

Yulia Alexandr

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

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 **Max Planck Institute for Mathematics in the Sciences**, *Visitor*.

2019 Leipzig, Germany
Supervised by Bernd Sturmfels
Project: *Logarithmic Voronoi Diagrams* (ongoing collaboration with Alexander Heaton)

Jan–May **Wesleyan University**, *NSF Research Fellow*.

2019 Middletown, CT
Supervised by Cameron Donnay Hill
Project: *On 3-DAP of Combinatorial Lascar Expansions*

Jun–Aug **Twin Cities REU**, *NSF Student Researcher*.

2018 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 **DIMACS/DIMATIA REU**, *NSF Student Researcher*.

2017 Rutgers University, NJ and Charles University, the Czech Republic
Supervised by James Abello
Project: *Visibility Graphs of Staircase Polygons*

Sep 2016– **Treespace REU**, *NSF Student Researcher*.

Feb 2017 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

- 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

- 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 Alex Heaton and Sascha Timme. *Computing a Logarithmic Voronoi Cell*. Published on the [HomotopyContinuation.jl](https://homotopycontinuation.jl) website, 2019.
- [2] with Brian Burks, Sunita Chepuri, and Patricia Commins. *Recovering Conductances of Resistor Networks in a Punctured Disk*. Submitted, 2019. arXiv: [1812.01517](https://arxiv.org/abs/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](https://arxiv.org/abs/1811.11879)
- [4] with Kayla Cummings and Edgar Jaramillo Rodriguez. *Growth of Meandric Numbers*. Transcription in DIMACS-DIMATIA REU booklet (pp. 33-36), 2017.