CATHERINE CANNIZZO

Homepage • ORCID • Google Scholar • LinkedIn

<u>cc5441@columbia.edu</u> <u>ckacannizzo@berkeley.edu</u> she/her Columbia University Department of Mathematics

Areas of study: symplectic geometry, homological mirror symmetry (HMS), Fukaya categories of Landau-Ginzburg models

POSITIONS

- NSF Ascend Postdoc, DMS-2316538, 2023 present
 - o Columbia University, 2025–2026, Sponsoring Scientist: Chiu-Chu Melissa Liu
 - o Goethe Universität-Frankfurt, visitor, Summer 2025, Host: Martin Möller
 - o **University of California-Berkeley**, 2023–'25, Sponsoring Scientist: David Nadler
- University of California-Riverside, Visiting Assistant Professor, 2022–2023
- Simons Center for Geometry and Physics, Research Assistant Professor, 2019–2022

EDUCATION

• PhD, University of California-Berkeley, 2013–2019

Dissertation: "Homological mirror symmetry for the genus 2 curve in an abelian variety and its generalized Strominger-Yau-Zaslow mirror"

Advisor: Professor Denis Auroux

MMath, University of Cambridge, 2011–2012

Thesis: "Kähler-Einstein Metrics on Fano Manifolds"

Advisor: Professor Julius Ross Graduated Part III with Merit

BA in Mathematics, University of Cambridge, 2008–2011

PAPERS

Publications & under revision

- 1. Fukaya category on a symplectic manifold with a B-field, arXiv:2311.04143. Haniya Azam, Catherine Cannizzo, Heather Lee, Chiu-Chu Melissa Liu, under revision for Mathematical Research Letters (2025), 19 pages
- 2. <u>A mirror into the higher dimensional world</u>, SCGP newsletter, C. Cannizzo, Volume XVII (2022), pp 12-16
- 3. Historical context as an inclusive practice. Contribution to Dr. Pamela E. Harris and Dr. Aris Winger's book 2 in their series, <u>Practices and Policies: Advocating for Students of Color in Mathematics</u> (2021), pp 28-55
- 4. <u>Action-angle and complex coordinates on toric manifolds</u>, Haniya Azam, C. Cannizzo, and Heather Lee. In <u>Research Directions in Symplectic and Contact Geometry and Topology</u>, AWM Series, vol. 27, Springer International Publishing (2021), pp 159–216

- 5. <u>Categorical mirror symmetry on cohomology for a complex genus 2 curve</u>, C. Cannizzo, Advances in Mathematics, 375 (2020), pp 107392.
- 6. <u>Carmichael's Totient Conjecture and Fermat Primes</u>, <u>UMBC Review</u>, vol 9, pp 160-173 (2008) under mentorship of Prof. Robert Campbell

Pre-prints

- 7. Semi-orthogonal decompositions in Fukaya-Seidel mirrors to blowups of abelian varieties, arXiv:2508.06379 with Sara Venkatesh, (2025), 33 pages
- 8. Global SYZ mirror symmetry and homological mirror symmetry for principally polarized abelian varieties, arXiv:2503.20948 with Haniya Azam, Heather Lee, Chiu-Chu Melissa Liu, (2025), 52 pages, submitted
- 9. On fiber and base decompositions in the Fukaya category of a symplectic Landau-Ginzburg model, arXiv:2312.00973. With Haniya Azam, Heather Lee, Chiu-Chu Melissa Liu, (2023), 16 pages, submitted

In preparation

- 10. <u>Homological mirror symmetry for theta divisors</u> with Haniya Azam, Heather Lee, Chiu-Chu Melissa Liu, 70 pages
- 11. <u>Global SYZ mirror symmetry for genus two curves and Voronoi decompositions</u> with Haniya Azam, Heather Lee, Chiu-Chu Melissa Liu, 24 pages

Other

- 12. <u>Kähler-Einstein Metrics on Fano Manifolds</u>, Cambridge University Part III essay, Master of Mathematics (2012)
- 13. <u>Z²-actions by Symplectic Automorphisms of a Torus</u> with Alexander Leaf and Nina Sakharova. Project in Penn State REU (2011)
- 14. X-Ray Variability: Quasi-periodic Oscillations, NASA internship (2010)

AWARDS

- MPS Scholars Outstanding Mentor Award, UC Berkeley, 2025
- Outstanding Visiting Assistant Professor Award, UC Riverside, 2022-2023 Math Department <u>award</u> to visiting assistant professors
- Nikki Kose Memorial Teaching Prize, UC Berkeley, 2019
 Math Department award to a math graduate student instructor
- Outstanding Graduate Student Instructor Award, UC Berkeley, 2016–2017
 Award to ~9% of GSIs across campus
- M.T. Meyer Scholarship and Gertrude Mather Jackson Prize, June 2012
 Awarded by Girton College, Cambridge University for Part III performance
- Cambridge Overseas Trust, Girton College Overseas Bursary, 2008–2012

TEACHING

• University of California-Riverside, July 2022–June 2023

- MATH 31, Applied Linear Algebra, Spring 2023 (~100 students)
 MATH 9B, First-Year Calculus, Spring 2023 (~75 students)
- o MATH 9C, First-Year Calculus, Winter 2023 (~135 students)
- MATH 6A, Intro to Functions (precalculus), Fall 2022 (2 sections), Winter 2023 (~120 students)
- Stony Brook University/Simons Center, Stony Brook, NY, Sept 2019 June 2022
 - o MAT 541, Algebraic Topology, Fall 2020 (~10 students)
 - MAT 125, Calculus A, <u>Spring 2020</u>, <u>Spring 2022</u> (~100–180 students)
- University of California-Berkeley, Fall 2013 Spring 2019
 - Berkeley Connect Graduate Fellowship, 2 weekly sections mentoring ~40
 STEM majors, UC Berkeley, Fall 2016—Spring 2017
 - o Math 53, TA for Multivariable Calculus
 - Math Honors 110, TA for Linear Algebra

ADVISING

- Lauren Aycott and Adán Javier Ortiz, *A Quantitative Approach to Disseminating Impacts of Dismantling Affirmative Action*, MPS Scholars undergraduate research project, UC Berkeley, Summer 2024
- Ofelia Flores Rodriguez, Respiratory Diseases Among Residents Living Near Dairy Farms, MPS Scholars undergraduate research project, UC Berkeley, Summer 2024
- Blythe Davis, *Open book decompositions and surgery on contact 3-manifolds*, master's thesis, Stony Brook University, May 2021

Invited Presentations

 Topic: Homological Mirror Symmetry Workshop on Enumerative Geometry and related topics 	pril 13-14, 2024	
· · · · · · · · · · · · · · · · · · ·	.piii 15 14, 2024	
University of Oregon, Eugene		
• <u>Latam-ICTP Physics Without Frontiers</u> , <u>Math & HEP Seminars</u>	<u>Sept 22, 2023</u>	
 HMS & Symplectomorphisms, Beyond Calabi-Yau/Fano, Kylere 	<u>c</u> June 21, 2023	
• Floer Homotopy Summer School on Floer homology, UBC/PIM	S July 2022	
• Homological Algebra of Mirror Symmetry, Fields Institute, Long Term Visitor		
 Geometry and Algebra of LG Models workshop 	Sept 17, 2019	
 Floer Homology Bootcamp 	Dec 3, 2019	
Topic: A mirror into the higher dimensional world		
Mathematics Colloquium, Chico State University	April 18, 2025	
Causeway, Northwestern University	May 3, 2024	
 Gender Equity in Math (GEM) talk, UC Berkeley 	Feb 26, 2024	
 Mathematics Undergraduate Student Association (MUSA) 		
Math Monday talk, UC Berkeley	Jan 29, 2024	
 The Math/Stats Colloquium, San José State University 	Feb 25, 2022	
 Mathematics Seminar, Hofstra University 	Dec 1, 2021	

Paper: Global SYZ mirror symmetry for genus 2 curves & Voronoi decompositions

Physics & Geometry Seminar, Northwestern University
 May 2, 2024

Popping the Science Bubble, Berkeley Public Library

August 27, 2018

Lie Theory Seminar, UC Riverside	Nov 8, 2022
 Connections Workshop: Floer Homotopy Theory, slides 	Sept 9, 2022
 Recent developments in Lagrangian Floer theory, SCGP 	March 17, 2022
 Geometry, Physics, & Rep Theory Seminar, Northeastern 	March 10, 2022
•	Widi Cii 10, 2022
 Paper: Homological Mirror Symmetry for Theta Divisors 2025 Summer Research Institute in Algebraic Geometry: 	July 24, 2025
Enumerative Geometry Special Session, Fort Collins, CO	jury 24, 2023
• Spin structures in enumerative geometry, Leiden Universite	it June 16, 2025
Berkeley String-Math seminar, UC Berkeley	Dec 2, 2024
Commutative Algebra & Algebraic Geometry Seminar, UC Berkeley Oct 29, '24	
• <u>2023 AWM Research Symposium</u> :	Oct 1, 2023
Geometric and Categorical Aspects of Representation Theor	у
and Mathematical Physics, Clark-Atlanta University	,
Combinatorial Number Theory Seminar, UC Riverside	May 10, 2023
Geometry and Topology Seminar, UC Irvine	April 11, 2023
Geometry and Topology Seminar, UC Riverside	March 10, 2023
Geometry and Topology Seminar, Louisiana State University	
• 2023 Midwest Geometry Conference, Kansas State Univ	March 3-5, 2023
Algebraic Geometry Seminar, UC Riverside	Feb 28, 2023
Number Theory and Algebraic Geometry Seminar, SFU	Nov 3, 2022
• Spec(Qbar), Fields Institute, slides	July 6-8, 2022
AMS Special Session on Quantum Categorical Structures in I	
JMM 2022, virtual	April 6, 2022
,	•
 Paper: Semi-orthog decomps in Fukaya-Seidel mirrors to blowu MIT Symplectic Seminar, <u>slides</u> 	Oct 9, 2025
 Syzygies and Mirror Symmetry Seminar, <u>virtual</u> 	March 6, 2025
 2024 Fall Western Sectional AMS Meeting, Special Session or 	
Topology of Contact and Symplectic Manifolds	Oct 26-27, 2024
, ,	March 12, 2024
UC Davis Geometry/Topology seminar AWM Special Session on Women and Conden Minerities in Se	
AWM Special Session on Women and Gender Minorities in S Contract Cooperative and Tappelogy, IMM 2024, SE alides.	* *
Contact Geometry and Topology, JMM 2024, SF, slides	Jan 3, 2024
AWM Special Session on Women and Gender Minorities in S	•
Contact Geometry and Topology, JMM 2022, virtual	April 8, 2022
Enumerative Geometry Seminar, Columbia University Alacharia Geometry Seminar, Columbia University Alacharia Geometry Seminar, Columbia University	Nov 8, 2021
 Algebraic Geometry Seminar, Stony Brook University 	Sept 8, 2021
Paper: Homological Mirror Symmetry for the genus 2 curve	
 Spring Eastern Sectional Meeting, 	
Mirror Symmetry and Enumerative Geometry	March 20, 2021
 Geometry and Analysis Seminar, Oxford University 	March 1, 2021
 Online Algebraic Geometry Seminar, Nottingham Univ 	Oct 29, 2020
 Geometry/Topology Seminar at Duke 	Oct 12, 2020
 Freemath, online geometry seminar 	July 28, 2020
 Rio's symplectic geometry seminar 	July 21, 2020

May 7, 2020		
Dec 5, 2019		
Nov 12, 2019		
Nov 8, 2019		
Nov 4, 2019		
Oct 21, 2019		
May 11, 2018		
 AMS-AWM Women in Symplectic and Contact Geometry/Topology I, 		
Jan 10–13, 2018		
Log Calabi-Yau surfaces and Lagrangian torus fibrations, BIGW II		
July 14–20, 2018		
• Women in Science and Engineering (WiSE), UC Berkeley, homological mirror		
April 17, 2017		

• <u>USTARS</u>, poster on HMS, Amherst College

Northernostory Cooperatory & Davidos (Vintral) Cominger

April 1-2, 2017

Mar. 7 2020

- Women in Science & Engineering, poster on HMS, UC Berkeley March 4, 2017
- Cylindrical contact homology of T³, Student Symplectic Field Theory
 Seminar co-organizer, UC Berkeley
 Oct 31, 2016

PROFESSIONAL TRAINING

- <u>2025 CIME Workshop 1147: K-12 Mathematics Literacy for 21st-Century Citizenship</u>, SLMath Berkeley, April 2–4, 2025.
- <u>SC2 Mentorship Community of Practice</u>, Strategies for Inclusive Recommendation Letter Writing and Reading. Virtual, October 29, 2024.
- Being Seen: Counter Stories for People of Color in Mathematics Doctoral Programs, Virtual, October 28, 2024
 Participant in sequel to AMS Advocating for Students of Color from NSF grant
- ASCEND Fellowship Conference, Iowa State <u>2023</u>, Vanderbilt <u>2024</u>
 Attended the mentor network conference for recipients of the <u>NSF MPS-Ascend</u>.
- Techbridge Girls (TBG) Training
 - o TBG Facilitating Equitable Programming and Practices in STEM, May 2024
 - TBG Ignite Youth Inventors & Programming Through an Equity Lens, Sep 2023 Equity training in supporting BIPOC girls* in STEM by promoting access, belonging, and persistence through out-of-school time (OST) programs.
- <u>Broadening Participation: 2021 MPS Workshop</u>, Virtual, October 7–8, 2021
 <u>Participant</u> in workshop for future PIs, by the University of Florida with NSF MPS.
- [Online] Workshop on Mathematics and Racial Justice, MSRI, June 9–18, 2021 Participant in workshop on the role of math in today's movement for racial justice.
- Online Science Communication, Alda Center, Stony Brook, March 19, 2021 Workshop using acting tools to enhance science communication.
- College Teaching Seminars, CELT, Stony Brook University, Fall 2020
 Focused on best practices for postdocs and graduate teaching assistants.

- Advocating for Students of Color: There's More You Can Do, virtual, Fall 2020 A four-part AMS webinar series on equity, diversity, and inclusion in math.
- Online Teaching Certification, Stony Brook University's CELT, Summer 2020 Completed a 2-week virtual bootcamp on online teaching methods.
- *Deep Dive 2017*: Communicating Science, Asilomar, CA, April 21-22, 2017 UC Berkeley retreat to discuss science communication, policy, and diversity issues.

PROFESSIONAL SERVICE

Book Co-Editor

 Research Directions in Symplectic and Contact Geometry and Topology, AWM-Springer, Dec 2021

Seminar/Reading Group Co-Organizer

- o Math 198/290 Seminar: Rao-Blackwell Theorem, UC Berkeley, Spring 2025
- MATH 198/290/<u>Math Alliance Mentored Reading Program</u> on Hodge Theory, UC Berkeley/Boston College/Math Alliance, Fall 2024
- o Fukaya Categories Reading Group, UC Riverside, Spring 2023
- o <u>Western Hemisphere Virtual Symplectic Seminar</u>, virtual, April 2020–June 2023
- o Math Postdoc Seminar, SCGP/Stony Brook Math Dept/IMS, Spring 2022
- o <u>Kuranishi Strs & Virtual Fund Chains Reading Group</u>, virtual/SBU, May-Dec '21
- Mirror Symmetry Reading Seminar, Stony Brook, Spring 2020
- Independent Study with Yutong Zhang in derived algebraic geometry, MAT 487, Stony Brook University, Fall 2020
- Topology & Symplectic Geometry Seminar, Stony Brook, Fall 2019—Spring 2020
- Student Symplectic Field Theory Seminar, UC Berkeley, Fall 2016

Conference Co-Organizer

- Women & Gender Minorities in Symplectic & Contact Geometry & Topology (WiSCons) in Madison, AWM Symposium, UW-Madison, May 16–18, 2025
- Floer-theoretic and algebro-geometric aspects of SYZ mirror symmetry, virtual, Sept 29-Oct 2, 2020
- JMM AMS-AWM <u>Women in Symplectic and Contact Geometry/Topology II</u>, Denver, CO, Jan 15, 2020
- Research Collaboration Conference for Women in Symplectic Geometry and Contact Topology (WiSCon), ICERM, July 22–26, 2019
- Kylerec workshop: Cotangent bundles and the nearby Lagrangian conjecture,
 Leavenworth, WA, May 25–31, 2018

Mentorship

- o Math Alliance, guidance on grad school applications, Dec 2020–present
- MPS Scholars Mentor, tiered mentoring program with weekly meetings with math majors and monthly activities for STEM majors, Fall 2024—Spring 2025
- Mentor at <u>Kylerec 2023</u>: Homological Mirror Symmetry, student symplectic geometry workshop, June 19-23, 2023
- Polyfold Summer School, Tutor for Deligne-Mumford spaces, UC Berkeley, June 12–16, 2017

Peer-Reviewer

- Journal of Mathematical Physics
- Served on NSF panel: 2022, 2024
- Diversity, Equity, Inclusion, and Outreach
 - UC Berkeley Math, 2023–2025
 - Consultant to <u>Equity and Inclusion Committee</u> (EIC)
 - Collaborated with EIC and Graduate Student EIC Coordinator to secure
 \$20k in microgrants and cross-departmental funding for DEI initiatives
 - Organized events <u>here</u> & <u>here</u>. Deliverables:
 - Resources and advice for quantitative sciences
 - Developed guide for EOP office hours & workshop, MPS Scholars
 - UC Berkeley Math Department Action Items from 2024 workshop
 - Collated qualitative action items into quantitative groupings
 - Outreach
 - Probability & Statistics: Choosing Wisely: math activity created from <u>Rao-Blackwell seminar</u> based on Prof. David Blackwell
 - Berkeley Math Circle, May 7, 2025
 - Equitable Voting: created math activity based on ranked choice voting, Mathematics for Social Justice by Karaali and Khadjavi, Chp 16: What Does Fair Mean? by Hamman.
 - Berkeley Math Circle, May 7, 2025
 - MPS Scholars Retreat, March 8, 2024
 - *Diné Dimensions*: created 2-session math activity on set theory and 3D modeling in Tinkercad, incorporating social-emotional learning content from Techbridge Girls
 - Navajo Nation Math Camp, Page Arizona, June 24-28, 2024
 - <u>Techbridge Girls</u>
 - Ignite after-school 8 sessions hosted by <u>Higher Ground</u>, Fall 2023
 - Assisted 1 session with <u>NCBW</u>, Sp 2024
 - <u>Towards a Vision of STEM community for all</u>, UC Berkeley, MLK Day Jan 15 2024
 Co-organized 1-day grad/faculty success workshop w/ math leadership experts.
 - o UCB Math Dept Peer Advisors Podcast S1 Ep#2, Nov 27 2023, Guest speaker
 - o *Rehumanizing Math Reading Group* from <u>SGA</u>, UCB, Fa 2023–Sp '24, Organizer
 - o <u>Mathematics Plus Equity Panel Discussion</u>, CELT, March 3, 2022, Panelist
 - o *LGBTQ+Math Day*, Virtual, November 18, 2021, Panelist
 - o *Graduates Achieving Inclusion Now*, Virtual, Sep 26-Oct 3 2021, Moderator
 - o <u>Seawolves Diversity Workshop: This is Us</u>, Stony Brook, Aug 19, 2021, Facilitator
 - Symplectic Group Action (SGA), Virtual, July 2020—Nov 2021
 Co-facilitated reading group for math academics focused on Black Lives Matter.
 - o Harvard Gender Inclusivity in Math, April 7, 2018, Panelist
 - o Expanding Your Horizons (TBG) Conference, UCB, March 17, 2018, Volunteer
 - o Dean's MPS Taskforce, address sexual harassment, UCB, Summer 2016, Member
 - Noetherian Ring, women & non-binary in math at UC Berkeley, 2015–2018
 Revamped webpage, coordinated and participated in events.

LANGUAGES

English: Native Language, Spanish: Novice

COMPUTER SKILLS

- *Python*: Coursera: <u>Programming for Everybody</u> / <u>Python Data Structures</u>, Summer 2023; Lesbians Who Tech: Intro to Python & Exploratory Data Analysis, Apr 15 2020
- *R Studio:* Intro to R Studio workshop, DoIT, Stony Brook, April 24 2021; STEMinist 3 Day Data Science & Coding Bootcamp, Cal NERDS UC Berkeley, Aug 16–18, 2017
- *MATLAB*: CATAM projects, Cambridge University, 2009-'11: Diffraction Pattern Due to a Current Strip, Galois Group of a Polynomial, Positive Definite Binary Quadratic Forms, Continued Fraction Method for Factorisation, Matrices Over Finite Fields, ODEs, Schrödinger's Equation, Public Key Cryptography.
- *Pedagogy technology:* HW management systems: iMathAS, WeBWorK, MyMathLab, LumenOHM. Other tools: Poll Everywhere, exam LaTeX class, Gradescope AI-grouping, auto-personalized mail merge for student check-ins.

OTHER INTERESTS

Ballet and other forms of dance, Piano