Yulia Alexandr

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Research Interests

graph theory, combinatorics, commutative algebra

Education

2019–	**University of California, Berkeley**, *Chancellor's Doctorate Fellow (Mathematics)*. Berkeley, CA
Class of 2019	**Wesleyan University**, *Bachelor of Arts (High Honors in Mathematics)*. Middletown, CT 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)
Jan–May 2019	**Wesleyan University**, *NSF Research Fellow*. Middletown, CT Supervised by Cameron Donnay Hill Project: *On 3-DAP of Combinatorial Lascar Expansions*
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*. Wesleyan University, CT Instructor: Han Li
Spring 2018	**Graph Theory**, *Teaching Assistant*. Wesleyan University, CT Instructor: Karen L. Collins
Fall 2017	**Probability Theory**, *Teaching Assistant*. Wesleyan University, CT Instructor: Felipe Ramírez

Talks & Lectures

June 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

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

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

[2] 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

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