

Paige Bright

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Education

Massachusetts Institute of Technology	Ph.D. Mathematics (GPA: N/A)	2025 – 2030
University of British Columbia	M.Sc. Mathematics (GPA: 4.0/4.0)	2024 – 2025
	– Co-supervised by Izabella Łaba, Pablo Shmerkin, and Josh Zahl	
	– Thesis: <i>Progress in Projection Theory and other dimensional developments</i>	
Massachusetts Institute of Technology	B.S. Mathematics (GPA: 5.0/5.0)	2020 – 2024
Fresno City College	A.S. Mathematics (GPA: 4.0/4.0)	2016 – 2020

Publications and Preprints

I am interested in geometric measure theory, harmonic analysis, and math education and pedagogy.

- [1] [Spread Furstenberg Sets](#), with Manik Dhar
- [2] [Pinned Dot Product Set Estimates](#), with Caleb Marshall and Steven Senger. *Submitted*.
- [3] [A continuum Erdős–Beck theorem](#), with Caleb Marshall
- [4] [Radial projections in \$\mathbb{R}^n\$ revisited](#), with Yuqiu Fu and Kevin Ren
- [5] [On a radial projection conjecture in \$\mathbb{F}_q^d\$](#) , with Ben Lund and Thang Pham
- [6] [Generalized point configurations in \$\mathbb{F}_q^d\$](#) , with Xinyu Fang, Barrett Heritage, Alex Iosevich, Tingsong Jiang, Hans Parshall, & Maxwell Sun
 - Finite Fields and Their Applications, 99, 102472, 2024.
- [7] [Improved bounds for embedding certain configurations in subsets of vector spaces over finite fields](#), with Xinyu Fang, Barrett Heritage, Alex Iosevich, & Maxwell Sun
 - Bulletin of the Hellenic Mathematical Society, 68:10-30, 2024.
- [8] [Exceptional set estimates in finite fields](#), with Shengwen Gan
 - Annales Fennici Mathematici, 50(2), 467-481, 2025.
- [9] [Exceptional set estimates for radial projections in \$\mathbb{R}^n\$](#) , with Shengwen Gan
 - Annales Fennici Mathematici, 49(2), 631-661, 2024.

Typed Notes, Expository Writing, and More

- [18.S096](#): Matrix Calculus (IAP '23) [typed notes](#) for Profs. Edelman and Johnson on OCW
- [18.S190/18.S097](#): Introduction to Metric Spaces (IAP '23 & '22) on OCW
- [18.100A](#): Real Analysis (Fall '20) typed notes for Prof. Casey Rodriguez on OCW
- [A study guide to "Kaufman and Falconer estimates for radial projections"](#), with Ryan Bushling, Caleb Marshall, & Alex Ortiz
- [A Proof of a Sobolev Inequality in \$\mathbb{R}^2\$](#) , with Yuqiu Fu
- [Chalk Radio](#) interview with Prof. Haynes Miller: [Communication is the Whole Game](#)

Selected Awards and Honors

NSF GRFP Fellowship Offered Award; Accepted	2025
MIT Math Bershadsky Mentor for 2025 Awarded for Mentorship and Outreach	2024
Phi Beta Kappa Member	2024
NSF GRFP Fellowship Offered Award; Declined to attend UBC	2024
MIT Math Peter Baddoo Community Building Award Awarded for Volunteering & Outreach	2024
MIT Math Teaching and Learning Award Awarded for 18.S097	2022

Graduate Experience

AIM's SQuaREs Program Covering Fractals by Curves	present
Participating in the Structured Quartet Research Ensembles (SQuaREs) Program hosted and supported by the American Institute of Mathematics with R. Bongers, C. Marshall, and K. Taylor	
UBC Undergraduate Research Graduate Mentor	present
Mentoring three undergraduates on research in harmonic analysis with Izabella Łaba	
UBC–PIMS Emerging Leaders Lecture Series Coorganizer	present
- Coorganizing lecture series with Caleb Marshall, supported by PIMS at UBC - Hosting early career women and nonbinary researchers in harmonic analysis and fractal geometry	

Undergraduate Experience

MIT Mathematics Undergraduate Research	Spring '21 – Spring '24
- Researched sets of hyperplanes generated by a set of points in $\mathbb{R}^n$ with A. Ortiz and D. Zakharov - Researched exceptional set estimates for projections in $\mathbb{F}_q^n$ with Shengwen Gan resulting in [8] - Studied extension theorems for homogeneous Sobolev spaces with Marjorie Drake - Wrote an expository paper proving a Sobolev inequality in $\mathbb{R}^2$ with Yuqiu Fu, found here - Explored relations between the side lengths and dihedral angles of a tetrahedron with Prof. Poonen	
UPenn Study Guide Writing Workshop	Aug. '23
Collaborated with Ryan Bushling, Caleb Marshall, and Alex Ortiz to write a study guide on a recent paper by Orponen–Shmerkin–Wang, mentored by Josh Zahl	
Williams SMALL REU	Summer '23
Studied point configurations in finite fields with Alex Iosevich, resulting in two papers ([6], [7])	
MIT Summer Program in Undergraduate Research (SPUR)	Summer '22
Proved two open conjectures on radial projections, as well as two classical exceptional set estimates for orthogonal projections on $\mathbb{R}^n$ using new methods with Shengwen Gan resulting in [7]	

Mentorship and Outreach Experience

√mathroots at MIT Assistant Residential Director	Summer '24 – present
Academic mentor and residential counselor (2024), as well as assistant residential director (2025)	
MIT PRIMES Circle Mentor	Springs '22 – '24
Met weekly with high school students reading math textbooks. Mentored papers which can be found here, here, and here	

Classroom Experience

UBC Teaching Assistantship Math 120, Math 421/510, MLC Fall '24 – Spring '25

- (Fall) Grader for Math 120: Honors Differential Calculus
- (Spring) Grader for Math 421/510: Functional Analysis, and tutor at UBC's Math Learning Center

MIT 18.S096/18.S190: Introduction to Metric Spaces Lecturer Jan. '22/'23

- Created and taught a bridge class between real analysis on $\mathbb{R}^n$ and on a general metric space; recipient of MIT Mathematics Department Teaching and Learning Award; course can be found [here](#)

MIT Undergraduate Assistant (UA) 18.101, 18.102 Fall '22 – Fall '23

- 18.101: Analysis and Manifolds (Fall '22/'23); 18.102: Functional Analysis (Spring '23)
- Held weekly office hours, graded problem sets, and typed problem set solutions

Invited Talks and Presentations

01/2026 JMM: AMS Session on "New Directions in Geometric Measure Theory and Effective Methods"

10/2025 AMS Eastern Virtual Sectional "[Research in Analysis and PDEs by Early Career Mathematicians](#)"

10/2025 AMS Central Sectional "[Harmonic Analysis, Geometric Measure Theory and Fractals](#)"

05/2025 Special Session "[Nonlinear Constraints: A Catalyst for Creativity in Analysis and its Applications](#)"

– Coorganized this AWM Research Symposium session with Marjorie Drake and Vinh Nguyen

04/2025 [Online Early Career Morning Session 2025](#) at Washington University in St. Louis

01/2025 JMM: SLMATH Session "At the Intersection of Harmonic Analysis and Fractal Geometry"

12/2024 CMS: Scientific Session on "Incidence Problems in Analysis"

11/2024 CMS: Scientific Session on "Harmonic Analysis and Geometric Measure Theory"

10/2024 UBC's [Harmonic Analysis and Fractal Geometry Seminar](#)

08/2024 [HAPPY's](#) "Hello, World" series ([YouTube Video](#))

01/2024 JMM: AWM Session on "Recent Developments in Harmonic Analysis"

01/2024 JMM: AMS Session on "Harmonic Analysis, Geometric Measure Theory, and Fractals"

11/2023 Graduate Lecture Series in Analysis and PDEs at Brown ([GLESPA](#))

11/2023 [Online Undergraduate Research Seminar at UNC](#) with Alex Ortiz

05/2023 [MIT International Women in Math Day](#)