Faye Jackson

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**Education**
- University of Michigan (UM)
  - B.S. in Mathematics. Expected May 2023.

**Publications**
- **Unexpected Biases between Congruence Classes for Parts in $k$-indivisible Partitions**, with Misheel Otgonbayar.
  - Part of the 2022 UVA REU.
  - *Journal of Number Theory* 248, 310-342. 2023.
  - https://doi.org/10.1016/j.jnt.2023.01.006. PDF

- **Distinct Angle Problems and Variants**, with Henry L. Fleischmann, Hongyi B. Hu, Steven J. Miller, Eyvindur A. Palsson, Ethan Pesikoff, and Charles Wolf.
  - Part of the 2021 SMALL REU.
  - *Discrete and Computational Geometry*. 2023.
  - https://doi.org/10.1007/s00454-022-00466-w. PDF

- **The Bergman Game**, with Benjamin Baily, Justine Dell, Irfan Durmić, Henry Fleischmann, Isaac Mijares, Steven J. Miller, Ethan Pesikoff, Luke Reifenberg, Alicia Smith Reina, Yingzi Yang.
  - Part of the 2021 SMALL REU
  - *The Fibonacci Quarterly (Proceedings of the 20th Conference)*, 60.5, 18-38. 2022. PDF

- **Limiting Spectral Distributions of Families of Block Matrix Ensembles**, with Teresa Dunn, Henry L. Fleischmann, Simran Khunger, Steven J. Miller, Luke Reifenberg, Alexander Shashkov, and Stephen Willis.
  - Part of the 2021 SMALL REU
  - *The PUMP Journal of Undergraduate Research*, Volume 5, 122-147. 2022. PDF

**Preprints**
- **Biases among Congruence Classes for Parts in $k$-regular Partitions**, with Misheel Otgonbayar.
  - Part of the 2022 UVA REU.
  - Submitted to the *Mathematical Proceedings of the Cambridge Philosophical Society*. PDF ArXiv:2207.04352 (2022).

- **Irreducibility Over the Max-Min Semiring**, with Benjamin Baily, Justine Dell, Henry L. Fleischmann, Steven J. Miller, Ethan Pesikoff, and Luke Reifenberg.
  - Part of the 2021 SMALL REU
  - Submitted to the *Journal of Integer Sequences* PDF ArXiv:2111.09786 (2021).

- **Large Sets are Sumsets**, with Benjamin Baily, Justine Dell, Sophia Dever, Adam Dionne, Henry L. Fleischmann, Steven J. Miller, Leo Goldmakher, Gal Gross, Ethan Pesikoff, Huy Pham, Luke Reifenberg, and Vidya Venkatesh.
  - Part of the 2021 SMALL REU
  - Draft (2021).
**The Complexity of the Zeckendorf Graph Game**, with Benjamin Baily, Justine Dell, Henry Fleischmann, Steven J. Miller, Ethan Pesikoff, and Luke Reifenberg. Part of the 2021 SMALL REU. Draft (2021).

*The Generalized Bergman Game*, with Benjamin Baily, Justine Dell, Irfan Durmić, Henry Fleischmann, Isaac Mijares, Steven J. Miller, Ethan Pesikoff, Luke Reifenberg, Alicia Smith Reina, Yingzi Yang. Part of the 2021 SMALL REU. Submitted to the *Conference Proceedings of CANT 2022* PDF ArXiv:2109.00117 (2021).

### Research Experience

| Year | Event | Description |
|------|-------|-------------|
| 2022 | UVA REU in Number Theory with **Professor Ken Ono and Dr. William Craig** |
| 2021 | SMALL REU at Williams College in Number Theory & Probability with **Professor Steven J. Miller** |
| 2021 | Lab of Geometry at Michigan with **Dr. Joern Zimmerling** |

### Honors, Awards, and Scholarships

| Year | Award | Institution |
|------|-------|-------------|
| 2023 | Stephen Smale Mathematical Sciences Award | University of Michigan |
| 2023 | Mathematics Outstanding Graduating Senior Award | University of Michigan |
| 2023 | NSF Graduate Research Fellowship Awardee | NSF |
| 2023 | Winner of the Alice T. Schafer Mathematics Prize | AWM |
| 2022 | Wirt & Mary Cornwell Prize | University of Michigan |
| 2022 | Goldwater Scholar | Goldwater Foundation |
| 2022 | Runner-up for the Alice T. Schafer Mathematics Prize | AWM |
| 2021 | Mathematics Merit Scholarship | University of Michigan |
| 2021 | Mathematics Alumni Scholarship | University of Michigan |
| 2021 | Frank G. Butorac Scholarship | University of Michigan |
| 2021 | Lincoln R. Siegal Scholarship | University of Michigan |
| 2019 | National Merit Semi-Finalist | NMSC |
| 2023 | Mathematics Outstanding Graduating Senior Award | University of Michigan |
| 2023 | NSF Graduate Research Fellowship Awardee | NSF |
| 2023 | Winner of the Alice T. Schafer Mathematics Prize | AWM |
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| 2021 | Mathematics Merit Scholarship | University of Michigan |
| 2021 | Mathematics Alumni Scholarship | University of Michigan |
| 2021 | Frank G. Butorac Scholarship | University of Michigan |
| 2021 | Lincoln R. Siegal Scholarship | University of Michigan |
| 2019 | National Merit Semi-Finalist | NMSC |

### Talks

**Biases in Parts among $k$-regular and $k$-indivisible Partitions** with Misheel Otgonbayar. UVA REU (2022), the Michigan Tech Partitions Seminar (2022), University of Michigan Undergraduate Seminar (2022). Slides.

**Reducibility of Sets in Generalized Settings** with Justine Dell and Henry L. Fleischmann. Advised by Steven J. Miller. Young Mathematician’s Conference (2021). Slides.

**The Complexity of the Zeckendorf Graph Game** with Benjamin Baily and Ethan Pesikoff. Advised by Steven J. Miller. Young Mathematician’s Conference (2021). Slides.

**The Bergman Game**, with Ethan Pesikoff and Luke Reifenberg. Advised by Steven J. Miller Young Mathematician’s Conference (2021), Joint Math Meetings (2022), Combinatorial and Additive Number Theory (2022), and the International Fibonacci Conference (2022). Slides. Video.

**Extensions of Conway’s Game of Life**, with Erya Du, Dianhui Ke, and Trey Smith. Advised by Benjamin Riley, Carsten Sprunger, Katie Storey, and Jörn Zimmerling. University of Michigan LoG(M) Poster Session 2021. Poster.
You Need a Lemma. Advised by Lukas Scheiwiller. University of Michigan Directed Reading Program (2021). Slides.

The Point at $\infty$: What is the degree of $1/z$? Advised by Christopher Zhang. University of Michigan Math Club (2021). Slides.

Attended Conferences

| Year     | Conference                                               | Location                      |
|----------|----------------------------------------------------------|-------------------------------|
| 2022     | International Fibonacci Conference                       | University of Sarajevo        |
| 2022     | Combinatorial and Additive Number Theory                | Virtual                       |
| 2022     | Joint Math Meetings                                      | Virtual                       |
| 2021     | Graduate Research Opportunities for Women               | University of Illinois        |
| 2021     | Young Mathematician’s Conference                         | Virtual                       |

Current Coursework

- Introduction to Dynamics*
- Independent Reading: Complex Dynamics

Past Coursework * indicates graduate level coursework

- Analysis I (Complex)*
- Modular Forms*
- Differential Topology*
- Analysis II (Real)*
- Algebraic Topology 1*
- Intro. to Algebraic Topology*
- Probability Theory*
- Honors Algebra II (Ring/Galois Theory)
- Honors Algebra I (Group/Rep. Theory)
- Honors Multivariate Analysis II
- Honors Multivariate Analysis I
- Intro. to Combinatorics
- Honors Math II (Linear Algebra)
- Honors Math I (Real Analysis)

Teaching Experience

| Year      | Position            | Course(s)                  | Instructors                     |
|-----------|---------------------|----------------------------|---------------------------------|
| Winter 2023 | Course Assistant    | 396 Honors Multivariate Analysis II | Univ. of Michigan |
| Fall 2022  | Course Assistant    | 395 Honors Multivariate Analysis I   | Univ. of Michigan |
| Fall 2022  | Course Assistant    | 201 Intro. to Proofs         | Univ. of Michigan               |
| Winter 2022 | Course Assistant    | 296 Honors Math II          | Univ. of Michigan               |
| Fall 2021  | Course Assistant    | 295 Honors Math I           | Univ. of Michigan               |
| Fall 2021  | Course Assistant    | 201 Intro. to Proofs        | Univ. of Michigan               |
| Summer 2021| Course Assistant    | 201 Intro. to Proofs        | Ypsilanti Math Corps           |
| Winter 2021| Course Assistant    | 297 Intro. to Real Analysis | Univ. of Michigan              |
| Winter 2021| Course Assistant    | 201 Intro. to Proofs        | Univ. of Michigan               |
| Fall 2020  | Course Assistant    | 201 Intro. to Proofs        | Univ. of Michigan               |
| Summer 2020| Instructor          | 201 Intro. to Proofs        | Ypsilanti Math Corps           |

Outreach

- Ypsilanti Math Corps Math Mondays College Assistant, 2019.
- Ypsilanti Math Corps Camp 201 Course Assistant, Summer 2021.
- Teaching Assistant for Professor Steven J. Miller’s continuing education class to K-12 math teachers through the Teachers as Scholars program. Summer 2021.
- Ypsilanti Math Corps Super Saturdays College Assistant, 2020-2023.
- Ypsilanti Math Corps Camp College Assistant and 201 Instructor, Summer 2020.
- Univ. of Michigan Middle/High School Math Circle Assistant, 2019-2023.
**Service**

Univ. of Michigan Society of Undergraduate Math Students President, 2022-2023.

Univ. of Michigan Advanced Undergraduate Seminar Organizer, 2022-2023.

Univ. of Michigan Mathematics Climate Committee Member, 2021-2023.

Univ. of Michigan Math Undergraduate Student Advisory Council Founder, 2021-2023.

**Refereeing**

The Fibonacci Quarterly

The Journal of Number Theory

The Rose-Hulman Undergraduate Mathematics Journal

**Relevant Skills**

| Languages:                                  | Programming Languages:          |
|---------------------------------------------|---------------------------------|
| English (fluent)                            | \LaTeX, Python, C, C++, Haskell,|
|                                             | Ruby, Java, HTML, CSS, Sagemath,|
|                                             | Mathematica                     |

**Relevant Coursework outside of Mathematics**

- Programming and Intro to Data Structures
- Machine Learning for Natural Language Processing