

YELENA MANDELSHTAM

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EDUCATION

University of California, Berkeley

August 2019 - May 2024

PhD in mathematics, advised by Bernd Sturmfels

Thesis title: Algebraic curves, Grassmannians, and integrable systems.

Stanford University

September 2015 - June 2019

B.S in Mathematics with Honors: thesis advised by Andras Vasy

Minor in Computer Science

APPOINTMENTS

University of California, Los Angeles

July 2024 - August 2024

UC President's Postdoctoral Fellow, mentor Pavel Galashin

Institute For Advanced Study

September 2024 - July 2025

Member

University of Michigan

August 2025 -

NSF postdoc and Parekh Research Assistant Professor, mentor Thomas Lam

RESEARCH

1. Combinatorics of $m = 1$ Grasstopes by Y. Mandelshtam, D. Pavlov, and Elizabeth Pratt, submitted. ([preprint](#))
2. Crossing the transcendental divide: from translation surfaces to algebraic curves by T.Çelik, S. Fairchild, and Y. Mandelshtam, *Experimental Mathematics* **34** (2023), 1-19. ([link](#))
3. Hirota Varieties and Rational Nodal Curves by C. Fevola and Y. Mandelshtam, *J. Symbolic Comput.* **120** (2024), 102239. ([link](#))
 - also presented at *MEGA 2022, Krakow*
4. KP Solitons from Tropical Limits by D. Agostini, C. Fevola, Y. Mandelshtam, and B. Sturmfels, *J. Symbolic Comput.* **114** (2023), 282-301. ([link](#))
 - Also presented at *MEGA 2021, Tromsø*
5. Pencils of Quadrics: Old and New by C. Fevola, Y. Mandelshtam, and B. Sturmfels, *Le Matematiche* **76**(2021), no. 2, 319-335. ([link](#))
6. Non Rigid Rank-One Infinite Measures on the Circle by H. Drillick, A. Espinosa - Dominguez, J. Jones-Baro, J. Leng, Y. Mandelshtam, and C.E. Silva, *Dynamical Systems* **38**(2023), no.2, 275-300. ([link](#))
7. On graphs representable by pattern-avoiding words by Y. Mandelshtam, *Discuss. Math. Graph Theory* **39** (2019), no. 2, 375-389. ([link](#))
8. Arrangements of Minors in the Positive Grassmannian and a Triangulation of the Hypersimplex by M. Farber and Y. Mandelshtam, *J. Algebraic Combin.* **47** (2018), no. 3, 473-504. ([link](#))

9. Arrangements of minors in the positive Grassmannian and a triangulation of the hypersimplex by M. Farber and Y. Mandelshtam, *Proceedings of FPSAC 2015*, 499-510, Discrete Math. Theor. Comput. Sci. Proc., *Assoc. Discrete Math. Theor. Comput. Sci.*, (2015). ([link](#))
10. When Learners Surpass their Models: Mathematical Modeling of Learning from an Inconsistent Source by Y. Mandelshtam and N. Komarova *Bull. Math. Biol.* **76** (2014), no. 9, 2198-2216. ([link](#))

OTHER PUBLICATIONS

- The Mathroscope: Small Adventures for a Curious Mind by A. Forero Cuervo, A. Mandelshtam, Y. Mandelshtam, and A. Pantano. Received first round of positive reviews from the MSRI Mathematical Circles Library.
 - A math circle book based on materials written for Math CEO, a math enrichment program serving an underprivileged Latino community in Southern California

HONORS AND ACTIVITIES

- NSF Mathematical Sciences Research Postdoctoral Fellowship, 2024
- UC President's Postdoctoral fellowship, 2024
- NSF graduate research fellowship, 2019
- Outstanding graduate student instructor award, 2023
- SMALL Research Experience for Undergraduates, Summer 2018
- Barry Goldwater Scholarship, 2017
- Two Sigma/Mary Sunseri award for outstanding performance by a woman in the Putnam Competition, 2016, 2017, 2018.
- Research Experience for Undergraduates at the University of Minnesota, Duluth, Summer 2016
- Research Science Institute at the Massachusetts Institute of Technology, Summer 2014

TEACHING EXPERIENCE/MENTORSHIP

- Graduate Student Instructor (GSI) at University of California at Berkeley:
 - Math 10B: Methods of Mathematics (Spring 2021)
 - Math 74: Transition to Upper Division Mathematics (Fall 2022)
- Mentor for [Yulia's Dream](#), a math enrichment program for high schoolers from Ukraine with the ultimate goal of completing a research project (May 2022 - current)
- Advisor for the University of Minnesota Duluth Mathematics REU (Summers of 2020, 2021, 2023)
- UC Berkeley [Directed Reading Program](#) mentor (Fall 2019 and Fall 2021)
- Counselor and TA for the abstract algebra program at the Stanford University Mathematics Camp (Summer 2017)
- TA at [Euler Circle](#), a mathematics institute for advanced high school students in the San Francisco Bay Area with classes taught at the college level by Simon Rubinstein-Salzedo. I was a TA for the following classes: Combinatorial Game Theory, Proofs from THE BOOK, Combinatorics, Mathematics of Euler, p -adic analysis, Ergodic Theory, Analytic Number Theory, Ring theory/algebraic geometry.

- Organizer and sole TA for the Irvine [Euler Camp](#) (Winter 2017)

SERVICE/LEADERSHIP

- Referee for Disc. Math. Graph Theory, Journal of Combinatorics, Special Matrices, and the Journal of Spectral Theory.
- Organizer of minisymposium on ‘Reconstruction of algebraic curves from analytic presentations’ at the [2023 SIAM Conference on Applied Algebraic Geometry](#)
- Organizer of the joint UCB & UBC Mathematical Computing Virtual Workshop (April 8, 2022)
- TA for the [ICERM Introductory Workshop: Combinatorial Algebraic Geometry](#)
- Contributor to [Tropical](#), the Macaulay2 package
- UC Berkeley [Math Graduate Student Association](#) officer (January 2020-Dec 2022)
- panel member on Berkeley MUSA’s panel for undergraduates applying to graduate school (October 2019) and MUSA’s REU panel (November 2022)

TALKS

key: \circ = seminar, \star = contributed conference, \dagger = invited conference, \bullet = colloquium

- \dagger *Combinatorics of $m = 1$ Grasstopes* - talk at the conference on Amplituhedra, Cluster algebras and Positive Geometry at Harvard (May 2024)
- *title TBD* - colloquium at Bar-Ilan University (March 3, 2024)
- \dagger *Grasstopes* - talk at the conference on Positive Geometry in Particle Physics and Cosmology at MPI MiS Leipzig (February 15, 2024)
- \circ *Crossing the transcendental divide: from translation surfaces to algebraic curves* - talk at the mini-workshop on “Model Theory meets Nonlinear Algebra” at UC Berkeley (November 27, 2023)
- \circ *Combinatorics of $m = 1$ Grasstopes* - talk at the Richard P. Stanley Seminar in Combinatorics at MIT (October 18, 2023)
- \circ *Combinatorics of $m = 1$ Grasstopes* - talk at the Brown Combinatorics Seminar (October 16, 2023)
- \circ *Combinatorics of $m = 1$ Grasstopes* - talk at the combinatorics forum at UCLA (October 5, 2023)
- \circ *Curves, degenerations, and Hirota varieties* - talk at the combinatorics seminar at the University of Michigan (September 15, 2023)
- \circ *Grassmann polytopes* - talk at the learning seminar in algebraic combinatorics at the University of Michigan (September 13, 2023)
- \star *Combinatorics of $m = 1$ Grasstopes* - talk at Number Theory and Combinatorics in Duluth: Honoring Joe Gallian and 45 years of the Duluth REU (August 2023)
- \dagger *KP solutions from nodal curves and the Schottky problem* - talk at the minisymposium on ‘Algebraic Curves, Integrable Systems, and Computer Algebra’ at the SIAM Conference on Applied Algebraic Geometry (July 10 2023)
- \circ *Grassmann Polytopes* - seminar talk at the Weizmann Institute of Science, Rehovot, Israel (May 16, 2023)
- \circ *Crossing the Transcendental Divide: From Translation Surfaces to Algebraic Curves* - talk at the algebra seminar at Georgia Tech (February 27, 2023)

- *Crossing the Transcendental Divide: From Translation Surfaces to Algebraic Curves* - talk at the University of Tübingen (January 18, 2023)
- † *The Transcendental Divide: From Translation Surfaces to Algebraic Curves* - talk in AMS special session on Riemann Surfaces at the Joint Mathematics Meetings (January 6, 2023)
- † *Pencils of quadrics, old and new* - talk in AMS Special Session on Applied Enumerative Geometry at the Joint Mathematics Meetings (January 5, 2023)
- *From Translation Surfaces to Algebraic Curves* - talk at the [Nonlinear Algebra Seminar](#) at UC Berkeley (December 6, 2022)
- ★ *From Translation Surfaces to Algebraic Curves* - poster at the conference on Combinatorial, Computational, and Applied Algebraic Geometry at University of Washington, Seattle (June 27, 2022)
- † *Curves, degenerations, and Hirota varieties* - talk at the [Workshop on Nonlinear Algebra and Combinatorics from Physics](#) at Harvard (April 29, 2022)
- *From Translation Surfaces to Algebraic Curves* - talk at Combinatorics & Nonlinear Algebra Day at Brown (April 26, 2022)
- ★ *Introduction to Macaulay2* - Mathematical computing virtual workshop by UCB and UBC (April 8, 2022)
- *Curves, degenerations, and Hirota varieties* - talk at the Seminar on Nonlinear Algebra, MPI MiS Leipzig (March 30, 2022)
- † *The Hirota Variety of a Rational Nodal Curve* - talk at the Leipzig Lectures on Theta, MPI MiS Leipzig (March 17, 2022)
- *Curves, degenerations, and Hirota varieties* - talk at the Seminar in Real & Complex Geometry at Tel-Aviv University (March 10, 2022)
- *Hurwitz spaces and Hurwitz numbers* - talk at the BLT learning Seminar on Plane Hurwitz numbers (February 11, 2022)
- *Hirota Varieties* - talk at the Algebra, Geometry, and Combinatorics Seminar at San Francisco State University (September 29, 2021)
- *Hirota Varieties* - talk at the Seminar on Nonlinear Algebra, MPI MiS Leipzig (July 23, 2021)
- † *KP Solitons From Tropical Limits* - 50 minute Invited talk at the Mathematical Congress of the Americas, special session on Mathematical-Physical Aspects of Toric and Tropical Geometry (July 12, 2021)
- *Applications of Nonlinear Algebra to Integrable Systems* - seminar on Nonlinear Algebra and Applications (April 22, 2021)
- *Tropical Hypersurfaces* - [Learning seminar on Tropical Geometry](#) (November 27, 2020)
- *Implicitization and Group Theory* - [Learning seminar on Tropical Geometry](#) (September 25, 2020)
- *Two-dimensional Linear Spaces of Symmetric Matrices* - Online Session lead jointly with Claudia Fevola and Bernd Sturmfels (July 27, 2020)
- *Rank-One Transformations* - guest lecture at Euler Circle, Ergodic Theory class (March 13, 2019)
- ★ *Non-Rigid Rank-One Infinite Measures on the Circle* - talk at Joint Mathematics Meetings (January 16, 2019)

- ★ *On graphs representable by pattern-avoiding words* - talk at Joint Mathematics Meetings (January 7, 2017)
- *On graphs representable by pattern-avoiding words* - talk at combinatorics seminar, University of Haifa (January 1, 2017)

SKILLS

- Proficient in Macaulay2, Python, Sage, Maple, Matlab, Java, C, C++
- Basic knowledge of Julia, HTML, CSS, Javascript
- Native English and Russian speaker, conversational in Spanish, learning German