

# Samir Canning

Department of Mathematics

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## Employment

2022– **Hermann-Weyl-Instructor**, *ETH Zürich*.

## Education

2017-2022 **Ph.D., Mathematics**, *University of California San Diego*, Advisor: Elham Izadi.

2013-2017 **B.A., Mathematics**, *Columbia University*.

## Research Interests

Algebraic geometry: intersection theory, algebraic cycles, geometry of moduli spaces of curves, K3 surfaces, and abelian varieties.

## Awards and Fellowships

2022 NSF postdoc (declined in order to accept Herman-Weyl-Instructorship).

2022 Powell Dissertation Fellowship.

2021 UCSD Summer Graduate Teaching Scholar.

2017 James B. Ax Fellowship.

## Preprints

1. The Chow ring of the moduli space of degree 2 quasi-polarized K3 surfaces (with Dragos Oprea and Rahul Pandharipande). arXiv:2307.09284.
2. Extensions of tautological rings and motivic structures in the cohomology of  $\overline{\mathcal{M}}_{g,n}$  (with Hannah Larson and Sam Payne). arXiv:2307.08830.
3. On the Chow and cohomology rings of moduli spaces of stable curves (with Hannah Larson). arXiv:2208.02357.

## Accepted Articles and Publications

1. The integral Chow rings of moduli of Weierstrass fibrations (with Andrea Di Lorenzo and Giovanni Inchiostro). arXiv:2204.05524. Accepted to *Transactions of the AMS*.
2. The bielliptic locus in genus 11 (with Hannah Larson). arXiv:2209.09715. Accepted to *Michigan Mathematical Journal*.
3. The eleventh cohomology group of  $\overline{\mathcal{M}}_{g,n}$  (with Hannah Larson and Sam Payne). *Forum Math. Sigma* 11 (2023), Paper No. e62, 18 pp. arXiv:2209.03113.
4. The rational Chow rings of moduli spaces of hyperelliptic curves with marked points (with Hannah Larson). arXiv:2207.10873. Accepted to *Annali della Scuola Normale Superiore di Pisa*.
5. The integral Picard groups of low-degree Hurwitz spaces (with Hannah Larson). *Math. Z.* 303 (2023), no. 3, Paper No. 61, 22 pp. arXiv:2110.14727.
6. The Chow rings of moduli spaces of elliptic surfaces over  $\mathbb{P}^1$  (with Bocho Kong). *Algebraic Geometry*, 10 (2023), 489 – 503. arXiv:2110.04928.
7. The Chow rings of the moduli spaces of curves of genus 7, 8, and 9 (with Hannah Larson). arXiv:2104.05820. Accepted to *Journal of Algebraic Geometry*.
8. The Chow rings of low-degree Hurwitz spaces (with Hannah Larson). *J. Reine Angew. Math.* 789 (2022), 103-152. arXiv:2110.01059.
9. Tautological classes on low-degree Hurwitz spaces (with Hannah Larson). arXiv:2103.09902. Accepted to *International Mathematics Research Notices*.
10. On a conjecture on the variety of lines on Fano complete intersections. *Ann. Mat. Pura Appl. (4)*, 200(5):2127-2131, 2021. arXiv:2002.04713.

## Other Writing

1. Exercises in *Hyperkahler manifolds* (with Yajnasetti Dutta, Elham Izadi, and David Stapleton). To appear in Proceedings of the ICTP.

## Invited Research Visits

- Jun 2023 Oberwolfach: Recent trends in algebraic geometry.  
Nov 2021 Institut Mittag-Leffler program on Moduli and Algebraic Cycles.

## Invited Conference Talks

- Mar 2024 Enumerative Geometry and Arithmetic at the Lorentz Center in Leiden.  
Jan 2024 JMM: Combinatorial perspectives on algebraic curves and their moduli.  
Jun 2023 Helvetic Algebraic Geometry Seminar.  
May 2023 Institut Mittag-Leffler conference on Moduli and Algebraic Cycles.  
Mar 2023  $\overline{\mathcal{M}}_{g,n}$  Conference at Les Diablerets.  
Mar 2023 *admcycles* Conference at Les Diablerets.

- Nov 2022 Resonance Varieties, Topological Invariants of Groups, and Moduli Conference.
- Dec 2021 CMS Winter Meeting Session: Combinatorics and Geometry of Moduli Spaces.
- Nov 2021 Institut Mittag-Leffler workshop on Moduli Spaces and Logarithmic Geometry.
- Oct 2021 Algebraic Geometry Northeastern Series (AGNES).
- Apr 2021 Western Algebraic Geometry Symposium (WAGS).

## Invited Seminar Talks

- May 2023 Universiteit Utrecht Algebraic Geometry Seminar.
- May 2023 Universiteit Leiden Algebra, Geometry, and Number Theory Seminar.
- Apr 2023 KTH and Stockholm University Algebra and Geometry Seminar.
- Mar 2023 ETH Zürich Algebraic Geometry and Moduli Seminar.
- Dec 2022 Harvard/MIT Algebraic Geometry Seminar.
- Dec 2022 Brown University Algebraic Geometry Seminar.
- Nov 2022 Cambridge University Algebraic Geometry Seminar.
- Oct 2022 Three lectures in the ETH Zürich Algebraic Geometry and Moduli Seminar.
- May 2022 UC Riverside Algebraic Geometry Seminar.
- Dec 2021 Intercontinental Algebraic Geometry and Moduli Zoominar (ETH Zürich and UBC).
- Jun 2021 University of Washington Algebraic Geometry Seminar.
- May 2021 ETH Zürich Algebraic Geometry and Moduli Seminar.
- Apr 2021 University of Illinois Chicago Algebraic Geometry Seminar.
- Apr 2021 Moduli Across the Pandemic (Boston College).
- Apr 2021 Stanford Algebraic Geometry Seminar.
- Mar 2019 Stanford Student Algebraic Geometry Seminar.
- Mar 2019 MSRI Graduate Student Seminar.

## Teaching

- Fall 2023 Commutative Algebra (ETH).
- Summer 2023 Individualized reading course on commutative algebra (Immanuel Quarch) (ETH).
- Spring 2023 Master's thesis supervision (Lorraine Lambert) (ETH).
- Spring 2023 Bachelor's thesis supervision (Vinzenz Neuner) (ETH).
- Summer 2021 Linear Algebra (UCSD).
- 2020-2021 Senior Head Teaching Assistant (UCSD).
- 2019-2020 Junior Head Teaching Assistant (UCSD).
- Fall 2018 Teaching Assistant, Mathematical Reasoning (UCSD).
- Spring 2018 Teaching Assistant, Vector Calculus (UCSD).
- Winter 2018 Teaching Assistant, Modern Algebra II (UCSD).
- Fall 2017 Teaching Assistant, Linear Algebra (UCSD).
- Spring 2017 Teaching Assistant, Representation Theory of Finite Groups (Columbia).

- Fall 2016 Teaching Assistant, Introduction to Modern Analysis I (Columbia).
- Summer 2016 Teaching Assistant, Calculus II (Columbia).
- Summer 2016 Teaching Assistant, Calculus III (Columbia).
- Spring 2016 Teaching Assistant, Introduction to Higher Mathematics (Columbia).
- Fall 2015 Teaching Assistant, Introduction to Modern Analysis I (Columbia).
- Summer 2015 Teaching Assistant, Introduction to Modern Analysis I (Columbia).

## Outreach and Service to the Profession

Full referee reports for *Annals of Mathematics*, *Geometry and Topology*, *International Mathematics Research Notices*, and *Proceedings of the AMS*.

- July 2023 Research group leader at AGNES summer school.
- July 2021 Exercise session leader at Trieste Algebraic Geometry Summer School.
- 2020-2022 Volunteer tutor at East Palo Alto Tennis and Tutoring.
- Spring 2018 Graduate Student Mentor, Algebraic Curves.
- Fall 2018 Volunteer tutor at San Diego Refugee Tutoring.
- 2018-2020 President of the UCSD Mathematics Graduate Student Council.
- 2019-2020 Alternate representative in the Graduate Student Association UCSD.

## Organizational Activities

- 2020-2021 American Graduate Student Algebraic Geometry Seminar.
- Summer 2020 Student Algebraic Geometry Seminar: Geometric Invariant Theory.
- Spring 2020 Student Algebraic Geometry Seminar: Moduli of Curves.
- Winter 2020 Student Algebraic Geometry Seminar: Moduli of Curves.
- January 2019 Complex Algebraic Geometry 2019 UCSD: student assistant organizer.
- Fall 2018 Student Algebraic Geometry Seminar: Abelian Varieties.
- Spring 2018 Student Algebraic Geometry Seminar: Surfaces.
- Winter 2018 Student Algebraic Geometry Seminar: Dimension Theory.