

Yulia Alexandr

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Office: Evans 1045

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

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| NSF Graduate Research Fellowship | 2020 |
| Chancellor’s Graduate Fellowship (UC Berkeley) | 2019 |
| Phi Beta Kappa (Connecticut Gamma Chapter) | 2019 |
| Rice Prize (Wesleyan University) | 2019 |
| <i>awarded to a senior for excellence in mathematics</i> | |
| Rae Shortt Prize (Wesleyan University) | 2018 |
| <i>awarded to a junior for excellence in mathematics</i> | |
| Twin Cities REU at the University of Minnesota | 2018 |
| DIMACS REU at Rutgers University and Charles University (Prague) | 2017 |
| Treespace REU at Lehman College | 2016 |

Publications **Logarithmic Voronoi cells for Gaussian models**
with Serkan Hoşten.
Presented at MEGA 2022 in Kraków, 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

Graduate student instructor (UC Berkeley)

MATH 54: Linear algebra and differential equations Fall 2022

Directed reading program mentor (UC Berkeley)

Topics: algebraic combinatorics and graph theory Spring 2020

Teaching assistant (Wesleyan University)

MATH 231: Probability theory Fall 2018

MATH 274: Graph theory Spring 2018

MATH 231: Probability theory Fall 2017

Talks

Decomposable context-specific models

CEG Workshop in Warwick (virtual) September 2022

Logarithmic Voronoi polytopes

Mathematical Methods in Data Analysis in Tirana, Albania July 2022

Combinatorics of logarithmic Voronoi cells

Algebra and Geometry seminar at University of Magdeburg July 2022

Logarithmic Voronoi cells for Gaussian models

Effective Methods in Algebraic Geometry in Kraków, Poland June 2022

Applied CATS seminar at KTH (virtual) 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 (virtual) 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

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| Berkeley Combinatorics Research Seminar (virtual) | April 2021 |
| Nonlinear Algebra Seminar Online (virtual) | April 2020 |

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| <i>Linear Spaces and Grassmannians</i> | |
| Nonlinear Algebra course at MPI MiS (Leipzig, Germany) | June 2019 |

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

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

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

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| <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

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| 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 |