

Stanford

Jacob Fox

Professor of Mathematics and, by courtesy, of Computer Science

Bio

ACADEMIC APPOINTMENTS

- Professor, Mathematics
- Professor (By courtesy), Computer Science

Teaching

COURSES

2021-22

- Graph Theory: MATH 107 (Spr)
- Math Discovery Lab: MATH 101 (Win)
- Topics in Combinatorics: MATH 233C (Spr)

2020-21

- Introduction to Combinatorics and Its Applications: MATH 108 (Sum)
- Math Discovery Lab: MATH 101 (Sum)
- Topics in Combinatorics: MATH 233C (Spr)

2019-20

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

2018-19

- Applied Number Theory and Field Theory: MATH 110 (Spr)
- Modern Mathematics: Discrete Methods: MATH 61DM (Aut)
- Topics in combinatorics: MATH 235A (Spr)

STANFORD ADVISEES

Doctoral Dissertation Advisor (AC)

Sammy Luo, Huy Pham, Cynthia Stoner, Yunkun Zhou

Doctoral Dissertation Co-Advisor (AC)

Max Xu

Publications

PUBLICATIONS

- **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
 - **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., Sauer mann, 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., Sauer mann, 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., Sauer mann, 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
 - **TOMESCU'S GRAPH COLORING CONJECTURE FOR 1-CONNECTED GRAPHS** *SIAM JOURNAL ON DISCRETE MATHEMATICS*
Engbers, J., Erey, A., Fox, J., He, X.

2021; 35 (2): 1478-1502

- **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
- **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., Saueremann, 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., Sauer mann, 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