

# KAITLIN BRUEGGE

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## EDUCATION

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**University of Kentucky**, Lexington, KY

- Ph.D., Mathematics *expected May 2023*
- M.A., Mathematics *December 2020*

**Xavier University**, Cincinnati, OH

- B.S., Summa cum Laude, Mathematics *May 2018*
- B.A., Summa cum Laude, Computer Science *May 2018*

## RESEARCH

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**Research Interests:** Algebraic and Geometric Combinatorics, Graph Theory

### Publications

- “Facets of Symmetric Edge Polytopes for Graphs with Few Edges,” with Benjamin Braun, arXiv:2201.13303 (submitted).
- “Triangulations of Flow Polytopes, Ample Framings, and Gentle Algebras”, with Matias von Bell, Benjamin Braun, Derek Hanely, Zachery Peterson, Khrystyna Serhiyenko, and Martha Yip, arXiv:2203.01896 (submitted).
- “Facets of Random Symmetric Edge Polytopes, Degree Sequences, and Clustering”, with Benjamin Braun and Matthew Kahle, arXiv:2204.07239 (submitted).
- “Alexander Duals of Symmetric Simplicial Complexes and Stanley-Reisner Ideals,” with Ayah Almousa, Martina Juhnke-Kubitzke, Uwe Nagel, and Sasha Pevzner, arXiv:2209.14132 (submitted).

## INVITED TALKS

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- October 14, 2022, *Counting Facets of Symmetric Edge Polytopes*, University of Minnesota Combinatorics Seminar
- October 13, 2022, *Lattice Polytopes and their Properties*, University of Minnesota Student Combinatorics and Algebra Seminar
- September 21, 2022, *Counting Facets of Symmetric Edge Polytopes*, Graduate Online Combinatorics Colloquium
- September 17, 2022, *Counting Facets of Symmetric Edge Polytopes*, AMS Central Sectional Meeting
- May 14, 2022, *Facets of Symmetric Edge Polytopes*, AMS Western Sectional Meeting

## CONTRIBUTED TALKS

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- January 5, 2023, *Counting Facets of Symmetric Edge Polytopes*, JMM Contributed Paper Session in Geometry
- February 25, 2022, *Facets of Symmetric Edge Polytopes*, 41st Annual WKU Mathematics Symposium
- February 21, 2022, *Facets of Symmetric Edge Polytopes*, University of Kentucky Discrete CATS Seminar
- May 20, 2021, *Symmetric Edge Polytopes, Graph Complexity, and Random Graph Sampling*, University of Kentucky Qualifying Examination
- September 21, 2020, *Random Monomial Ideals*, University of Kentucky Masters Examination
- August 10 2017, *Partially Restricted Vertex and Edge Connectivity*, Ohio State University Young Mathematicians Conference
- March 2017, *Political Opinion and Social Media: A Mathematical Model*, MAA Ohio Section Meeting

## AWARDS AND HONORS

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### University of Kentucky

Carl Lee Excellence in Teaching Award

Spring 2022

Max Steckler Fellowship

Fall 2018, Fall 2020

## TEACHING AND RELEVANT EXPERIENCE

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### University of Kentucky

#### Primary Instructor

- MA 202, Math Problem Solving for Elementary Teachers, *Spring 2023, Spring 2022*
- MA 111, Intro to Contemporary Math with Co-Requisite Instruction, *Fall 2022*
- MA 109/A&S 122, College Algebra with Co-Requisite Instruction, *Fall 2021*
- MA 201, Math for Elementary Teachers, *Spring 2021*
- MA 114, Calculus II, *Summer 2020*
- MA 113, Calculus I, *Summer 2019*

#### Recitation Leader

- MA 213, Calculus III, *Fall 2020*
- MA 110, Algebra and Trigonometry for Calculus, *Spring 2020, Fall 2018*
- MA 162, Finite Math and Its Applications, *Fall 2019*
- MA 114/194, Calculus II, *Spring 2019*

Assistant Course Coordinator- MA 201/202

Spring 2023

Teaching Assistant- FastTrack Program

Summer 2021

### Xavier University

Grader—Ordinary Differential Equations

Spring 2018

Advanced Mathematics Tutor- Xavier University Math Lab

Fall 2016-Spring 2018

## SERVICE

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### Graduate Online Combinatorics Colloquium

Colloquium Organizer

Fall 2022-Spring 2023

### University of Kentucky Department of Mathematics

Co-Chair of Graduate Student Council

Fall 2022-Spring 2023

Association for Women in Mathematics Officer

Fall 2020-Spring 2021

UK Math Graduate Student Council Peer Mentor

Fall 2019-Spring 2022

“Teaching on Zoom” Workshop Leader

August 2020

## WORKSHOPS AND DEVELOPMENT

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### MSRI Summer School “*Topological Methods for the Discrete Mathematician*”

Summer 2022

This two-week, in-person school presented ways that topological results and strategies can be used to solve problems in combinatorics and geometry.

### Research Encounters in Algebraic and Combinatorial Topics

Spring 2021

This two-week, online workshop introduced graduate students to several open problems related to algebra and combinatorics. This has developed into an ongoing working group.