

ZOE WELLNER

zwellner@andrew.cmu.edu \diamond (315)247-2581

EDUCATION

- Carnegie Mellon University (Pittsburgh, PA)** *2018-2023 (projected)*
PhD in Algorithms Combinatorics and Optimization
Advisor: Florian Frick
- Cornell University (Ithaca, NY)** *2014-2018*
Magna Cum Laude BA in Mathematics

PUBLICATIONS

1. **New Families of Simplicial Filtration Functors.** Samir Chowdhury, Nathaniel Clause, Facundo Memoli, Jose Angel Sanchez, Zoe Wellner. (Dec 2017) arXiv:1608.04279, Topology and its Applications 279 (2020) 107254
2. **Flow Polytopes of Partitions.** Karola Mészáros, Connor Simpson, Zoe Wellner. (Jul 2017) arXiv:1608.04279, Electronic Journal of Combinatorics vol. 26 no. 1 (2019)
3. **Fair division and generalizations of Sperner and KKM-type results.** Megumi Asada, Florian Frick, Vivek Pisharody, Maxwell Poley, David Stoner, Ling Hei Tsang, Zoe Wellner. (Jan 2017) arXiv:1701.04955, SIAM Journal of Discrete Math 32(1), 591-610 (2018)
4. **On Reay's relaxed Tverberg conjecture and generalizations of Conway's thrackle conjecture.** Megumi Asada, Ryan Chen, Florian Frick, Frederick Huang, Maxwell Poley, David Stoner, Ling Hei Tsang, Zoe Wellner. (Aug 2016) arXiv:1608.04279, Electronic J. Combin. 25 (3), P3.16 (2018)

TEACHING

- Graduate Teaching Fellowship** August 2018 - Present
Teaching Assistant and Grader *Carnegie Mellon University (Pittsburgh, PA)*
- Teaching Assistant for 21-241 (Matrices and Linear Algebra) and 21-127 (Concepts of Mathematics)
 - Grader for 21-752 (Algebraic Topology), 21-301 (Combinatorics) and 21-484 (Graph Theory)

- Canada/USA Mathcamp** Summer 2021
Mentor *Virtual Program*
- Developed curriculum for five different courses
 - Helped run social events and general events around camp
 - Ran four different student directed projects

- Hefei Ivy Summer Program** June 2018 - August 2018
Math Counselor and Program Developer *Hefei Ivy Preparatory School (Hefei, China)*
- Developed a ten day curriculum for middle school students to learn selected topics from linear algebra, abstract algebra, combinatorics, geometry and topology in an approachable way,
 - Developed an additional, activity focused, ten day curriculum that gave other students within the program an abbreviated exposure to some of the topics listed above.
 - Ran a puzzle hunt for all students in the program
 - Assisted other instructors, coordinated field trips, organized recreational activities.

Math Support Center, Cornell University*Tutor (Spring 2016), Head Tutor (Fall 2016- Spring 2018)*

January 2016 - May 2018

Cornell University (Ithaca, NY)

- The math support center is for walk in questions of any type. The overall goal is to provide consistent help focusing but not limited to introductory math classes
- Head tutors create the shift schedule, resolve conflicts or issues in tutor behavior, and arrange shift replacements when necessary.

Private Tutoring*Algebra through Calculus*

February 2017 - May 2018

Cornell University (Ithaca, NY)

- Tutored Ithaca High School students and Boynton middle school students as a supplement to their math classes

SERVICE

PA ARML*Assistant Coach*

August 2020 - Present

Carnegie Mellon University (Pittsburgh, PA)

- Lectured on basic number theory and polynomial manipulations with middle and high school students.
- Prepared relevant competition problems and exercises to supplement lecture material and went over these exercises after a problem session.

Mathematics Graduate Student Seminar*Organizer*

January 2019- Present

Carnegie Mellon University (Pittsburgh, PA)

- Found speakers for weekly seminar and coordinated weekly email and catering.

Association for Women in Mathematics Chapter at Carnegie Mellon October 2018- Present*Co-Founder and Co-President**Carnegie Mellon University (Pittsburgh, PA)*

- Organized a keynote address by Professor Ami Radunskaya followed by a panel on diversity and women in mathematics (Attendance: about 100 people).
- Organized weekly teas
- Organized career and development panels

Undergraduate Math Club*Vice President, Treasurer and Event Coordinator*

March 2016-May 2018

Cornell University (Ithaca, NY)

- Organized talks and events such as the math bake off, the pi(e) eating contest, and a panel on imposter syndrome.
- Budgetary and organizational tasks

ZigZag Mentoring*Founder and Mentor*

October 2017- May 2018

Cornell University (Ithaca, NY)

- Started an organization to connect underclassmen prospective female math majors with a pair of mentors, one an undergraduate senior or junior female math major and the other a female graduate student.

AP Calculus Workshop*Lectured*

June 2017

Fayetteville Manlius High School (Manlius, NY)

- Spoke to high school students on what math at a university level is like and why math is an interesting and active research field.

TALKS AND PRESENTATIONS

Introduction to Topological Data Analysis Carnegie Mellon Graduate Student Seminar October 2018

Volumes of Flow Polytopes Poster at JMM 2018

Introduction to Topological Data Analysis Cornell Math Club August 2017

Generalizations of Conway's Thrackle Conjecture Poster at JMM 2017

Eating Cake and Keeping Friends: The Topology and Combinatorics of Fair division at WIMIN 2016

On Eating Cake and Keeping Friends Cornell Math Club October 2016

SKILLS

Computer Languages Matlab, Java, Python

Software Tools Sage, \LaTeX , Tikz, Mathematica, Git, Macaulay2

Fluent in English and French