

Benjamin V. Church

PHD CANDIDATE, MATHEMATICS, STANFORD UNIVERSITY

EDUCATION	Stanford University <i>Ph.D.</i> in Mathematics Advisor: Ravi Vakil 2021 - Present
	Columbia University <i>B.A.</i> in Mathematics and Physics with Honors, Summa Cum Laude GPA: 4.13 (Overall) 2016 - 2020
RESEARCH INTERESTS	Algebraic geometry with a focus on birational geometry, arithmetic geometry, and geometry in positive characteristic.
PREPRINTS	Benjamin Church. "Nowhere vanishing 1-forms on 4-folds ." arXiv preprint https://arxiv.org/abs/2504.19006 (2025).
	Benjamin Church and Francisco García-Cortéz. " \mathbf{SL}_2 -character varieties of 2-generated groups and failure of weak integrality." arXiv preprint https://arxiv.org/abs/2410.23233 (2024).
	Benjamin Church. "Nowhere vanishing 1-forms on varieties admitting a good minimal model." arXiv preprint https://arxiv.org/abs/2410.22753 (2024).
	Chen, Nathan, Benjamin Church , and Junyan Zhao. "Curves on complete intersections and measures of irrationality." arXiv preprint https://arxiv.org/abs/2406.12101 (2024).
	Chen, Nathan, Benjamin Church , Lena Ji, and David Stapleton. "The fibering genus of Fano hypersurfaces." arXiv preprint https://arxiv.org/abs/2308.12401 (2023).
	Chen, Nathan, Benjamin Church , and Feng Hao. "Nowhere vanishing holomorphic one-forms and fibrations over abelian varieties." arXiv preprint https://arxiv.org/abs/2306.15064 (2023).
PUBLICATIONS	Church, B. V. , Mocz, P., & Ostriker, J. P. (2019). Heating of milky way disc stars by dark matter fluctuations in cold dark matter and fuzzy dark matter paradigms. Monthly Notices of the Royal Astronomical Society, 485(2), 2861–2876. https://doi.org/10.1093/mnras/stz534
	Church, B. V. , Williams, H. T., & Mar, J. C. (2019). Investigating skewness to understand gene expression heterogeneity in large patient cohorts. BMC Bioinformatics, 20(S24). https://doi.org/10.1186/s12859-019-3252-0
INVITED TALKS & PRESENTATIONS	Algebraic Geometry Seminar: "1-forms on varieties admitting a good minimal model." University of Utah Spring 2025
	Algebraic Geometry Seminar: "Curves on complete intersections and measures of irrationality." IMPA Spring 2025
	Visiting Scholar IMPA Spring 2025

Algebraic Geometry Seminar: “Curves on complete intersections and measures of irrationality.”

University of Pennsylvania

Spring 2025

Algebraic Geometry Seminar: “1-forms on varieties admitting a good minimal model.”

Boston College

Fall 2024

Algebraic Geometry Seminar: “1-forms on varieties admitting a good minimal model.”

University of Maryland, College Park

Fall 2024

AGNES poster: “The fibering genus of Fano hypersurfaces”

Dartmouth University

Fall 2024

AGNES short talk: “1-forms on varieties admitting a good minimal model.”

Dartmouth University

Fall 2024

Algebraic Geometry Seminar: “Curves on complete intersections and measures of irrationality.”

Stony Brook University

Fall 2024

Harvard-MIT Algebraic Geometry Seminar: “Curves on complete intersections and measures of irrationality.”

Harvard University

Fall 2024

Birational Geometry Seminar: “Curves on complete intersections and measures of irrationality.”

UCLA

Summer 2024

GAeL XXXI: “Curves on complete intersections and measures of irrationality.”

Politecnico di Torino

Summer 2024

Algebraic geometry seminar: “Obstructions to unirationality in characteristic p .”

University of Toronto

Spring 2024

Higher Dimensional Algebraic Geometry, poster “The fibering genus of Fano hypersurfaces”

UCSD

Winter 2024

Algebraic geometry seminar: “Frames of 1-forms on varieties and maps to abelian varieties.”

Stanford University

Spring 2023

AWARDS

Jane Street Graduate Research Fellowship finalist

2025

NSF Graduate Research Fellowship

2023

John Dash van Buren, Jr. Prize in Mathematics, Columbia University

2020

Departmental Honors – Mathematics, Physics, Columbia University

2020

Phi Beta Kappa Junior Inductee

2019

MIT Battlecode AI Competition Finalist

2017

Science Research Fellow – Columbia University

2016 - 2020

TEACHING

Graduate Teaching Assistant: MATH145 Algebraic Geometry
Stanford University

Instructor: Prof. Hunter Spink

Spring 2022

Taught students in office hours and graded problem sets.

**Graduate Teaching Assistant: MATH56 Proofs and Modern Mathematics
Stanford University**

Instructor: Prof. András Vasy *Autumn 2021*

Taught students in office hours and graded problem sets.

Counselor at Ross Mathematics Program

Instructor: Prof. Daniel Shapiro *Summer 2020*

Guided students through number theory coursework and graded assignments.

**Teaching Assistant: Accelerated Physics
Columbia University**

Instructor: Prof. Brian Cole *2017 - 2018 and 2018 - 2019*

Taught weekly recitations and graded problem sets.

SERVICE	Organizer for the Stanford student algebraic geometry seminar	<i>2021-2023</i>
	Topics: method of Deligne-Illusie, bend and break, variations of Hodge structures	
	Directed Reading Program Mentor	<i>2021</i>
	Mentored an undergraduate reading <i>Model Theory: an Introduction</i> by David Marker	
	President, Columbia Society of Physics Students	<i>2019 - 2020</i>
	Organized talks, educational outreach, and mentorship opportunities.	
	Board Member, Columbia Undergraduate Mathematics Society	<i>2019 - 2020</i>
	Organized talks, help sessions for new students, and teaching materials.	

SKILLS	Programming Languages: C/C++, Python, L ^A T _E X, Sage, Macaulay2, MAGMA.
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