

Darrion Thornburgh

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Education

B.A. in Mathematics and Computer Science – Bard College, NY. August 2020 — May 2024 (expected)
GPA: 3.59 (Cumulative), 3.83 (Math). Thesis: *Translating graphs of vectorial functions*.

Research Experience

Data Science Internship — DSC-WAV August 2023 — Present

- Created an R package which takes existing code from past DSC-WAV interns to be used by other programmers. This project was funded by the NSF. **Advisor:** Dr. Valerie Barr.

Topology REU Researcher — Georgia Tech Math REU (CUBE) May 2023 — July 2023

- Constructed explicit examples in the curve complex of the 5-punctured sphere, proving it is not 1-hyperbolic.
- Introduced the notion of the intersection graphs of curves and arcs on a surface to provide lower bounds on intersection numbers. This project was funded by the NSF. **Advisors:** Dr. Dan Margalit and Dr. Wade Bloomquist.

Affine Geometry Undergraduate Researcher — Bard Summer Research Institute (BSRI) June 2022 — July 2022

- Classified all Sidon sets, or 2-caps, in the affine geometry \mathbb{F}_2^n up to size 9, with respect to affine isomorphism, and wrote computer calculations to provide an upper bound on the count of affine equivalence classes up to dimension 11.
- Defined the daisy property and used it to prove exactly when a Sidon set has an exclude point of a given multiplicity. **Advisor:** Dr. Lauren Rose.

Publications

[1] **Topological methods in zero-sum Ramsey theory.** Florian Frick, Jacob Lehmann Duke, Meenakshi McNamara, Hannah Park-Kaufmann, Steven Raanes, Steven Simon, Darrion Thornburgh, and Zoe Wellner. *Submitted to Forum of Mathematics, Sigma*. [arXiv:2310.17065](https://arxiv.org/abs/2310.17065). November 2023.

[2] **How Many Cards Should You Lay Out in a Game of EvenQuads? A Detailed Study of 2-Caps in $AG(n, 2)$.** Julia Crager, Felicia Flores, Timothy E. Goldberg, Lauren L. Rose, Daniel Rose-Levine, Darrion Thornburgh, and Raphael Walker. *La Matematica*. May 2023.

Honors and Awards

Bard College: Kenneth Bush '36 Memorial Scholar in Mathematics, 2023-2024. Distinguished Scientist Scholarship (DSS) Award, 2023-2024. Darnell Pierce Award, May 2023. Head Junior Marshal, May 2023.

1st Place in Simon's Rock Hackathon 2021: *Visualizing Music with Generative AI*. In collaboration with Henry Chang, Josef Lazar, and Raphael Walker.

Teaching Experience & Engagement

Member, Association for Women in Mathematics Club & Chapter — Bard College August 2022 — Present

Mathematics Tutor — Bard College Learning Commons August 2021 — Present

- Served as a dedicated course tutor for Real Analysis, Vector Calculus, Linear Algebra, and Proofs & Fundamentals.
- Held one-on-one appointments and office hours for students enrolled in any course in mathematics.

Computer Science Tutor — Bard College Learning Commons August 2021 — Present

- Served as a dedicated course tutor for Object Oriented Programming.
- Held office hours for students enrolled in any course in computer science.

Leadership

Member, Senior Class Council — Bard College September 2023 — Present

Lead Residential Advisor — Bard College Office of Residence Life & Housing August 2023 — Present

- Led and advised a team of 12 Resident Advisors who oversee residential halls.
- Organized campus-wide events in collaboration with student clubs and manage a several thousand dollar budget.

Chair, Student Judiciary Board — Bard Student Government August 2023 — Present

- Organized monthly meetings and case hearings for the Student Judiciary Board, which hears cases involving severe policy infractions, by maintaining an open line of communication with the Deans of Student Affairs Office.

Co-Chair, Constitutional Court — Bard Student Government August 2023 — Present

- Interpreted and settled disputes regarding the Bard Student Government Constitution and Bylaws.

Member, Student Judiciary Board — Bard Student Government August 2022 — May 2023

Residential Advisor — Bard College Office of Residence Life & Housing August 2021 — May 2023

Presentations

Bard Summer Research Institute Poster Session. Poster by Sami Aurin and Darrion Thornburgh. *The curve graph of the 5-punctured sphere.* Annandale-on-Hudson, NY. October 2023.

Symposium for Undergraduate Mathematics Research Conference. Talk by Darrion Thornburgh. *On the hyperbolicity of the arc and curve graphs of surfaces.* New Paltz, NY. September 2023.

WIMIN Math Conference. Talk by Darrion Thornburgh. *On the hyperbolicity of the arc and curve graphs of surfaces.* Northampton, MA. September 2023.

Bard College Mathematics and Computer Science Seminar. Talk by Darrion Thornburgh. *On the hyperbolicity of the arc and curve graphs of surfaces.* Annandale-on-Hudson, NY. September 2023.

MAA MathFest. Poster by Sami Aurin and Darrion Thornburgh. *The curve graph of the 5-punctured sphere.* Tampa, FL. August 2023.

Georgia Tech Summer Research Poster Session. Poster by Sami Aurin and Darrion Thornburgh. *The curve graph of the 5-punctured sphere.* Atlanta, GA. July 2023.

Hudson River Undergraduate Mathematics Conference. Talk by Felicia Flores and Darrion Thornburgh. *2-Caps in the game of EvenQuads: The Daisy Property.* South Hadley, MA. April 2023.

Joint Mathematics Meetings. Talk by Felicia Flores and Darrion Thornburgh. *2-Caps in the game of EvenQuads: The Daisy Property.* Boston, MA. January 2023.

Bard Summer Research Institute Poster Session. Poster by Felicia Flores and Darrion Thornburgh. *2-Caps in the game of EvenQuads.* Annandale-on-Hudson, NY. September 2022.

Bard College Mathematics Seminar. Talk by Felicia Flores and Darrion Thornburgh. *2-Caps in the game of EvenQuads: The Daisy Property.* Annandale-on-Hudson, NY. September 2022.

Specialized Skills

Programming: Proficient in C, C++, Java, Python, JavaScript, MATLAB, R, Racket, Scheme, Bash, and SQL.

Languages: English (Native), Spanish (Intermediate-Novice), Korean (Novice)