

# Benjy Firester

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## Education

- 2023– **Ph.D. in Mathematics**, *MIT*, Levinson fellow  
Geometric Analysis & Complex Geometry advised by [Toby Colding](#) and [Tristan Collins](#)
- 2023 **A.B. & A.M. in Mathematics**, *Harvard University*, *Summa Cum Laude*  
Honors thesis advised by [Curt McMullen](#)

## Research & Expository

- [1] Benjy Firester and Raphael Tsiamis. Cohomogeneity two Ricci solitons with sub-Euclidean volume. *arxiv.org/abs/2408.13982*, 2024.
- [2] Benjy J. Firester. Mostow rigidity and hyperbolic 3-manifolds, 2023. [benjyjf.com/thesis.pdf](http://benjyjf.com/thesis.pdf).
- [3] Benjy J. Firester. Complete Calabi–Yau metrics from smoothing Calabi–Yau complete intersections. *Geometriae Dedicata*, 218(2):46, Feb 2024.
- [4] 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](http://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 [2] see: [math.harvard.edu/event/special-lecture...](http://math.harvard.edu/event/special-lecture...) and interviewed in the [2023 Harvard Math Newsletter](#)
- 2023 **Hoopes Prize**, \$5,000  
Awarded for my senior thesis [2] see: [prizes.fas.harvard.edu/.../2022-2023\\_hoopes...](http://prizes.fas.harvard.edu/.../2022-2023_hoopes...)
- 2022 **Phi Beta Kappa**, *Member of Senior 48*  
National academic honor society see: [thecrimson.com/article/2022/11/15/harvard-pbk-senior-48](http://thecrimson.com/article/2022/11/15/harvard-pbk-senior-48)
- 2022 **Goldwater Scholar**, \$7,500  
For my work [3] see: [goldwaterscholarship.gov/2022-goldwater-scholars...](http://goldwaterscholarship.gov/2022-goldwater-scholars...)
- 2022 **Herchel-Smith Fellow**, “*A competitive and generous award*” for Harvard research  
Research funding for [2] see: [uraf.harvard.edu/.../herchel-smith-summer-fellowship](http://uraf.harvard.edu/.../herchel-smith-summer-fellowship)
- 2022 **PRISE Fellow**, *Harvard summer research community for science*  
Research funding for [2] see: [uraf.harvard.edu/uraf-opportunities/prise](http://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](https://societyforscience.org/...regeneron-science-talent-search-2018)
- 2017 **Davidson Fellow, \$25,000**  
Scientific scholarship winner from the Davidson Institute see: [davidsongifted.org/.../2017-fellows](https://davidsongifted.org/.../2017-fellows)

## Presentations

- 1/16/2025 **Geometric Analysis seminar, Hebrew University**  
Presented Cohomogeneity two Ricci solitons with sub-Euclidean volume [1] see: [mathematics.huji.ac.il...firester...cohomogeneity-two-ricci-solitons...](https://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 [1]
- 7/8/2024 **Seminario de geometría, University of Granada**  
Presented Cohomogeneity two Ricci solitons with sub-Euclidean volume [1] see: [wpd.ugr.es/.../collapsing-cohomogeneity-two-ricci-solitons/](https://wpd.ugr.es/.../collapsing-cohomogeneity-two-ricci-solitons/)
- 7/8/2024 **Seminario de geometría, University of Granada**  
Presented Cohomogeneity two Ricci solitons with sub-Euclidean volume [1] see: [wpd.ugr.es/.../collapsing-cohomogeneity-two-ricci-solitons/](https://wpd.ugr.es/.../collapsing-cohomogeneity-two-ricci-solitons/)
- 4/1/2023 **Harvard Special Lecture for Friends Prize Recipient, Harvard University**  
Presented senior thesis [2] see: [math.harvard.edu/event/special-lecture...](https://math.harvard.edu/event/special-lecture...)
- 3/29/2023 **Harvard Math Table, Harvard University**  
Non-compact Calabi-Yau manifolds [3] see: [sites.google.com/.../mathtable...](https://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...](https://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](https://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](https://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

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## Languages

- Hebrew **Advanced**  
Citation in Modern Hebrew from Harvard
- Spanish **Proficient**

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## Service

- 2023– **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
- 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/benjoy-firester](http://winthrop.harvard.edu/people/benjoy-firester)
- 2023 **Math community undergraduate mentor for GIIM**, *Harvard GIIM*  
Gender Inclusivity In Mathematics see: [harvardgiim.org](http://harvardgiim.org)
- 2019–2022 **Volunteer at JF&CS**  
Volunteered helping Holocaust survivors at the [Jewish Family and Children's Service](#)

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## 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/](http://theharvardadvocate.com/)
- 2019–2023 **The Harvard Political Review**, *Technology board member*  
[harvardpolitics.com/](http://harvardpolitics.com/)
- 2019–2022 **MIT Mathematics Department**, *Research with Tristan Collins*  
Funded by [HCRP](#)
- 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](#))
- 2012–2018 **Hunter College High School**
- 2017 **Rockefeller University**, *Krueger Group*  
Summer Science Research Program ([SSRP](#))

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

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## Other Scientific Papers and Presentations

- 2020 **The MIT Undergraduate Journal of Economics**, *with Andrew Komo*  
[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](#)