

BENJY FIRESTER

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EDUCATION

Harvard College (Concentration GPA 4.0/4.0, Overall GPA 3.99/4.0) **Graduating May 2023**

Concurrent Master's and Bachelor's in Mathematics; Honors thesis with Curtis McMullen

[Phi Beta Kappa](#), [Goldwater Scholar](#), [PRISE scholar](#), [Herchel-Smith fellow](#), John Harvard Scholar (highest GPA award), research with Tristan Collins: [CY metrics from complete intersections](#),

Senior Fall Courses: Math 213a*, Math 270z*, MIT 18.116*, Senior honors thesis

Junior Courses: Math 232a*, Math 222*, Math 286y*/z*, Math 231br*, MIT 18.157*, Math 91r

Sophomore Courses: Math 230a*/b*, Math 231a*/b*, Math 212*, Math 270x*, Math 281y*, Physics 211ar*, Econ 2099* (* graduate course)

Freshman Courses: Math 55a/b, Math 132, Math 136, Math 137, CS 124, CS 182

Course Assistant: **Math 101** (Sets, groups, & knots) under Prof. Curtis McMullen, **Math 123** (Rings, modules, Galois theory) under Prof. Mark Kisin, **Math 114** (Lebesgue theory, Fourier analysis, functional analysis) under Prof. Dennis Gaitsgory, **Math 55a/b** under Prof. Joe Harris

Extracurricular: [The Harvard Advocate](#) Tech Editor (2019-2020); [The Harvard Political Review](#) Technology; Harvard Gender Inclusivity in Mathematics Mentor ([GIIM](#)); Intramural flag football

Hunter College High School, New York, NY (GPA 4.0/4.0) **Class of 2018**

Regeneron Science Talent Search Winner \$250,000 (press includes [CNN](#), [Fox Business](#), [Reuters](#))

Hunter College (while in high school) (GPA: 4.0/4.0) **2017-2018**

Calculus with Analytical Geometry III, Software Analysis & Design III, Vector Analysis, Linear Algebra

Mannes Prep The New School for Music **2004-2018**

Classical Piano, Chamber Music, Music Theory, Ear Training, Digital Composition, and Music History

PAPERS & PRESENTATIONS

arXiv 2208.04279 Benjy J. Firester [Complete Calabi-Yau metrics from smoothing Calabi-Yau complete intersections](#) (submitted to Journal of Geometric Analysis)

Joint Mathematics Meeting: Presenting my work on [CY metrics](#) at the [2023 JMM AMS Contributed Paper Session on Geometry](#)

RTG PDE on Manifolds: Undergraduate Analysis and PDE seminar: [UNC Chapel Hill seminar](#) presentation November 18, 2022 [Complete Calabi-Yau metrics from smoothing Calabi-Yau complete intersections](#)

Proceedings of the MSRI 2018 Fall Semester on Hamiltonian Systems L. Becker, S. Elliott, B. Firester, S. Gonen Cohen, M. Pnueli, V. Rom-Kedar [Impact Hamiltonian systems and polygonal billiards](#)

Plant Pathology Firester, B., Shtienberg, D. & Blank, L., [Modelling the spatiotemporal dynamics of *Phytophthora infestans* at a regional scale](#) doi:10.1111/ppa.12860

The MIT Undergraduate Journal of Economics Benjy Firester & Andrew Komo [Resource Allocation with Externalities](#). Second Place Best Paper Award.

EuroBlight: (global conference) A Potato Late Blight Network for Europe, 2017 Workshop. Modelling the Spatio-Temporal Dynamics of *Phytophthora infestans* on a Regional Scale; euroblight.net/euroblight-workshop-14-17-may-2017 (search Benjy or Firester)

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

How Mail Order Transformed American Retailing in the 19th Century: The Impact of the Montgomery Ward and Sears, Roebuck & Company Mail-Order Houses, [The Concord Review](#), Volume 28, Vol. III, 2018

HONORS & AWARDS

Harvard College Class of 2023 Phi Beta Kappa, Senior 48: An academic honor based on GPA, course rigor, and faculty recommendations

2022 Goldwater Scholar (\$7,500) A competitive, federal undergraduate scholarship to fund research in natural science, mathematics and engineering. I received it for my research project, "Complete Calabi-Yau metrics from smoothing Calabi-Yau complete intersections" under Prof. Tristan Collins.

goldwaterscholarship.gov/2022-goldwater-scholars/.../

2022 Herchel-Smith Fellow A competitive and generous award supporting high-potential undergraduates who are conducting a promising summer research project in mathematics. It funded my research in geometry with Prof. Joe Harris and Prof. Curtis McMullen. uraf.harvard.edu/.../herchel-smith-summer

2022 PRISE Scholar Harvard's summer research village is a competitive program with funding and scientific community participation. I participated and worked on my thesis geometry research with Prof. Joe Harris and Prof. Curtis McMullen. <https://uraf.harvard.edu/uraf-opportunities/prise>

2018 Winner First Place Regeneron Science Talent Search \$250,000 award (Formerly Westinghouse/Intel STS) societyforscience.org/.../regeneron-science-talent-search-2018/

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

RESEARCH, WORK & COMMUNITY

Honors Senior Thesis **2022-present**
Advised by [Curtis McMullen](#) on Mostow Rigidity & Geometrization of 3-manifolds. [PRISE](#) & [Herchel-Smith](#)

Math Research at MIT **2020-present**
Research with [Tristan Collins](#) on non-compact Calabi-Yau manifolds funded by [HCRP](#). Additional advising from Joe Harris. [CY metrics from complete intersections](#) submitted to Journal of Geometric Analysis

Economics Research at Harvard Business School **Summer 2020**
Research with [Scott Kominers](#) on Efficient redistribution through markets and taxation. Funded by Harvard Business School and the National Science Foundation (NSF)

Math Community Undergraduate Mentor **2022**
Mentoring undergraduate students at the Gender Inclusivity in Mathematics club ([GIIM](#))

D.E. Shaw Quantitative Research Intern on the Equities Team **Summer 2020**

Microsoft Software Engineering Intern, MS Office Excel Alpha Team **Summer 2019**

The Weizmann Institute of Science, Rehovot, Israel **Summer 2018**
International Summer Science Program ([ISSI](#)) under the mentorship of Prof. Vered Rom-Kedar, Applied math, coauthor for [Impact Hamiltonian systems and polygonal billiards](#) published in the "Proceedings of the MSRI 2018 Fall semester on Hamiltonian Systems"

Volunteer at JF&CS Volunteer helping Holocaust survivors at [JF&CS](#) **2019 - 2022**

The Rockefeller University, New York, NY **Summer 2017**
Summer Science Research Program ([SSRP](#)) under the mentorship of Dr. Daniel Gareau, Biomedical Engineering. coauthor of [Deep learning-level melanoma detection ...](#) published in the Journal of Biomedical Optics

The Agricultural Research Organization (Volcani) Israel **Summer 2015 & 2016**
Research under the mentorship of Prof. Dani Shtienberg and Dr. Lior Blank. First author of [Modelling the Spatio-Temporal Dynamics of Phytophthora infestans on a Regional Scale](#)

PROGRAMMING: C/C++, Python, Java, MATLAB, JavaScript, HTML/CSS

LANGUAGES: Hebrew, proficient Spanish

CITIZENSHIP: USA, Israel, Portugal