CATHERINE CANNIZZO

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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
  - **Columbia University**, 2025–2026, under Prof. Chiu-Chu Melissa Liu
  - **Goethe Universität-Frankfurt**, Summer '25, visitor hosted by Prof. Martin Möller
  - **University of California-Berkeley**, 2023–2025, under Prof. 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 & Preprints

1. *Semi-orthogonal decompositions in Fukaya-Seidel mirrors to blowups of abelian varieties*, [arXiv:2508.06379](#) with Sara Venkatesh, (2025), 43 pages, submitted
2. *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
3. *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
4. *Fukaya category on a symplectic manifold with a B-field,* [arXiv:2311.04143](#). Haniya Azam, Catherine Cannizzo, Heather Lee, Chiu-Chu Melissa Liu, (2023), 19 pages, under revision for *Mathematical Research Letters*

5. *A mirror into the higher dimensional world*, SCGP newsletter, C. Cannizzo, Volume XVII (2022), pp 12-16
6. *Historical context as an inclusive practice.* Contribution to Dr. Pamela E. Harris and Dr. Aris Winger's book 2 in their series, Practices and Policies: Advocating for Students of Color in Mathematics (2021), pp 28-55
7. *Action-angle and complex coordinates on toric manifolds*, Haniya Azam, C. Cannizzo, and Heather Lee. In Research Directions in Symplectic and Contact Geometry and Topology, AWM Series, vol. 27, Springer International Publishing (2021), pp 159–216
8. *Categorical mirror symmetry on cohomology for a complex genus 2 curve*, C. Cannizzo, Advances in Mathematics, 375 (2020), pp 107392.
9. *Carmichael's Totient Conjecture and Fermat Primes*, UMBC Review, vol 9, pp 160-173 (2008) under mentorship of Prof. Robert Campbell

In preparation

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

Other

12. *Kähler-Einstein Metrics on Fano Manifolds*, Cambridge University Part III essay, Master of Mathematics (2012)
13. *Z^2-actions by Symplectic Automorphisms of a Torus* 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 award 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)

- ○ 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
  - ○ [MAT 541](), Algebraic Topology, Fall 2020 (~10 students)
  - ○ MAT 125, Calculus A, [Spring 2020](), [Spring 2022]() (~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
  - ○ 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: Mirror Symmetry
- Online Undergraduate Resource Fair for the Advancement   Feb 8, 2026
  and Alliance of Marginalized Mathematicians ([OURFA²M²]())
- JMM AMS Special Session on Women & Gender Minorities in   Jan 7, 2026
  Symplectic & Contact Geometry & Low Dimensional Topology, DC
- Mathematics Colloquium, Chico State University   April 18, 2025
- Causeway, Northwestern University   May 3, 2024
- [Workshop on Enumerative Geometry and related topics]()   April 13-14, 2024
  University of Oregon, Eugene
- Gender Equity in Math (GEM) talk, UC Berkeley   Feb 26, 2024
- Mathematics Undergraduate Student Association (MUSA)
  Math Monday talk, UC Berkeley   Jan 29, 2024
- [Latam-ICTP Physics Without Frontiers](), [Math & HEP Seminars]()   [Sept 22, 2023]()
- HMS & Symplectomorphisms, *Beyond Calabi-Yau/Fano*, [Kylerec]() June 21, 2023
- [Floer Homotopy Summer School]() on *[Floer homology]()*, UBC/PIMS   July 2022
- The Math/Stats Colloquium, San José State University   Feb 25, 2022
- Mathematics Seminar, Hofstra University   Dec 1, 2021
- Homological Algebra of Mirror Symmetry, Fields Institute, Long Term Visitor
  - ○ [Floer Homology Bootcamp]()   Dec 3, 2019
  - ○ [Geometry and Algebra of LG Models workshop]()   Sept 17, 2019
- Popping the Science Bubble, Berkeley Public Library   August 27, 2018

[Paper](): Semi-orthog decomps in Fukaya-Seidel mirrors to blowups of abelian varieties
- Informal Mathematical Physics Seminar, Columbia University   Dec 8, 2025
- Columbia Symplectic Geometry, Gauge Theory, Categorification Nov 21, 2025
- Michael Zhao Memorial Student Colloquium, Columbia Univ.   Nov 13, 2025
- MIT Symplectic Seminar, [slides]   Oct 9, 2025
- Syzygies and Mirror Symmetry Seminar, [virtual]   March 6, 2025
- 2024 Fall Western Sectional AMS Meeting, Special Session on Geometry and Topology of Contact and Symplectic Manifolds   Oct 26-27, 2024
- UC Davis Geometry/Topology seminar   March 12, 2024
- AWM Special Session on Women and Gender Minorities in Symplectic and Contact Geometry and Topology, JMM 2024, SF, [slides]   Jan 3, 2024
- AWM Special Session on Women and Gender Minorities in Symplectic and Contact Geometry and Topology, JMM 2022, virtual   April 8, 2022
- Enumerative Geometry Seminar, Columbia University   Nov 8, 2021
- Algebraic Geometry Seminar, Stony Brook University   Sept 8, 2021

Paper: Homological Mirror Symmetry for Theta Divisors
- 2025 Summer Research Institute in Algebraic Geometry: July 24, 2025
  [Enumerative Geometry Special Session], Fort Collins, CO
- Spin structures in enumerative geometry, Leiden Universiteit   June 16, 2025
- Berkeley String-Math seminar, UC Berkeley   Dec 2, 2024
- Commutative Algebra & Algebraic Geometry Seminar, UC Berkeley Oct 29, '24
- [2023 AWM Research Symposium]:   Oct 1, 2023
  Geometric and Categorical Aspects of Representation Theory
  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   March 8, 2023
- [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 Mirror Symmetry, JMM 2022, virtual   April 6, 2022

Paper: Global SYZ mirror symmetry for genus 2 curves & Voronoi decompositions
- Physics & Geometry Seminar, Northwestern University   May 2, 2024
- 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

[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
- Northwestern Geometry & Physics (Virtual) Seminar   May 7, 2020
- Mirror Symmetry Seminar, Rutgers University   Dec 5, 2019
- Enumerative Geometry Seminar, Columbia University   Nov 12, 2019
- Valley Geometry Seminar, Univ of Massachusetts Amherst   Nov 8, 2019
- IAS/Princeton Symplectic Geometry & Dynamics Seminar   Nov 4, 2019
- Symplectic Geometry Seminar at Stanford University   Oct 21, 2019
- Thesis talk in Mirror Symmetry seminar at MSRI program:
  Enumerative Geometry Beyond Numbers   May 11, 2018
- AMS-AWM Women in Symplectic and Contact Geometry/Topology I,
  invited talk and poster at Joint Math Meeting   Jan 10–13, 2018

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- Log Calabi-Yau surfaces and Lagrangian torus fibrations, BIGW II
  Singularities and Symplectic Topology   July 14–20, 2018
- Women in Science and Engineering (WiSE), UC Berkeley, homological mirror
  symmetry and impostor syndrome   April 17, 2017
- USTARS, poster on HMS, Amherst College   April 1–2, 2017
- Women in Science & Engineering, poster on HMS, UC Berkeley March 4, 2017
- Cylindrical contact homology of $\mathbf{T}^3$, Student Symplectic Field Theory
  Seminar co-organizer, UC Berkeley   Oct 31, 2016

PROFESSIONAL TRAINING

- *2025 CIME Workshop 1147: K-12 Mathematics Literacy for 21st-Century Citizenship*,
  SLMath Berkeley, April 2–4, 2025.
- *SC2 Mentorship Community of Practice*, 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 2023, Vanderbilt 2024
  Attended the mentor network conference for recipients of the NSF MPS-Ascend.
- *Techbridge Girls (TBG) Training*
  - 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.
- *Broadening Participation: 2021 MPS Workshop*, Virtual, October 7–8, 2021
  Participant 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**
  - Math 198/290 Seminar: Rao-Blackwell Theorem, UC Berkeley, Spring 2025
  - MATH 198/290/Math Alliance Mentored Reading Program on Hodge Theory,
    UC Berkeley/Boston College/Math Alliance, Fall 2024
  - Fukaya Categories Reading Group, UC Riverside, Spring 2023
  - Western Hemisphere Virtual Symplectic Seminar, virtual, April 2020–June 2023
  - Math Postdoc Seminar, SCGP/Stony Brook Math Dept/IMS, Spring 2022
  - Kuranishi Strs & Virtual Fund Chains Reading Group, 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/Session Co-Organizer**
  - JMM AMS Special Session on The Impact of the ASCEND Program: Research
    and Reflection, Washington DC, Jan 7, 2026
  - 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 Women in Symplectic and Contact Geometry/Topology II,
    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**
  - 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 Kylerec 2023: 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**
  - ○ *Columbia University Science Honors Program (SHP)*, plenary talk, Jan 24, 2026
  - ○ *UC Berkeley Math*, 2023–2025
    - Consultant to Equity and Inclusion Committee (EIC)
    - Collaborated with EIC and Graduate Student EIC Coordinator to secure $20k in microgrants and cross-departmental funding for DEI initiatives
    - Organized events here & here. 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 Rao-Blackwell seminar 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*: co-created 2-session math activity on set theory and 3D modeling in Tinkercad with Navajo Nation Math Camp and social emotional learning content from Techbridge Girls
      - Navajo Nation Math Camp, Page Arizona, June 24-28, 2024
    - *Techbridge Girls*
      - Ignite after-school 8 sessions hosted by Higher Ground, Fall 2023
      - Assisted 1 session with NCBW, Sp 2024
  - ○ *Towards a Vision of STEM community for all*, UC Berkeley, MLK Day Jan 15 2024 Co-organized 1-day grad/faculty success workshop w/ math leadership experts.
  - ○ *UCB Math Dept Peer Advisors Podcast* S1 Ep#2, Nov 27 2023, Guest speaker
  - ○ *Rehumanizing Math Reading Group* from SGA, UCB, Fa 2023–Sp '24, Organizer
  - ○ *Mathematics Plus Equity Panel Discussion*, CELT, March 3, 2022, Panelist
  - ○ *LGBTQ+Math Day*, Virtual, November 18, 2021, Panelist
  - ○ *Graduates Achieving Inclusion Now*, Virtual, Sep 26-Oct 3 2021, Moderator
  - ○ *Seawolves Diversity Workshop: This is Us*, 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*.
- *Harvard Gender Inclusivity in Math*, April 7, 2018, Panelist
- *Expanding Your Horizons (TBG) Conference*, UCB, March 17, 2018, Volunteer
- *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: Programming for Everybody / Python Data Structures, 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