Contact

Email: mzubkov@berkeley.edu
Office: Evans 1045

Research Interests

Real Algebraic Geometry, Homogeneous Maps, Tensor Decompositions

Education

- *University of California, Berkeley*, 2018 - present
  PhD candidate in Mathematics
  Advisor: David Nadler
- *University of California, Irvine*, Class of 2018
  Bachelor of Science Honors in Mathematics
  Advisor: Vladimir Baranovsky

Preprints

- "Orientations of Uniform Oriented Lagrangian Matroid", Tobias Boege, Jesse Selover, and Maksym Zubkov, *preprint*
- "Topology of Totally Non-degenerate Symmetric Matrices", Maksym Zubkov, *preprint*

Publications

- "Likelihood Geometry of Determinantal Point Processes", Hannah Friedman, Bernd Sturmfels, and Maksym Zubkov, *to appear* in Algebraic Statistics
- "Chromatic Graph Homology for Brace Algebras", Vladimir Baranovsky and Maksym Zubkov, New York J. Math. 23 (2017) 1307–1319

Surveys

- "An Algebraic Case Study of Polynomial Neural Networks", Miles Bikenhus, Maximilian Wiesmann, and Maksym Zubkov

Honors and Awards

- Outstanding Graduate Student Instructor Award, University of California, Berkeley, 2020
- UROP Fellowship, University of California, Irvine, 2018
- SURP Fellowship, University of California, Irvine, 2017
- Honorary Presenter MAA at MathFest 2017 in Chicago, 2017

Presentations at Seminars

- "Geometry of Shallow Polynomial Neural Networks", UC Berkeley Computational Math Seminar, Fall 2023
- "Polynomial Neural Network", IMSI, Apprenticeship Week: Varieties from Statistics, Fall 2023
- "Topology of the Complement of Determinantal Variety", Leipzig University, Summer 2023
- "Applications of Riemann-Roch theorem", UC Berkeley Student Algebraic Curve Seminar, Fall 2021
- "Hochschild Homology and differential forms", UC Irvine Graduate Algebra Seminar, Spring 2021
- "Colored Jones Polynomials", UC Berkeley Student Topology Seminar, Fall 2019
- "Hyperbolic Dehn Surgeries", UC Berkeley Student Topology Seminar, Spring 2019
- "Chromatic Graph Homology for Brace Algebras", Joint Mathematics Meetings in San Diego, Winter 2018
- "Homotopy Algebras: A-infinity, E2, and Brace", UC Irvine Graduate Algebra Seminar, Spring 2017
- "Preliminaries on Knot Theory: Jones Polynomials and Vassiliev Invariant", UC Irvine Undergraduate Math Club, Spring 2017

Presentations at Conferences

- "Likelihood Geometry of Determinantal Point Processes", Joint Mathematics Meetings, San Francisco, January 2024
- "Chromatic Graph Homology for Brace Algebras",Joint Mathematics Meetings, San Diego, January 2018

Teaching Experience

- Lecturer, UC Berkeley:
  - Math 53: Multivariable Calculus, Summer 2019, Summer 2021
- Graduate Student Instructor, UC Berkeley:
  - Math 16A: Calculus, Spring 2023, Fall 2023
  - Math 16B: Calculus, Spring 2021, Fall 2021
  - Math 32: Precalculus, Spring 2020, Fall 2020
  - Math 53: Multivariable Calculus, Fall 2018, Spring 2019, Fall 2019
- Supplemental Math Instructor, UC Irvine:
  - Math 2D: Multivariable Calculus, Spring 2019, Winter 2018, Fall 2017, Spring 2017
  - Math 2B: Integral Calculus, Summer 2017
  - Math 2A: Differential Calculus, Summer 2017

Conferences Attended

- "Numbers in the Universe", Kyiv, Ukraine, August 2023
- "SIAM Conference on Applied Algebraic Geometry", Eindhoven, The Netherlands, July 2023
- "Algebraic and topological interplay of algebraic varieties" Jaca, Spain, June 2023
- "Let's get $\mathbb{R}$eal", Leipzig, Germany, June 2023
- "Joint Mathematics Meetings", San Diego, USA, January 2018
- "Field of Dreams Conference", St. Louis, November 2017
- "Interactions between Representation Theory and Algebraic Geometry", Chicago, USA, August 2017
- "MAA MathFest Conference", Chicago, July 2017

Skills

- Programing skills: Python, C/C++, Mathematica, Julia
- Languages: Fluent in Russian and Ukrainian

Service and Outreach

- MathForLife: Math Educational channel, YouTube, 2017 - present
- Math Circle Instructor, UC Irvine, 2017 - 2018
- Direct Reading Program, UC Berkeley, 2020, 2021