suk, A.
  2024; 119
- **Ramsey numbers of sparse digraphs** *ISRAEL JOURNAL OF MATHEMATICS*
  Fox, J., He, X., Wigderson, Y.
  2024
- **SET-COLORING RAMSEY NUMBERS VIA CODES** *STUDIA SCIENTIARUM MATHEMATICARUM HUNGARICA*
  Conlon, D., Fox, J., He, X., Mubayi, D., Suk, A., Verstrate, J.
  2024; 61 (1): 1-15
- **Small subsets with large sumset: Beyond the Cauchy-Davenport bound** *COMBINATORICS PROBABILITY & COMPUTING*
  Fox, J., Luo, S., Pham, H., Zhou, Y.
  2024
- **Discrepancy of arithmetic progressions in grids** *MATHEMATIKA*
  Fox, J., Xu, M., Zhou, Y.
  2024; 70 (1)
- **Enumeration of Intersection Graphs of x-Monotone Curves**
  Fox, J., Pach, J., Suk, A.
  edited by Felsner, S., Klein, K.
  SCHLOSS DAGSTUHL, LEIBNIZ CENTER INFORMATICS.2024
- **On random irregular subgraphs** *RANDOM STRUCTURES & ALGORITHMS*
  Fox, J., Luo, S., Pham, H.
  2023

- **On the number of edges of separated multigraphs** *JOURNAL OF GRAPH THEORY*
  Fox, J., Pach, J., Suk, A.
  2023
- **Extremal results on feedback arc sets in digraphs** *RANDOM STRUCTURES & ALGORITHMS*
  Fox, J., Himwich, Z., Mani, N.
  2023
- **Hypergraph Ramsey numbers of cliques versus stars** *RANDOM STRUCTURES & ALGORITHMS*
  Conlon, D., Fox, J., He, X., Mubayi, D., Suk, A., Verstraete, J.
  2023
- **Three Early Problems on Size Ramsey Numbers** *COMBINATORICA*
  Conlon, D., Fox, J., Wigderson, Y.
  2023
- **Sunflowers in Set Systems of Bounded Dimension** *COMBINATORICA*
  Fox, J., Pach, J., Suk, A.
  2023
- **Off-diagonal book Ramsey numbers** *COMBINATORICS PROBABILITY & COMPUTING*
  Conlon, D., Fox, J., Wigderson, Y.
  2023; 32 (3): 516-545
- **Threshold Ramsey multiplicity for paths and even cycles** *EUROPEAN JOURNAL OF COMBINATORICS*
  Conlon, D., Fox, J., Sudakov, B., Wei, F.
  2023; 107
- **GEOMETRIC AND O-MINIMAL LITTLEWOOD-OFFORD PROBLEMS** *ANNALS OF PROBABILITY*
  Fox, J., Kwan, M., Spink, H.
  2023; 51 (1): 101-126
- **Quasiplanar Graphs, String Graphs, and the Erdos-Gallai Problem**
  Fox, J., Pach, J., Suk, A.
  edited by Angelini, P., vonHanxleden, R.
  SPRINGER INTERNATIONAL PUBLISHING AG.2023: 219-231
- **Tower-type bounds for Roth's theorem with popular differences** *JOURNAL OF THE EUROPEAN MATHEMATICAL SOCIETY*
  Fox, J., Pham, H., Zhao, Y.
  2023; 25 (10): 3795-3831
- **Discrepancy in modular arithmetic progressions** *COMPOSITIO MATHEMATICA*
  Fox, J., Xu, M., Zhou, Y.
  2022; 158 (11): 2082-2108
- **The upper logarithmic density of monochromatic subset sums** *MATHEMATIKA*
  Conlon, D., Fox, J., Huy Tuan Pham
  2022; 68 (4): 1292-1301
- **Minimum degree and the graph removal lemma** *JOURNAL OF GRAPH THEORY*
  Fox, J., Wigderson, Y.
  2022
- **Making an H H-free graph k k-colorable** *JOURNAL OF GRAPH THEORY*
  Fox, J., Himwich, Z., Mani, N.
  2022
- **THRESHOLD RAMSEY MULTIPLICITY FOR ODD CYCLES** *REVISTA DE LA UNION MATEMATICA ARGENTINA*
  Conlon, D., Fox, J., Sudakov, B., Wei, F.
  2022; 64 (1): 49-68

- **Multicolor list Ramsey numbers grow exponentially** *JOURNAL OF GRAPH THEORY*
  Fox, J., He, X., Luo, S., Xu, M.
  2022
- **RAMSEY NUMBERS OF BOOKS AND QUASIRANDOMNESS** *COMBINATORICA*
  Conlon, D., Fox, J., Wigderson, Y.
  2022
- **INDUCED ARITHMETIC REMOVAL: COMPLEXITY 1 PATTERNS OVER FINITE FIELDS** *ISRAEL JOURNAL OF MATHEMATICS*
  Fox, J., Tidor, J., Zhao, Y.
  2022
- **Removal lemmas and approximate homomorphisms** *COMBINATORICS PROBABILITY & COMPUTING*
  Fox, J., Zhao, Y.
  2022
- **Which graphs can be counted in C-4-free graphs?** *PURE AND APPLIED MATHEMATICS QUARTERLY*
  Conlon, D., Fox, J., Sudakov, B., Zhao, Y.
  2022; 18 (6): 2413-2432
- **COMMON AND SIDORENKO LINEAR EQUATIONS** *QUARTERLY JOURNAL OF MATHEMATICS*
  Fox, J., Pham, H., Zhao, Y.
  2021; 72 (4): 1223-1234
- **Bounded VC-Dimension Implies the Schur-Erdos Conjecture** *COMBINATORICA*
  Fox, J., Pach, J., Suk, A.
  2021
- **Powers of paths in tournaments** *COMBINATORICS PROBABILITY & COMPUTING*
  Draganic, N., Dross, F., Fox, J., Girao, A., Havet, F., Korandi, D., Lochet, W., Correia, D., Scott, A., Sudakov, B.
  2021; 30 (6): 894-898
- **The regularity method for graphs with few 4-cycles** *JOURNAL OF THE LONDON MATHEMATICAL SOCIETY-SECOND SERIES*
  Conlon, D., Fox, J., Sudakov, B., Zhao, Y.
  2021
- **Combinatorial anti-concentration inequalities, with applications** *MATHEMATICAL PROCEEDINGS OF THE CAMBRIDGE PHILOSOPHICAL SOCIETY*
  Fox, J., Kwan, M., Sauermann, L.
  2021; 171 (2): 227-248
- **Clique minors in graphs with a forbidden subgraph** *RANDOM STRUCTURES & ALGORITHMS*
  Bucic, M., Fox, J., Sudakov, B.
  2021
- **ANTI-CONCENTRATION FOR SUBGRAPH COUNTS IN RANDOM GRAPHS** *ANNALS OF PROBABILITY*
  Fox, J., Kwan, M., Sauermann, L.
  2021; 49 (3): 1515-1553
- **On the inducibility problem for random Cayley graphs of abelian groups with a few deleted vertices** *RANDOM STRUCTURES & ALGORITHMS*
  Fox, J., Sauermann, L., Wei, F.
  2021
- **Popular Progression Differences in Vector Spaces** *INTERNATIONAL MATHEMATICS RESEARCH NOTICES*
  Fox, J., Pham, H.
  2021; 2021 (7): 5261-5289
- **Independent sets in hypergraphs with a forbidden link** *PROCEEDINGS OF THE LONDON MATHEMATICAL SOCIETY*
  Fox, J., He, X.

2021

- **Acyclic subgraphs of tournaments with high chromatic number** *BULLETIN OF THE LONDON MATHEMATICAL SOCIETY*
  Fox, J., Kwan, M., Sudakov, B.
  2021
- **Extremal and Ramsey results on graph blowups** *JOURNAL OF COMBINATORICS*
  Fox, J., Luo, S., Wigderson, Y.
  2021; 12 (1): 1–15
- **ON THE NUMBER OF CLIQUES IN GRAPHS WITH A FORBIDDEN SUBDIVISION OR IMMERSION** *SIAM JOURNAL ON DISCRETE MATHEMATICS*
  Fox, J., Wei, F.
  2021; 34 (4): 2556-2582
- **A NOTE ON THE ERDOS DISTINCT SUBSET SUMS PROBLEM** *SIAM JOURNAL ON DISCRETE MATHEMATICS*
  Dubroff, Q., Fox, J., Xu, M.
  2021; 35 (1): 322–24
- **A NOTE ON THE ERDOS DISTINCT SUBSET SUMS PROBLEM** *SIAM JOURNAL ON DISCRETE MATHEMATICS*
  Dubroff, Q., Fox, J., Xu, M.
  2021; 35 (1): 322–24
- **Sets without k-term progressions can have many shorter progressions** *RANDOM STRUCTURES & ALGORITHMS*
  Fox, J., Pohoata, C.
  2020
- **On edge-ordered Ramsey numbers** *RANDOM STRUCTURES & ALGORITHMS*
  Fox, J., Li, R.
  2020
- **Short proofs of some extremal results III** *RANDOM STRUCTURES & ALGORITHMS*
  Conlon, D., Fox, J., Sudakov, B.
  2020
- **The Schur-Erdos problem for sesmi-algebraic colorings** *ISRAEL JOURNAL OF MATHEMATICS*
  Fox, J., Pach, J., Suk, A.
  2020
- **Ramsey, Paper, Scissors** *RANDOM STRUCTURES & ALGORITHMS*
  Fox, J., He, X., Wigderson, Y.
  2020
- **Triforce and corners** *MATHEMATICAL PROCEEDINGS OF THE CAMBRIDGE PHILOSOPHICAL SOCIETY*
  Fox, J., Sah, A., Sawhney, M., Stoner, D., Zhao, Y.
  2020; 169 (1): 209–23
- **Towards the linear arboricity conjecture** *COMPUTATIONAL STATISTICS & DATA ANALYSIS*
  Ferber, A., Fox, J., Jain, V.
  2020; 145: 56–79
- **Pure pairs. III. Sparse graphs with no polynomial-sized anticomplete pairs** *JOURNAL OF GRAPH THEORY*
  Chudnovsky, M., Fox, J., Scott, A., Seymour, P., Spirkl, S.
  2020
- **FINDING CLIQUES IN SOCIAL NETWORKS: A NEW DISTRIBUTION-FREE MODEL** *SIAM JOURNAL ON COMPUTING*
  Fox, J., Roughgarden, T., Seshadhri, C., Wei, F., Wein, N.
  2020; 49 (2): 448–64
- **On Ramsey numbers of hedgehogs** *COMBINATORICS PROBABILITY & COMPUTING*
  Fox, J., Li, R.

2020; 29 (1): 101–12

- **A short proof of the canonical polynomial van der Waerden theorem** *COMPTES RENDUS MATHEMATIQUE*
  Fox, J., Wigderson, Y., Zhao, Y.
  2020; 358 (8): 957–59
- **BOOKS VERSUS TRIANGLES AT THE EXTREMAL DENSITY** *SIAM JOURNAL ON DISCRETE MATHEMATICS*
  Conlon, D., Fox, J., Sudakov, B.
  2020; 34 (1): 385–98
- **Popular Progression Differences in Vector Spaces II** *DISCRETE ANALYSIS*
  Fox, J., Huy Tuan Pham
  2019
- **TOWER-TYPE BOUNDS FOR UNAVOIDABLE PATTERNS IN WORDS** *TRANSACTIONS OF THE AMERICAN MATHEMATICAL SOCIETY*
  Conlon, D., Fox, J., Sudakov, B.
  2019; 372 (9): 6213–29
- **Towards Erds-Hajnal for Graphs with No 5-Hole** *COMBINATORICA*
  Chudnovsky, M., Fox, J., Scott, A., Seymour, P., Spirkl, S.
  2019
- **A fast new algorithm for weak graph regularity** *COMBINATORICS PROBABILITY & COMPUTING*
  Fox, J., Lovasz, L., Zhao, Y.
  2019; 28 (5): 777–90
- **HYPERGRAPH CUTS ABOVE THE AVERAGE** *ISRAEL JOURNAL OF MATHEMATICS*
  Conlon, D., Fox, J., Kwan, M., Sudakov, B.
  2019; 233 (1): 67–111
- **Approximating the rectilinear crossing number** *COMPUTATIONAL GEOMETRY-THEORY AND APPLICATIONS*
  Fox, J., Pach, J., Suk, A.
  2019; 81: 45–53
- **Erds-Hajnal Conjecture for Graphs with Bounded VC-Dimension**
  Fox, J., Pach, J., Suk, A.
  SPRINGER.2019: 809–29
- **The removal lemma for tournaments** *JOURNAL OF COMBINATORIAL THEORY SERIES B*
  Fox, J., Gishboliner, L., Shapira, A., Yuster, R.
  2019; 136: 110–34
- **A proof of Tomescu's graph coloring conjecture** *JOURNAL OF COMBINATORIAL THEORY SERIES B*
  Fox, J., He, X., Manners, F.
  2019; 136: 204–21
- **Efficient Arithmetic Regularity and Removal Lemmas for Induced Bipartite Patterns** *DISCRETE ANALYSIS*
  Alon, N., Fox, J., Zhao, Y.
  2019
- **Lines in Euclidean Ramsey Theory** *DISCRETE & COMPUTATIONAL GEOMETRY*
  Conlon, D., Fox, J.
  2019; 61 (1): 218–25
- **Ramsey-Turan numbers for semi-algebraic graphs** *ELECTRONIC JOURNAL OF COMBINATORICS*
  Fox, J., Pach, J., Suk, A.
  2018; 25 (4)
- **A polynomial bound for the arithmetic k-cycle removal lemma in vector spaces** *JOURNAL OF COMBINATORIAL THEORY SERIES A*
  Fox, J., Lovasz, L., Sauermann, L.

2018; 160: 186–201

- **On Regularity Lemmas and their Algorithmic Applications (vol 26, pg 481, 2017)** *COMBINATORICS PROBABILITY & COMPUTING*
  Fox, J., Lovasz, L., Zhao, Y.
  2018; 27 (5): 851–52
- **Fast Property Testing and Metrics for Permutations**
  Fox, J., Wei, F.
  CAMBRIDGE UNIV PRESS.2018: 539–79
- **Hereditary quasirandomness without regularity** *MATHEMATICAL PROCEEDINGS OF THE CAMBRIDGE PHILOSOPHICAL SOCIETY*
  Conlon, D., Fox, J., Sudakov, B.
  2018; 164 (3): 385–99
- **Erdos-Ginzburg-Ziv constants by avoiding three-term arithmetic progressions** *ELECTRONIC JOURNAL OF COMBINATORICS*
  Fox, J., Sauermann, L.
  2018; 25 (2)
- **More Distinct Distances Under Local Conditions** *COMBINATORICA*
  Fox, J., Pach, J., Suk, A.
  2018; 38 (2): 501–9
- **A tight lower bound for Szemer,di's regularity lemma** *COMBINATORICA*
  Fox, J., Lovasz, L.
  2017; 37 (5): 911–51
- **On graphs decomposable into induced matchings of linear sizes** *BULLETIN OF THE LONDON MATHEMATICAL SOCIETY*
  Fox, J., Huang, H., Sudakov, B.
  2017; 49 (1): 45-57
- **Ordered Ramsey numbers** *JOURNAL OF COMBINATORIAL THEORY SERIES B*
  Conlon, D., Fox, J., Lee, C., Sudakov, B.
  2017; 122: 353-383
- **Permutation Property Testing under Different Metrics with Low Query Complexity**
  Fox, J., Wei, F., ACM
  ASSOC COMPUTING MACHINERY.2017: 1618–37
- **A tight bound for Green's arithmetic triangle removal lemma in vector spaces**
  Fox, J., Lovasz, L., ACM
  ASSOC COMPUTING MACHINERY.2017: 1612–17
- **Short proofs of some extremal results II** *JOURNAL OF COMBINATORIAL THEORY SERIES B*
  Conlon, D., Fox, J., Sudakov, B.
  2016; 121: 173-196
- **On the minimum degree of minimal Ramsey graphs for multiple colours** *JOURNAL OF COMBINATORIAL THEORY SERIES B*
  Fox, J., Grinshpun, A., Liebenau, A., Person, Y., Szabo, T.
  2016; 120: 64-82
- **A POLYNOMIAL REGULARITY LEMMA FOR SEMIALGEBRAIC HYPERGRAPHS AND ITS APPLICATIONS IN GEOMETRY AND PROPERTY TESTING** *SIAM JOURNAL ON COMPUTING*
  Fox, J., Pach, J., Suk, A.
  2016; 45 (6): 2199-2223
- **A SHORT PROOF OF THE MULTIDIMENSIONAL SZEMEREDI THEOREM IN THE PRIMES** *AMERICAN JOURNAL OF MATHEMATICS*
  Fox, J., Zhao, Y.
  2015; 137 (4): 1139-1145