Yulia Alexandr

University of California, Berkeley
826 Evans Hall
✉ yulia@math.berkeley.edu

Research Interests

combinatorics, nonlinear algebra, commutative algebra, graph theory

Education

2019–	**University of California, Berkeley**, *Ph.D. in Mathematics (expected).*
Class of 2019	**Wesleyan University**, *B.A. in Mathematics (High Honors).*
	Honors Thesis: "Combinatorial Nullstellensatz: Various Proofs, Extensions and Applications"
	Advised by Karen L. Collins

Academic & Research Experience

Jun–Jul 2019	**Max Planck Institute for Mathematics in the Sciences**, *Visitor.*
	Leipzig, Germany
	Supervised by Bernd Sturmfels
	Project: *Logarithmic Voronoi Diagrams* (ongoing collaboration with Alexander Heaton)
Jun–Aug 2018	**Twin Cities REU**, *NSF Student Researcher.*
	University of Minnesota, MN
	Supervised by Benjamin Brubaker and Pavlo Pylyavskyy
	Projects: *Ice Models and Classical Groups* and *Resistor Networks in a Punctured Disk*
May–Aug 2017	**DIMACS/DIMATIA REU**, *NSF Student Researcher.*
	Rutgers University, NJ and Charles University, the Czech Republic
	Supervised by James Abello
	Project: *Visibility Graphs of Staircase Polygons*
Sep 2016– Feb 2017	**Treespace REU**, *NSF Student Researcher.*
	Lehman College (CUNY), NY
	Mentored by Katherine St. John and Megan Owen
	Project: *Recovering the Closure of Rooted Triples*

Teaching

Fall 2018	**Probability Theory**, *Teaching Assistant.*
	Instructor: Han Li (Wesleyan University)
Spring 2018	**Graph Theory**, *Teaching Assistant.*
	Instructor: Karen L. Collins (Wesleyan University)
Fall 2017	**Probability Theory**, *Teaching Assistant.*
	Instructor: Felipe Ramírez (Wesleyan University)

Talks & Lectures

Oct 2019	*Ice Models for Type A* (two talks)
	Berkeley Combinatorics Reading Seminar
Jun 2019	*Linear Spaces and Grassmannians*
	Max Planck Institute for Mathematics in the Sciences (Leipzig, Germany)
Jan 2019	*Combinatorial Nullstellensatz: Various Proofs, Extensions and Applications*
	Wesleyan University Thesis Defense
Apr 2018	*Visibility Graphs of Staircase Polygons*
	Berkeley Undergraduate Number Theory Conference

Awards & Fellowships

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

Workshops & Conferences Attended

2019	Workshop on Classical and Quantum Integrable Systems at Euler International Mathematical Institute in Saint Petersburg, Russia;
	Summer School on Randomness and Learning in Non-Linear Algebra at MPI Leipzig;
	Workshop on Applied Algebra at TU Braunschweig, Germany;
	Discrete Math Day at U Mass, Amherst;
2017	GROW Conference at Northwestern University;
	WIMIN (Women in Math) at Smith College;
	DIMATIA Program at Charles University, the Czech Republic;
	Midsummer Combinatorial Workshop at Charles University, the Czech Republic;
	SAMSI Optimization Workshop.

Languages

Programming	C++, LaTeX, OCaml, SML, HTML, Python
Spoken	Russian (native), English (fluent), Hebrew (beginner)

Publications and Preprints

[1] with Alex Heaton and Sascha Timme. *Computing a Logarithmic Voronoi Cell.* Published on the HomotopyContinuation.jl website, 2019.

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[2] with Brian Burks, Sunita Chepuri, and Patricia Commins. *Recovering Conductances of Resistor Networks in a Punctured Disk.* Submitted, 2019. arXiv: 1812.01517

[3] with Patricia Commins, Alexandra Embry, Sylvia Frank, Yutong Li, and Alexander Vetter. *Deformations of the Weyl Character Formula for $SO(2n+1, \mathbb{C})$ via Ice Models.* In preparation, 2018. arXiv: 1811.11879

[4] with Kayla Cummings and Edgar Jaramillo Rodriguez. *Growth of Meandric Numbers.* Transcription in DIMACS-DIMATIA REU booklet (pp. 33-36), 2017.