

Yulia Alexandr

Updated April 29, 2022

Email: yulia@math.berkeley.edu

Office: Evans 1044

Research interests algebraic statistics, nonlinear algebra, convex geometry

Education **University of California, Berkeley** 2019–present
PhD in Mathematics
Advisors: Bernd Sturmfels and Serkan Hoşten

Wesleyan University Class of 2019
BA in Mathematics with High Honors
Advisor: Karen Collins
Thesis: *Combinatorial Nullstellensatz: Various Proofs, Extensions & Applications*

Awards and fellowships NSF Graduate Research Fellowship 2020
Chancellor’s Graduate Fellowship (UC Berkeley) 2019
Phi Beta Kappa (Connecticut Gamma Chapter) 2019
Rice Prize (Wesleyan University) 2019
awarded to a senior for excellence in mathematics
Rae Shortt Prize (Wesleyan University) 2018
awarded to a junior for excellence in mathematics

Publications **Logarithmic Voronoi cells for Gaussian models**
with Serkan Hoşten.
Submitted. Available on [arXiv](#), 2022.

Logarithmic Voronoi polytopes for discrete linear models
Submitted. Available on [arXiv](#), 2021.

Logarithmic Voronoi cells
with Alexander Heaton.
Published in *Algebraic Statistics* **12** (2021), no. 1, 75-95.

Computing a logarithmic Voronoi cell
with Alexander Heaton and Sascha Timme.
Published online at [HomotopyContinuation.jl](#), 2019.

Recovering Conductances of Resistor Networks in a Punctured Disk
with Brian Burks, Sunita Chepuri, and Patricia Commins.
Under revision. Available on [arXiv](#), 2019.

Deformations of the Weyl Character Formula for $SO(2n + 1, \mathbb{C})$ via Ice Models

with P. Commins, A. Embry, S. Frank, Y. Li, and A. Vetter.
Available on *arXiv*, 2018.

Growth of Meandric Numbers

with Kayla Cummings and Edgar Jaramillo Rodriguez.
Transcription in *DIMACS-DIMATIA REU booklet (pp. 33-36)*, 2017.

Teaching

Directed reading program mentor (UC Berkeley) Spring 2020
Topics: algebraic combinatorics and graph theory

Teaching assistant (Wesleyan University) Fall 2018
MATH 231: Probability Theory
Instructor: Han Li

Teaching assistant (Wesleyan University) Spring 2018
MATH 274: Graph Theory
Instructor: Karen Collins

Teaching assistant (Wesleyan University) Fall 2017
MATH 231: Probability Theory
Instructor: Felipe Ramírez

Talks

Logarithmic Voronoi polytopes for Gaussian models
Effective Methods in Algebraic Geometry in Kraków, Poland June 2022
Applied CATS seminar at KTH May 2022

Logarithmic Voronoi polytopes for discrete linear models
Algebraic Statistics at the University of Hawai'i at Manoa May 2022
AMS Spring Central Sectional Meeting at Purdue University March 2022

Introduction to SAGE
Mathematical computing virtual workshop by UCB and UBC Apr 2022

Logarithmic Voronoi Cells
SFSU Algebra, Geometry, and Combinatorics Seminar October 2021
Berkeley Combinatorics Research Seminar April 2021
Nonlinear Algebra Seminar Online April 2020

Linear Spaces and Grassmannians
Max Planck Institute for Mathematics in the Sciences (Leipzig) June 2019

Caratheodory, Radon, and Helly theorems in convex geometry
Minicourse on Convex Geometry at MPI MiS (Leipzig, Germany) July 2021

<i>Ice Models for Types A and B</i> (two talks)	
Berkeley Combinatorics Reading Seminar	October 2019

<i>Combinatorial Nullstellensatz</i>	
Wesleyan University Thesis Defense	January 2019

<i>Visibility Graphs of Staircase Polygons</i>	
Berkeley Undergraduate Number Theory Conference	April 2018

Skills

Programming

Macaulay2, SAGE, Mathematica, Singular, C, C++, \LaTeX , OCaml, SML, HTML, Python

Languages

English (fluent), Russian (native), Hebrew (intermediate)

Service and outreach

STEMinist club, invited speaker, <i>Berkeley High School</i>	Nov 2021
Noetherian Ring, member, <i>UC Berkeley</i>	2019–present
Math Club graduate school panel, panelist, <i>Wesleyan University</i>	2020
Directed reading program (DRP), mentor, <i>UC Berkeley</i>	2020
Unbounded Representation (URep), officer, <i>UC Berkeley</i>	2019–2020