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 Phytopthora 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/.../herchel-smith-summer

2022 PRISE Scholar Harvards 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 Phytopthora infestans on a Regional Scale

PROGRAMMING: C/C++, Python, Java, MATLAB, JavaScript, HTML/CSS
LANGUAGES: Hebrew, proficient Spanish
CITIZENSHIP: USA, Israel, Portugal