

Matt Larson

CONTACT INFORMATION

6 Comstock Circle, Apt 418A
Stanford, CA USA 94305
Citizenship: United States

EDUCATION

Stanford University

PhD in Mathematics, 2019 – present
Advisors: June Huh and Ravi Vakil

Yale University

M.S. in Mathematics, B.S. in Mathematics, 2015 – 2019
Honors: Phi Beta Kappa, *magna cum laude*, distinction in the major

RESEARCH PAPERS

Rigidity matroids and linear algebraic matroids with applications to matrix completion and tensor codes (with J. Brakensiek, M. Dhar, J. Gao, and S. Gopi), submitted.

Straightening laws for Chow rings of matroids, submitted.

K-theoretic positivity for matroids (with C. Eur), submitted.

Kapranov degrees (with J. Brakensiek, C. Eur, and S. Li), submitted.

K-classes of delta-matroids and equivariant localization (with C. Eur and H. Spink), submitted.

Rank functions and invariants of delta-matroids, submitted.

The local motivic monodromy conjecture for simplicial nondegenerate singularities (with S. Payne and A. Stapledon), submitted.

The Bergman fan of a polymatroid (with C. Crowley, J. Huh, C. Simpson, and B. Wang), submitted.

Signed permutohedra, delta-matroids, and beyond (with C. Eur, A. Fink, and H. Spink), Proc. Lond. Math. Soc. 3 (2024). Paper No. e12592, 54pp.

Intersection theory of polymatroids (with C. Eur), Int. Math. Res. Not. IMRN. 5 (2024), 4207-4241.

K-rings of wonderful varieties and matroids (with S. Li, S. Payne, and N. Proudfoot), Adv. Math. 441 (2024). Paper No. 109554, 43pp.

Kazhdan–Lusztig polynomials of braid matroids (with L. Ferroni), Comm. Amer. Math. Soc. 4 (2024), 64-79.

Stellahedral geometry of matroids (with C. Eur and J. Huh), Forum Math. Pi 11 (2023). Paper No. e24, 48pp.

Resolutions of local face modules, functoriality, and vanishing of local h -vectors (with S. Payne and A. Stapledon), Algebr. Comb. 6 (2023), 1057-1072.

The Arakelov-Zhang pairing and Julia sets (with A. Bridy), Proc. Amer. Math. Soc. 149 (2021), 3699-3713.

Inverse problems for minimal complements and maximal supplements (with N. Alon and N. Kravitz), J. Number Theory 223 (2021), 307-324.

Unions of Random Trees and Applications (with A. James, D. Montealegre, and A. Salmon), Disc. Math. 344 (2021). Paper No. 112265, 13pp.

Power maps in finite groups, Integers 19 (2019). Paper No. A58, 15pp.

OTHER WRITING *Theorem of the base* (with R. Cheng, L. Ji, and N. Olander). *Stacks Project Expository Collection*, 163-193, London Math. Soc. Lecture Note Ser., 480, Cambridge Univ. Press, Cambridge, 2022

INVITED TALKS *The monodromy conjecture for simplicial nondegenerate singularities*, SNU algebraic geometry seminar, Seoul. (March 2024)

Cross-ratio degrees, University of Minnesota combinatorics seminar, online. (January 2024)

Kapranov degrees, Joint Math Meetings, San Francisco. (January 2024)

Cross-ratio degrees, Harvard-MIT combinatorics seminar, Cambridge. (November 2023)

Cross-ratio degrees, University of Oregon algebra seminar, Eugene. (October 2023)

Signed permutohedra, Combinatorial algebraic geometry ICERM event, Providence. (August 2023)

The Kähler package for projective bundle rings, Workshop on Lefschetz properties, Toronto. (May 2023)

Signed permutohedra, San Francisco State University algebraic geometry seminar, San Francisco. (May 2023)

Bergman fans of polymatroids, Fields matroid seminar, online. (April 2023)

The K-ring of $\overline{M}_{0,n}$, University of Michigan algebraic geometry seminar, Ann Arbor. (March 2023)

Invariants of delta-matroids, Algebraic aspects of matroid theory, BIRS. (March 2023)

The K-ring of $\overline{M}_{0,n}$, Cambridge algebraic geometry seminar, Cambridge. (February 2023)

Stellahedral geometry of matroids, KTH combinatorics seminar, online. (November 2022)

The local motivic monodromy conjecture for simplicial nondegenerate singularities, Brown algebraic geometry seminar, Providence. (November 2022)

Algebraic geometry of delta-matroids, Matroids Day, Madison. (November 2022)

The local motivic monodromy conjecture for simplicial nondegenerate singularities, Stanford algebraic geometry seminar, Stanford. (October 2022)

Stellahedral geometry of matroids, University of Western Ontario geometry and combinatorics seminar, online. (October 2022)

Algebraic geometry of delta-matroids, Fall Eastern Sectional Meeting, Amherst. (October 2022)

Nonvanishing criteria for local h -polynomials, Fall South Sectional Meeting, El Paso. (September 2022)

TEACHING

Stanford University

Spring 2020 Course assistant for Modules and Groups Representations

Fall 2019 Course assistant for Applied Linear Algebra

Yale University

Fall 2017 - Spring 2019 Peer tutor for Vector Calculus and Linear Algebra I and II

HONORS AND AWARDS

2023 ARCS Fellowship

2020 NDSEG Fellowship

2019 DeForest Prize

2018 Chess International Master

2018 Anthony Stanley Prize

2017 Benjamin F. Barge Prize

SERVICE

Stanford directed reading project mentor (2022-2024)

Organizer of Stanford student algebraic geometry seminar (2020-2023)

Contributor to the Stacks project

Member of Yale math department's undergraduate student advisory committee (2018-2019)

Reviewer for MathSciNet

Referee for Adv. Math., Algebr. Comb., Compos. Math., Discrete Math. Lett., Electron. J. Combin., Eur. J. Combin., Exp. Math., FPSAC, Int. Math. Res. Not. IMRN, J. Algebra, Manuscripta Math., MATRIX Ann., Selecta Math.