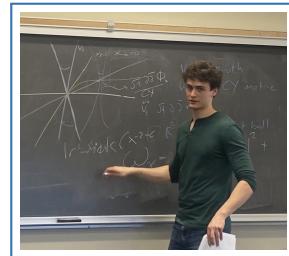


Benjy Firester

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DOI [qKbndfgAAAAJ](https://doi.org/10.5281/qKbndfgAAAAJ)



Education

2023– **Ph.D. in Mathematics, MIT**, Levinson fellow, Mathworks fellow 2023–2026
Geometric Analysis & Complex Geometry advised by [Toby Colding](#) and [Tristan Collins](#)
Levinson Fellowship 2024, Mathworks Fellowship 2023–2025

2023 **A.B. & A.M. in Mathematics, Harvard University**, *Summa Cum Laude*
Honors thesis advised by [Curt McMullen](#)

Research & Expository

- [1] Benjy Firester, Raphael Tsiamis, and Yipeng Wang. Area minimizing capillary cones. [arxiv:2601.18794](https://arxiv.org/abs/2601.18794), 2026.
- [2] Benjy Firester, Raphael Tsiamis, and Yipeng Wang. Stability inequalities for one-phase cones. [arxiv:2601.16966](https://arxiv.org/abs/2601.16966), 2026.
- [3] Tristan C. Collins, Benjy Firester, and Freid Tong. Homogeneous optimal transport maps between oblique cones. [arXiv:2511.01692](https://arxiv.org/abs/2511.01692), 2025.
- [4] Tristan C. Collins and Benjy Firester. On a general class of free boundary Monge-Ampère equations. [arXiv:2508.05551](https://arxiv.org/abs/2508.05551), 2025.
- [5] Benjy Firester, Raphael Tsiamis, and Yipeng Wang. Uniqueness of cylindrical tangent cones $C_{p,q} \times \mathbb{R}$. [arXiv:2507.22373 to appear in Calculus of Variations & PDE](https://arxiv.org/abs/2507.22373), 2025.
- [6] Benjy Firester and Raphael Tsiamis. Cohomogeneity two Ricci solitons with sub-Euclidean volume. *Journal of Geometric Analysis*, 35(407), 2025.
- [7] Benjy Firester. Mostow rigidity and hyperbolic 3-manifolds, 2023. benjyjf.com/thesis.pdf.
- [8] Benjy Firester. Complete Calabi–Yau metrics from smoothing Calabi–Yau complete intersections. *Geometriae Dedicata*, 218(2):46, Feb 2024.
- [9] L. Becker, S. Elliott, B. Firester, S. Gonen Cohen, Michal Pnueli, and Vered Rom-Kedar. *Impact Hamiltonian systems and polygonal billiards*, page 29–66. Mathematical Sciences Research Institute Publications. Cambridge University Press, 2024.

Awards

2023 **Mumford Prize**, “*Most promising senior concentrator in mathematics*”
math.harvard.edu/undergraduate-prizes-and-awards-2022-2023

2023 **Friends Prize**, *Top two theses present to The Friends of the Harvard Math Department*
Presented senior thesis [7] see: math.harvard.edu/event/special-lecture... and interviewed in the
2023 Harvard Math Newsletter

2023 **Hoopes Prize, \$5,000**
 Awarded for my senior thesis [7] see: prizes.fas.harvard.edu/.../2022-2023_hoops...

2022 **Phi Beta Kappa, Member of Senior 48**
 National academic honor society see: thecrimson.com/article/2022/11/15/harvard-pbk-senior-48

2022 **Goldwater Scholar, \$7,500**
 For my work [8] see: goldwaterscholarship.gov/2022-goldwater-scholars...

2022 **Herchel-Smith Fellow, "A competitive and generous award" for Harvard research**
 Research funding for [7] see: uraf.harvard.edu/.../herchel-smith-summer-fellowship

2022 **PRISE Fellow, Harvard summer research community for science**
 Research funding for [7] see: uraf.harvard.edu/uraf-opportunities/prise

2022 **John Harvard Scholar, Harvard College Scholar (2019)**
 Dean's list

2018 **Winner of Regeneron Science Talent Search, \$250,000**
 Formerly Westinghouse/Intel STS see: societyforscience.org/.../regeneron-science-talent-search-2018

2017 **Davidson Fellow, \$25,000**
 Scientific scholarship winner from the Davidson Institute see: davidsongifted.org/.../2017-fellows

Presentations

12/19/2025 **Conference on Mathematical Analysis, National Technical University of Athens**
 Uniqueness of cylindrical tangent cones $C_{p,q} \times \mathbb{R}$ [5]

12/05/2025 **Geometric Analysis and Topology Seminar, NYU Courant**
 Boundary regularity of capillary surfaces [1] see: math.nyu.edu/.../seminars/geometric-analysis-and-topology-seminar/4338/

11/18/2025 **Informal Geometric Analysis Seminar, University of Maryland**
 Free boundary Monge-Ampere equations and boundary regularity of optimal transport [3, 4] see: https://www.math.umd.edu/_tdarvas/IGA.html

11/07/2025 **Geometric Analysis Seminar, Columbia University**
 Free boundary Monge-Ampere equations and boundary regularity of optimal transport [3, 4] Click: "Geometric Analysis Seminar" Tab

9/25/2025 **Workshop on Geometry and PDEs, University of Copenhagen (GeoTop)**
 Presented On a general class of free boundary Monge-Ampère equations [4] see: math.ku.dk/.../workshop_on_geometry_and_pdes_sep_2025

6/11/2025 **Workshop on Topics in Differential Geometry, Brown University**
 Presented On a general class of free boundary Monge-Ampère equations [4] see: brown.edu/christine-breiner-brown/workshop-2025

5/02/2025 **Pure math graduate student seminar (PUMAGRASS), MIT**
 Presented On a general class of free boundary Monge-Ampère equations [4] see: <https://math.mit.edu/pumagrass/>

4/22/2025 **Geometric Analysis Seminar, Rutgers University**
 Presented On a general class of free boundary Monge-Ampère equations [4] see: math.rutgers.edu/.../free-boundary-monge-ampere-and-optimal-transport-equations

4/19/2025 **AMS New England Grad Student Conference (PDE), Brown University**
 Presented On a general class of free boundary Monge-Ampère equations [4] see: sites.google.com/brown.edu/amsgradconference/talks

1/22/2025 **Calculus of Variations and PDE's in Geometric Analysis, Sapienza Università di Roma**
 Poster presentation of Cohomogeneity two Ricci solitons with sub-Euclidean volume [6] see: sites.google.com/uniroma1.it/cvga2025

1/16/2025 **Geometry and Topology Seminar, Hebrew University**
 Presented Cohomogeneity two Ricci solitons with sub-Euclidean volume [6] see: mathematics.huji.ac.il...firester...cohomogeneity-two-ricci-solitons...

1/14/2025 **PDE and Applied Mathematics Seminar, Technion University**
 Presented Cohomogeneity two Ricci solitons with sub-Euclidean volume [6]

7/8/2024 **Seminario de geometría, University of Granada**
 Presented Cohomogeneity two Ricci solitons with sub-Euclidean volume [6] see: wpd.ugr.es/.../collapsing-cohomogeneity-two-ricci-solitons/

4/1/2023 **Harvard Special Lecture for Friends Prize Recipient, Harvard University**
 Presented senior thesis [7] see: math.harvard.edu/event/special-lecture...

3/29/2023 **Harvard Math Table, Harvard University**
 Non-compact Calabi-Yau manifolds [8] see: sites.google.com/.../mathtable...

2/23/2023 **Stanford Special Geometry Seminar, Stanford University**
 Complete CY metrics from smoothing CY complete intersections
 see: mathematics.stanford.edu/...geometry-seminar-complete-calabi-yau-metrics...

1/5/2023 **Joint Mathematics Meeting, AMS Contributed Papers in Geometry**
 Complete CY metrics from smoothing CY complete intersections
 see: meetings.ams.org/math/jmm2023/meetingapp.cgi/Paper/19585

11/18/2022 **RTG Partial Differential Equations on Manifolds, Undergraduate Analysis and PDE Seminar, with T. C. Collins**
 Complete CY metrics from smoothing CY complete intersections
 see: tarheels.live/waves/activities/undergraduate-online-seminar-fall-2022

Teaching

Spring 2023 **Harvard Math 123, Course Assistant**, taught by [Curt McMullen](#)
 Rings, Fields, Galois theory

Fall 2022 **Harvard Math 101, Course Assistant**, taught by [Curt McMullen](#)
 Sets, Groups, and Knots

Spring 2022 **Harvard Math 123, Course Assistant**, taught by [Mark Kisin](#)
 Rings, Fields, Galois theory

Fall 2021 **Harvard Math 114, Course Assistant**, taught by [Dennis Gaitsgory](#)
 Measure, Integration, Banach spaces, Duality, and Fourier analysis

Spring 2020 **Harvard Math 55b, Course Assistant**, taught by [Joe Harris](#)
 Topology and Real/Complex analysis

Fall 2019 **Harvard Math 55a, Course Assistant**, taught by [Joe Harris](#)
 Group theory, Linear algebra, Representation theory

Service

2025 **Co-organizer, MIT Geometric Analysis Reading group**
<https://benjyjf.com/GeometricAnalysisReadingGroup/>

2025 **UROP mentor, MIT Math department**
 Graduate mentor for prestigious Undergraduate Research Opportunity urop.mit.edu/

2023-2024 **PRIMES mentor, MIT Math department**
 Graduate mentor for prestigious high school mathematics research program see:
<https://math.mit.edu/research/highschool/primes/program/>

2024– **Referee**
Acta Mathematica, Journal of Differential Geometry

2023– **GUMMI mentor, MIT Math department**
Graduate mentor for MIT mathematics undergraduates interested in graduate school see: <https://math.mit.edu/gummi/>

2023– **Non-resident tutor, Winthrop House**
Advisor for undergraduates specializing in STEM and pre-career related disciplines winthrop.harvard.edu/people/benji-firester

2023 **Math community undergraduate mentor for GIIM, Harvard GIIM**
Gender Inclusivity In Mathematics see: harvardgiim.org

2019–2022 **Volunteer at JF&CS**
Volunteered helping Holocaust survivors at the [Jewish Family and Children's Service](https://jfc.org)

Affiliations

2023– **MIT Mathematics Department, PhD Student**
Geometric Analysis & Complex Geometry

2018–2023 **Harvard Mathematics Department, Bachelors (Summa Cum Laude) and Masters, Course Assistant**
Advised by Curt McMullen, Joe Harris, Cliff Taubes, Peter Kronheimer

2019–2023 **The Harvard Advocate, Technology editor 2019–2020**
theharvardadvocate.com/

2019–2023 **The Harvard Political Review, Technology board member**
harvardpolitics.com/

2019–2022 **MIT Mathematics Department, Research with Tristan Collins**
Funded by [HCRP](https://hcrp.org)

2020 **D. E. Shaw, Systematic Equities**
Quantitative research intern

2019 **Microsoft, Excel Alpha Team**
Software engineering intern

2018 **Weizmann Institute, Advised by Vered Rom-Kedar**
International Summer Science Institute research program ([ISSI](https://issi.org))

2012–2018 **Hunter College High School**

2017 **Rockefeller University, Krueger Group**
Summer Science Research Program ([SSRP](https://ssrp.org))

2015–2016 **The Agricultural Research Organization (Volcani), Research advised by Lior Blank and Dani Shtienberg**

Languages

Hebrew **Advanced**
Citation in Modern Hebrew from Harvard

Spanish **Proficient**

Other Scientific Papers and Presentations

2020 **The MIT Undergraduate Journal of Economics, with Andrew Komo**
[Resource allocation with externalities](https://mitu.journals.mit.edu/resource-allocation-with-externalities) second best paper award

2020 **Journal of Biomedical Optics**, *Gareau et al.*
[Deep learning-level melanoma detection by interpretable machine learning and imaging biomarker cues](#)

2018 **Plant Pathology**, *with Dani Shtienberg & Lior Blank*
[Modelling the spatiotemporal dynamics of Phytophthora infestans at a regional scale](#)
doi:10.1111/ppa.12860

2018 **The Concord Review**, *Volume 28, No. 3*, Emerson Prize
Mail-Order

2017 **Euroblight**, *International conference*
Presentation by Lior Blank on our paper in Plant Pathology see: [Euroblight programme](#)