

Stanford

Jacob Fox

Professor of Mathematics

Bio

ACADEMIC APPOINTMENTS

- Professor, Mathematics

Teaching

COURSES

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)

2022-23

- Modern Mathematics: Discrete Methods: MATH 63DM (Spr)
- Topics in Combinatorics: MATH 233C (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Nathan Tung

Postdoctoral Faculty Sponsor

Tara Abrishami

Doctoral Dissertation Advisor (AC)

Carl Schildkraut, Shengtong Zhang

Doctoral (Program)

Anqi Li, 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.
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 - **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*
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 - **Threshold Ramsey multiplicity for paths and even cycles** *EUROPEAN JOURNAL OF COMBINATORICS*
Conlon, D., Fox, J., Sudakov, B., Wei, F.
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 - **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.
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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.
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 - **The upper logarithmic density of monochromatic subset sums** *MATHEMATIKA*
Conlon, D., Fox, J., Huy Tuan Pham
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 - **Minimum degree and the graph removal lemma** *JOURNAL OF GRAPH THEORY*
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 - **Making an H -free graph k -colorable** *JOURNAL OF GRAPH THEORY*
Fox, J., Himwich, Z., Mani, N.
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- **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.
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- **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.
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- **Bounded VC-Dimension Implies the Schur-Erdos Conjecture** *COMBINATORICA*
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- **Clique minors in graphs with a forbidden subgraph** *RANDOM STRUCTURES & ALGORITHMS*
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- **ANTI-CONCENTRATION FOR SUBGRAPH COUNTS IN RANDOM GRAPHS** *ANNALS OF PROBABILITY*
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- **On the inducibility problem for random Cayley graphs of abelian groups with a few deleted vertices** *RANDOM STRUCTURES & ALGORITHMS*
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- **Popular Progression Differences in Vector Spaces** *INTERNATIONAL MATHEMATICS RESEARCH NOTICES*
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- **Independent sets in hypergraphs with a forbidden link** *PROCEEDINGS OF THE LONDON MATHEMATICAL SOCIETY*
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- **Acyclic subgraphs of tournaments with high chromatic number** *BULLETIN OF THE LONDON MATHEMATICAL SOCIETY*
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- **Extremal and Ramsey results on graph blowups** *JOURNAL OF COMBINATORICS*
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- **ON THE NUMBER OF CLIQUES IN GRAPHS WITH A FORBIDDEN SUBDIVISION OR IMMERSION** *SIAM JOURNAL ON DISCRETE MATHEMATICS*
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- **A NOTE ON THE ERDOS DISTINCT SUBSET SUMS PROBLEM** *SIAM JOURNAL ON DISCRETE MATHEMATICS*
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- **A NOTE ON THE ERDOS DISTINCT SUBSET SUMS PROBLEM** *SIAM JOURNAL ON DISCRETE MATHEMATICS*
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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.
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- **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*
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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*
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- **FINDING CLIQUES IN SOCIAL NETWORKS: A NEW DISTRIBUTION-FREE MODEL** *SIAM JOURNAL ON COMPUTING*
Fox, J., Roughgarden, T., Seshadhri, C., Wei, F., Wein, N.

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- **On Ramsey numbers of hedgehogs** *COMBINATORICS PROBABILITY & COMPUTING*
Fox, J., Li, R.
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- **A short proof of the canonical polynomial van der Waerden theorem** *COMPTES RENDUS MATHEMATIQUE*
Fox, J., Wigderson, Y., Zhao, Y.
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- **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*
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- **TOWER-TYPE BOUNDS FOR UNAVOIDABLE PATTERNS IN WORDS** *TRANSACTIONS OF THE AMERICAN MATHEMATICAL SOCIETY*
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2019
- **A fast new algorithm for weak graph regularity** *COMBINATORICS PROBABILITY & COMPUTING*
Fox, J., Lovász, L., Zhao, Y.
2019; 28 (5): 777–90
- **HYPERGRAPH CUTS ABOVE THE AVERAGE** *ISRAEL JOURNAL OF MATHEMATICS*
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- **Approximating the rectilinear crossing number** *COMPUTATIONAL GEOMETRY-THEORY AND APPLICATIONS*
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- **Erdős-Hajnal Conjecture for Graphs with Bounded VC-Dimension**
Fox, J., Pach, J., Suk, A.
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- **The removal lemma for tournaments** *JOURNAL OF COMBINATORIAL THEORY SERIES B*
Fox, J., Gishboliner, L., Shapira, A., Yuster, R.
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- **A proof of Tomescu's graph coloring conjecture** *JOURNAL OF COMBINATORIAL THEORY SERIES B*
Fox, J., He, X., Manners, F.
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- **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*
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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.
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- **Fast Property Testing and Metrics for Permutations**
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- **Erdos-Ginzburg-Ziv constants by avoiding three-term arithmetic progressions** *ELECTRONIC JOURNAL OF COMBINATORICS*
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- **More Distinct Distances Under Local Conditions** *COMBINATORICA*
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- **A tight lower bound for Szemer,di's regularity lemma** *COMBINATORICA*
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- **On graphs decomposable into induced matchings of linear sizes** *BULLETIN OF THE LONDON MATHEMATICAL SOCIETY*
Fox, J., Huang, H., Sudakov, B.
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- **Ordered Ramsey numbers** *JOURNAL OF COMBINATORIAL THEORY SERIES B*
Conlon, D., Fox, J., Lee, C., Sudakov, B.
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- **Permutation Property Testing under Different Metrics with Low Query Complexity**
Fox, J., Wei, F., ACM
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- **A tight bound for Green's arithmetic triangle removal lemma in vector spaces**
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- **Short proofs of some extremal results II** *JOURNAL OF COMBINATORIAL THEORY SERIES B*
Conlon, D., Fox, J., Sudakov, B.
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- **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.
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- **A POLYNOMIAL REGULARITY LEMMA FOR SEMIALGEBRAIC HYPERGRAPHS AND ITS APPLICATIONS IN GEOMETRY AND PROPERTY TESTING** *SIAM JOURNAL ON COMPUTING*
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- **A SHORT PROOF OF THE MULTIDIMENSIONAL SZEMEREDI THEOREM IN THE PRIMES** *AMERICAN JOURNAL OF MATHEMATICS*
Fox, J., Zhao, Y.

