

# JULIET AYGUN

ja742 at cornell dot edu  
Ithaca, New York, USA

## EDUCATION

---

### Cornell University

Ph.D. in Mathematics  
Advisor: Ben Dozier

*Fall 2022 - Spring 2028*

### Purdue University–West Lafayette

B.S. in Mathematics Honors  
Advisors: Jeremy Miller and Manuel Rivera

*Fall 2018 - Spring 2022*

## RESEARCH INTERESTS

---

Flat surfaces, Teichmüller theory, hyperbolic geometry, low-dimensional topology.

## PAPERS

---

- 1) *Components of strata of  $k$ -differentials and their orbit closures* with P. Apisa, In preparation.
- 2) *Counting geodesics on prime-order  $k$ -differentials*, arXiv:2506.24084.
- 3) *Realizing pairs of multicurves as cylinders on translation surfaces* with J. Barkdoll, A. Calderon, J. Lorman, T. Sandstrom, Algebraic & Geometric Topology (2025).
- 4) *A degree theorem for the simplicial closure of Auter space* with J. Miller, Homology, Homotopy, and Applications (2024).

## TALKS

---

*Strata of translation surfaces*, Cornell Topology Festival, May 2026

*The classification of components of strata of  $k$ -differentials*, AMS Sectional Meeting at Boston College, March 2026

*The classification of components of strata of  $k$ -differentials*, UW-Madison Group Actions and Dynamics seminar, March 2026

*Counting geodesics on prime-order  $k$ -differentials*, Binghamton Geometry and Topology seminar, January 2026

*Counting cylinders on  $(1/k)$ -translation surfaces*, BUGCAT – Binghamton, November 2025

*Counting geodesics on prime-order  $k$ -differentials*, Rice Analysis Seminar, October 2025

*Counting geodesics on prime-order  $k$ -differentials*, CUNY Complex analysis and dynamics seminar – NYC, September 2025.

*Realizing Pairs of Multicurves as Cylinders on Translation Surfaces*, Graduate Student Conference in Algebra, Geometry, and Topology – Temple, May 2024.

*General flat structures on Riemann surfaces*, BUGCAT, November 2023.

*Realizing Pairs of Multicurves as Cylinders on Translation Surfaces*, University of Buffalo Graduate Student Seminar, March 2023.

*Cylinder Configurations on Flat Surfaces*, MAA Mathfest Undergraduate Student Paper Session, August 2021.

*Cylinder Configurations on Flat Surfaces*, REU Virtual Conference 2021 - UCONN (Virtual), July 2021.

*The Riemannian Geometry of Almost Abelian Groups*, Young Mathematician Conference - Ohio State University (Virtual), August 2020.

*The Riemannian Geometry of Almost Abelian Groups*, SURMC - Stanford University (Virtual), August 2020.

*The Riemannian Geometry of Almost Abelian Groups*, Southern California Math REU Conference - Occidental Conference (Virtual), August 2020.

## AWARDS

---

**Eleanor York Award** December 2026

*Cornell Math Dept.*

For research and academic achievements.

**Simons Dissertation Fellowship in Mathematics** August 2025

*Simons Foundation*

Awarded \$38,400 for year 4 and 5 of Ph.D.

**AWM Emerging Mathematicians Travel Grant** January 2025

*Cornell AWM*

Awarded \$700

**Outstanding Senior in the College of Science** April 2022

*Purdue Department of Mathematics*

**Senior Achievement Award in Mathematics** April 2022

*Purdue Department of Mathematics*

**Cornell Fellow** March 2022

*Cornell Department of Mathematics*

**Eugene V. Schenkman Award** April 2021

*Purdue Department of Mathematics*

Most outstanding algebra student in the 2020-2021 academic year.

**Leonard D. & Anna W. Berkovitz Scholar** April 2021

*Purdue Department of Mathematics*

Awarded \$3,200 for academic achievement in mathematics.

**Purdue Undergraduate Research Conference 3rd Place** April 2020

*Krannert School of Management*

*Predicting Postoperative Delirium: A Machine Learning Approach* awarded 3rd place at Purdue Undergraduate Research Conference 2020.

**D.U.R.I. Scholar** August 2019

*Purdue University*

Chosen as 1/33 to be awarded a scholarship to do research for Discovery Park.

**Dean's List and Semester Honors**

2018-2022

*Purdue University*

All eight semesters.

**OUTREACH AND INVOLVEMENT**

---

**Co-organizer for Directed Reading Project**

Spring 2025-Spring 2026

*Cornell University***Co-organizer for Cornell Topology Festival**

Spring 2026

*Cornell University***Directed Reading Project Mentor**

Fall 2023 and Fall 2024

*Cornell University*

Ran a DRP in flat geometry (2023) and on A Primer on Mapping Class Groups (2024) with undergraduate students.

**Co-organizer for Olivetti Club**

Spring 2024

*Cornell University*

Co-organize Cornell math's weekly graduate student seminar.

**MATH 1910 Liaison**

Spring 2024

*Cornell University*

Communicate with Cornell's AEW facilitators on ways to constantly improve students' learning processes in MATH 1910.

**Cornell AWM Graduate Student Mentor**

2022-Present

*Cornell University***Julia Robinson Math Festival**

March 2023

*Cornell University*

Ran math activities for elementary school students to help spark interest in mathematics.

**Cornell Undergraduate Research Board Mentor**

Fall 2022

*Cornell University*

Mentoring undergraduate students on the graduate school application process and on preparation for graduate school.

**Mathematics Tutor**

2018-Present

*Purdue University*

Tutor students weekly in calculus, linear algebra, real analysis, abstract algebra, and ordinary differential equations.

**TEACHING**

---

Fall 2025 - Spring 2026: Teaching assistant for MATH 1106: Calculus for the Life Sciences.

Fall 2023-Fall 2024: Teaching assistant for MATH 1910: Calculus for Engineers.