

Sheel Ganatra

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Personal

Born in November 1984, United States Citizen.

Employment

2025-: **Department Chair of Mathematics**, University of Southern California.
2024-2025: **Interim Department Chair of Mathematics**, University of Southern California.
2024-present: **Professor of Mathematics** (tenured), University of Southern California.
2022-2024: **Associate Professor of Mathematics** (tenured), University of Southern California.
2016-2022: **Assistant Professor of Mathematics** (tenure track), University of Southern California.
2013-2016: **NSF Postdoctoral Fellow**, Department of Mathematics, Stanford University.
2012-2013: **Szegő Assistant Professor**, Department of Mathematics, Stanford University.

Visiting Appointments

February 2025: **Program Participant**, Simons Center for Geometry and Physics, Stony Brook University (program “Recent developments in higher genus curve counting”).
Winter-Spring 2024: **Visiting Scientist**, California Institute of Technology.
Fall 2022: **Research Professor**, Mathematical Sciences Research Institute / Simons Laufer Mathematical Sciences Institute (program “Floer homotopy theory”).
April 2018: **Research Member**, Mathematical Sciences Research Institute (program “Enumerative geometry beyond numbers”).
Fall 2016: **Member**, Institute for Advanced Study (program “Homological Mirror Symmetry”).
September 2015: **Program Participant**, Institut Mittag-Leffler (program “Symplectic geometry and topology”).
September 2012: **Program Participant**, Simons Center for Geometry and Physics, Stony Brook University (program “Symplectic and Contact Geometry and Connections to Low-Dimensional Topology”).

Education

2007-2012, **Massachusetts Institute of Technology**, Cambridge MA.
Ph.D. in Mathematics, June 2012. Advisor: Denis Auroux.
Thesis title: *Symplectic Cohomology and Duality for the Wrapped Fukaya Category*.
Exchange Scholar at UC Berkeley, 2009-2010, 2011-2012.
2002-2006, **Harvard University**, Cambridge MA.
S.M. in Computer Science, June 2006.
A.B. Magna Cum Laude with Highest Honors in Mathematics, June 2006.
Honors thesis title: *Seiberg-Witten theory and Einstein Metrics on Four-Manifolds*.

Research

I'm interested in symplectic topology. Much of my recent work concerns structural aspects of *Fukaya categories*, using methods of homological algebra and non-commutative geometry, with applications to *mirror symmetry* and *string topology*.

Funding

2025-current, National Science Foundation RTG (Research and Training Group) award DMS-2446019: "RTG: Geometry and Representation Theory at USC". Total Award Amount: \$2,997,232. PI: Sheel Ganatra. co-PIs: Aravind Asok, Sami Assaf, Julian Chaidez, Aaron Lauda.

2025-current, National Science Foundation FRG (Focused Research Group) award DMS-2412041: "FRGMS: Multigraded Commutative Algebra, Toric Varieties, and Homological Mirror Symmetry". Total Award Amount: \$1,457,854 (Ganatra portion: \$251,133). PI: Christine Berkesch (U. Minnesota). co-PIs: Sheel Ganatra, Andrew Hanlon (U. Oregon), Daniel Erman (U. Hawaii), David Favero (U. Minnesota), Matthew Ballard (U. South Carolina), Michael Brown (Auburn U.).

2021-current, National Science Foundation CAREER award DMS-2048055: "Fukaya categories and noncommutative Hodge structures" (\$450,000).

2023-2024, Simons Fellowship in Mathematics, award 1031288: "Conceptual approaches to Fukaya categories and mirror symmetry" (\$136,004).

2022-2024, National Science Foundation research grant DMS-2002137: "Relating Fukaya Categories Using Combinatorics, Operads, and Nonlinear Elliptic Partial Differential Equations" (\$111,304).

2019-2023, National Science Foundation research grant DMS-1907635: "Structural results in Floer theory and mirror symmetry" (\$228,000).

Conference Grants

National Science Foundation Conference Grant DMS-2533874: "Conference: Southern California Symplectothon." PI: Kyler Siegel. co-PIs: Sheel Ganatra, Bahar Acu, Austin Christian. Award Amount: \$41,049. Dates: 10/01/2025 - 09/30/2027

Articles

Following the convention in mathematics, authors are listed alphabetically. The arXiv numbers correspond to the corresponding entries on the ArXiv preprint server, accessible at <http://arxiv.org>. Graduate students respectively postdocs under my supervision during the time of the research are indicated with (*) respectively (**).

- [GM] S. Ganatra, M. Maydanskiy, *Legendrian surgery formula and P. Seidel's conjecture*, published as appendix to: F. Bourgeois, T. Ekholm, and Y. Eliashberg *Effect of Legendrian Surgery*, *Geometry & Topology* **16** (2012), no. 1, 301–389. <http://doi.org/10.2140/gt.2012.16.301>.
- [EGL] Y. Eliashberg, S. Ganatra, and O. Lazarev, *Flexible Lagrangians*, *International Mathematics Research Notices* **2020** (2020), 2408–2435. <https://doi.org/10.1093/imrn/rny078>.
- [GPS1] S. Ganatra, J. Pardon, V. Shende, *Covariantly functorial wrapped Floer theory on Liouville sectors*, *Publications mathématiques de l'IHÉS* **131** (2020), 73–200. <https://doi.org/10.1007/s10240-019-00112-x>.
- [AGIS] M. Abouzaid, S. Ganatra, H. Iritani, and N. Sheridan, *The Gamma and SYZ conjectures: a tropical approach to periods*, *Geometry & Topology* **24** (2020), no. 5, 2547–2602. <https://doi.org/10.2140/gt.2020.24.2547>.
- [GP2] S. Ganatra, D. Pomerleano, *Symplectic cohomology rings of affine varieties in the topological limit*, *Geometric and Functional Analysis* **30** (2020), no. 2, 334–456. <https://doi.org/10.1007/s00039-020-00529-1>.

- [GP1] S. Ganatra, D. Pomerleano, *A log PSS morphism with applications to Lagrangian embeddings*, Journal of Topology **14** (2021), 291–368. <https://doi.org/10.1112/topo.12183>.
- [G3] S. Ganatra, *Cyclic homology, S^1 -equivariant Floer cohomology, and Calabi-Yau structures*, Geometry & Topology **27** (2023), no. 9, 3461–3584. <http://doi.org/10.2140/gt.2023.27.3461>.
- [GPS2] S. Ganatra, J. Pardon, V. Shende, *Sectorial descent for wrapped Fukaya categories*, Journal of the American Mathematical Society **37** (2024), 499–635. <https://doi.org/10.1090/jams/1035>.
- [GPS3] S. Ganatra, J. Pardon, V. Shende, *Microlocal Morse theory of wrapped Fukaya categories*, Annals of Mathematics **199** (2024), 943–1042. <https://doi.org/10.4007/annals.2024.199.3.1>.
- [GSi] S. Ganatra, K. Siegel, *On the embedding complexity of Liouville manifolds*, Journal of Differential Geometry **127** (2024), no. 3, 1019–1082. <http://doi.org/10.4310/jdg/1721071496>.
- [GHHPS1] S. Ganatra, A. Hanlon, J. Hicks, D. Pomerleano, N. Sheridan, *Integrality of mirror maps and arithmetic homological mirror symmetry for Greene–Plesser mirrors*, to appear in Adv. Math. (2025), 30 pages, arXiv:2312.01949.
- [G1] S. Ganatra, *Automatically generating Fukaya categories and computing quantum cohomology*, submitted (2019), 27 pages, arXiv:1605.07702.
- [G4] S. Ganatra, *Categorical non-properness in wrapped Floer theory*, submitted (2021), 19 pages, arXiv:2104.06516.
- [GGV] S. Ganatra, Y. Gao (*), S. Venkatesh, *Rabinowitz Fukaya categories and the categorical formal punctured neighborhood of infinity*, submitted (2023), 82 pages, arXiv:2212.14863.
- [GHHPS2] S. Ganatra, A. Hanlon, J. Hicks, D. Pomerleano, N. Sheridan, *Homological mirror symmetry for Batyrev mirror pairs*, submitted (2024), 86 pages, arXiv:2406.05272.
- [G2] S. Ganatra, *Symplectic Cohomology and Duality for the Wrapped Fukaya Category*, MIT PhD thesis (2012), 166 pages, arXiv:1304.7312.
- [GPSh1] S. Ganatra, T. Perutz, N. Sheridan, *Mirror symmetry: from categories to curve counts* (2015), 37 pages, arXiv:1510.03839.
- [B3EFGH3] M. Ballard, C. Berkesch, M. Brown, D. Erman, D. Favero, S. Ganatra, A. Hanlon, L. Heller, J. Huang, *King’s conjecture and birational geometry* (2025), 54 pages, arXiv:2501.00130.
- [GSh] S. Ganatra, N. Sheridan, *The cyclic open-closed map and variations of Hodge structures* (2025), 46 pages, arXiv:2511.04498.

Manuscripts in preparation

- [GS] S. Ganatra, D. Sen (*), *The \mathbb{Z}/p -Gysin sequence in symplectic cohomology*, in preparation.
- [AG] M. Abouzaid, S. Ganatra, *Generating Fukaya Categories of Landau-Ginzburg Models*, draft, 31 pages, https://sheelganatra.com/materials/generating_LG_models_draft.pdf. See also lecture notes (based on lectures at MIT in March 2015), available at https://sheelganatra.com/materials/LG_models_notes.pdf.
- [CG] R. Cohen, S. Ganatra, *Calabi-Yau categories, the Floer field theory of a cotangent bundle, and the string topology of its base*, draft, 132 pages, http://math.stanford.edu/~ralph/scy-floer-string_draft.pdf.

Awards and Honors

2026: Invited speaker, **International Congress of Mathematicians**

2024: **Fellow of the American Mathematical Society**

2024: **Frontiers of Science Award**, awarded by the International Congress of Basic Science for paper “Covariantly functorial wrapped Floer theory on Liouville sectors” [GPS1] (jointly with coauthors J. Pardon and V. Shende).

2023-2024: **Simons Fellowship in Mathematics**

2023: **AIM SQuARE proposal funded** (with Shaoyun Bai, Kai Hugtenburg, Yusuf Baris Kartal, Jae Hee Lee, Daniel Pomerleano)

2021: NSF CAREER Award

2021: AIM SQuaRE proposal funded (with Andrew Hanlon, Jeff Hicks, Abigail Ward)

2012: NSF Postdoctoral Research Fellowship

2012: Housman Award for Excellence in Teaching, MIT Mathematics Department

2008-2011: NSF Graduate Research Fellowship

2007-2008: Norman Levinson Fellowship and MIT Presidential Fellowship

2006: Herb Alexander Prize, Harvard Mathematics Department

2005: Phi Beta Kappa, Harvard University

2003-2005: Three time *Outstanding* Designation in the Mathematics Contest in Modeling

2001: Davidson Fellowship

2001: Regional Finalist, Siemens-Westinghouse Competition in Math, Science, and Technology

Invited Talks

July 2026, *International Congress of Mathematicians*, sectional lecture in Topology.

November 2025, *Colloquium*, Northwestern University.

November 2025, *Geometry and Physics Seminar*, Northwestern University.

November 2025, *Western Algebraic Geometry Symposium (WAGS) Fall 2025*, Eugene Oregon.

July 2025, *International Congress of Basic Science (ICBS) 2024* (congress in Beijing held at BIMS), Plenary Lecture.

June 2025, *Birational Geometry seminar* (Zoom seminar lecture).

June 2025, *Homotopical algebra in geometry, topology, and physics* (conference at Northwestern U.).

May 2025, *Derived Categories and Mirror Symmetry* (conference at UW Madison).

February 2025, *Recent Developments in Higher Genus Curve counting* (workshop at Simons Center for Geometry and Physics).

October 2024, *AMS Sectional Meeting at UC Riverside*, special session on “Geometry and topology of contact and symplectic manifolds”

July 2024, *International Congress of Basic Science (ICBS) 2024* (congress in Beijing held at BIMS), FSA award lecture.

June 2024, *Toric and tropical techniques in symplectic field theory* (conference at Institut Mittag-Leffler in Djursholm, Sweden)

May 2024, *M-Seminar* at Kansas State University

April 2024, *Recent Developments in Noncommutative Algebraic Geometry* (workshop at SL Math formerly MSRI)

April 2024, *Colloquium*, CCR La Jolla

February 2024, *Colloquium*, Claremont Center for the Mathematical Sciences, Pomona College

February 2024, *Northern California Symplectic Geometry Seminar*, Stanford

February 2024, *Caltech/USC Algebra and Geometry Seminar*, Caltech

October 2023, *Colloquium*, UCLA

November 2022, *MSRI Approaches to Khovanov homology* seminar

November 2022, *UC Davis Algebraic geometry* seminar

September 2022, *Multipotentials in mirror symmetry*, online workshop hosted at U. Edinburgh.

February 2022, Caltech Algebra and Geometry seminar

January 2022, Max Planck Institute of Mathematics Topology Seminar, invited to plan a 4-talk miniseries and give the final talk

October 2021, IBS-CGP Weekly Zoom seminar (weekly seminar organized by IBS Center for Geometry and Physics, Korea)

April 2021, Symplectic Zoominar (widescale Zoom symplectic geometry seminar jointly co-organized by Princeton, IAS, CRM-Montreal, Tel Aviv, Paris)

March 2021, *Southern California Topology Colloquium*

January 2021, Stanford symplectic geometry seminar

December 2020, *Current advances in mirror symmetry* (virtual workshop organized by the Simons Collaboration on Homological Mirror Symmetry)

November 2020, Northwestern Geometry and Physics Seminar

July 14 2020, Freemath seminar (virtual widescale seminar in geometry hosted at Kings College)

May 2020, *Annual Moscow fair: "Mirror symmetry"* (conference at HSE Moscow— cancelled/postponed due to the COVID-19 pandemic)

December 2019, *Geometry and representation theory* (mini-conference at UC Riverside)

June 2019, *Thematic programme on Homological Algebra, Microlocal Analysis, and Symplectic Geometry*, invited to give a lecture series of five 1.5 hour talks jointly with J. Pardon and V. Shende at Centre de recherches mathématique, University of Montreal

May 27-June 1, 2019, *Who is who in Mirror Symmetry*, (HSE Moscow)

March 22-24, 2019, *AMS Sectional Meeting at University of Hawaii at Manoa* on "SYZ Mirror Symmetry and Enumerative Geometry"

February 8, 2019, *M-Seminar* at Kansas State University

January 28-Feb. 2, 2019, *Mirror symmetry and related topics* (Conference at U. Miami)

January 7-10, 2019, *Workshop on Categorical Gromov-Witten invariants* (workshop at ETH Zurich), invited to give a 2 lecture series

December 12-14, 2018, *Symplectic geometry and homotopy theory* (conference at UCLA)

November 19-23, 2018, *Noncommutative deformations and moduli spaces* (conference at IPMU in Japan)

November 16-17, 2018, *Simons Collaboration on Homological Mirror Symmetry Annual meeting* (conference at Simons Foundation in New York City)

August 20-24, 2018, *2nd Yashafest (Yakov Eliashberg 70th birthday) conference*, Monterey CA

July 2-7, 2018, *Fukaya categories, coefficients, skeleta, and stability conditions*, (conference at IHES)

March 26-30, 2018, *Mirror Symmetry and Enumerative Geometry*, (conference at UC Berkeley)

December 11-15, 2017, *Conference on Mirror Symmetry and Related Subjects* (conference at Kyoto U.)

November 6, 2017, *LA-Top* (Los Angeles area topology seminar, UCLA)

September 15, 2017, Symplectic geometry seminar at U. Montreal

August 7-11, 2017, *Conference on Holomorphic curves and symplectic topology* (conference at Institut Mittag-Leffler in Djursholm, Sweden)

July 17-21, 2017, *Conference on Floer homology and homotopy theory* (conference at UCLA)

May 22-June 2, 2017, *2017 Georgia International Topology Conference*, (conference at U. Georgia)

Jan. 26-29, 2017, *Workshop on Homological Mirror Symmetry* (U. Miami), invitation to serve as *Discussion session leader*.

- Dec. 14-17, 2016, symposium on Symplectic Geometry at *TIMC-AMS International Mathematics Conference*, (BHU, Varanasi, India)
- Nov. 30 - Dec. 2, 2016, *Special Year on Homological Mirror Symmetry* (Institute for Advanced Study, Princeton), invited to give a 2-lecture mini-course
- Nov. 17-18, 2016, *Simons Collaboration on Homological Mirror Symmetry Annual Meeting* (Simons Foundation, New York City)
- Nov. 7-11, 2016, *Workshop on Homological Mirror Symmetry*, (Institute for Advanced Study, Princeton)
- Oct. 3, 2016, Northern California Symplectic Geometry Seminar (lecture given at Stanford)
- Sept. 30, 2016 *Arithmetic algebraic geometry seminar* (Yale)
- Sept. 29, 2016, *Colloquium* (Yale)
- July 25-29, 2016, *Conference on Symplectic geometry and topology* (International Centre for Mathematical Sciences, Edinburgh)
- June 27-July 8, 2016, *Jussieu 2016 Summer School on Symplectic topology, sheaves, and mirror symmetry* (Institut de Mathématiques de Jussieu-Paris Rive Gauche, Paris), invited to give 2 supplementary lectures to a minicourse by D. Auroux.
- April 20, 2016, Special Seminar at Columbia University
- Feb. 29, 2016, *LA-Top* (Los Angeles area topology seminar, UCLA)
- Feb. 22, 2016, MIT Geometry and Topology Seminar
- Feb. 1, 2016, *Northern California Symplectic Geometry Seminar* (Berkeley)
- January 6, 2016, *2016 AMS Joint Mathematical Meetings* (Seattle), “Moduli Spaces in Symplectic Geometry” session
- December 10-12, 2015, *Workshop on Mirror Symmetry* (Kyoto University), 2 lecture series.
- January 11, 2016, *Colloquium* (USC)
- December 1, 2015, *Colloquium* (Boston College)
- November 12, 2015, Geometry and physics seminar (University of Texas at Austin)
- November 7-8, 2015, *Cascade Topology Seminar* (Bi-annual Pacific Northwest topologists conference in Portland, Oregon)
- November 5-8, 2015, *Conference on Homological Mirror Symmetry* (University of Pennsylvania), invited to give a two part lecture series joint with N. Sheridan.
- October 30, 2015, Columbia-Princeton-IAS joint Symplectic Geometry seminar (Columbia University)
- September 21-25, 2015, *Symplectic Geometry and Topology Workshop* (conference in Uppsala U., Sweden)
- June 1-5, 2015, *Conference on Moduli Spaces in Symplectic Topology and in Gauge Theory* (CIRM, Marseille, France)
- March 26-27, 2015, *MIT Workshop on Lefschetz Fibrations*, invited to give a two part lecture series plus discussion session joint with M. Abouzaid.
- March 14-15, 2015 *AMS Sectional Meeting at Michigan State University*, special session on “Floer homology, gauge theory, and symplectic geometry”
- January 26-31, 2015, *Miami conference on Homological Mirror Symmetry* (U. Miami)
- December 15-22, 2014, *Advanced workshop and discussion on Symplectic Geometry and Contact Topology* (Workshop at Tata Institute for Fundamental Research, Mumbai), invited to give 3-lecture series.
- November 21, 2014, Princeton/IAS Symplectic Geometry Seminar
- October 27, 2014, Geometry, Topology, and Dynamics Seminar (UIC)
- September 29, 2014 Stanford Symplectic Geometry Seminar

June 23, 2014 *Mirror Symmetry Week* (conference at Hebrew University of Jerusalem, Israel)

June 16-19, 2014, *International Meeting of the American Mathematical Society and Israeli Mathematical Union* (Tel Aviv), session on “Geometry and Dynamics”

June 10, 2014, *Moduli Spaces Program Seminar* (Simons Center for Geometry and Physics)

May 5, 2014, Northern California Symplectic Geometry Seminar (Stanford University)

April 30, 2014, Hebrew University topology and geometry seminar (Hebrew University of Jerusalem, Israel)

February 21, 2014, Princeton/IAS Symplectic Geometry Seminar

January 24, 2014, Columbia Symplectic Geometry, Gauge Theory, and Categorification Seminar

October 7-11, 2013, *Mini-course at University of Hamburg*, invited to give a 4-lecture mini-course.

July 23, 2013, Mirror Symmetry Seminar (Kavli IPMU, University of Tokyo, Japan)

July 18, 2013, Seminar on Geometry and Related topics (RIMS, Kyoto University, Japan)

July 8-12, 2013, *Mini-course at Seoul National University*, invited to give a 3-lecture mini-course.

July 4-5, 2013, *Pacific RIM Conference in Mathematics 2013* (Sapporo, Japan), session on “Symplectic topology”

May 1, 2013, *Workshop on J-holomorphic Curves in Symplectic Geometry, Topology and Dynamics* (Centre de recherches mathématique, University of Montreal)

January 2013, *Miami conference on Homological Mirror Symmetry* (U. Miami)

September 11, 2012, Simons Center for Geometry and Physics seminar

March 31, 2012, *AMS Sectional Meeting*, special Session on “Mirror Symmetry” (University of Kansas)

November 7, 2011, Northern California Symplectic Geometry Seminar

October 27, 2011, Northwestern Geometry and Physics Seminar

April 12, 2011, Stanford Topology Seminar

October 11, 2010, Stanford Symplectic Geometry Seminar

November 2009, *AIM Workshop on Cyclic Homology and Symplectic Topology* (American Institute of Mathematics, Palo Alto CA)

Teaching

University of Southern California

Spring 2023, **Instructor** and **Course Coordinator** for Math 229, *Calculus III for engineers and scientists*.

Spring 2023, **Instructor** for Math 641, *Topics in Topology: Advanced Algebraic Topology* (second semester graduate topology course, newly created).

Fall 2022, **Instructor** for Math 599, *Topics in Topology: Floer homotopy theory* (newly created advanced topics course).

Spring 2022, **Instructor** for Math 535a, *Differential Geometry I* (first semester graduate course on geometry of manifolds).

Fall 2021, **Instructor** for Math 226g, *Calculus III* (multivariable calculus, two classes)

Spring 2021, **Instructor** for Math 641, *Topics in Topology: Advanced Algebraic Topology* (second semester graduate topology course, newly created).

Fall 2020, **Instructor** for Math 641, *Topics in Topology: Mirror symmetry* (advanced topics graduate topics course, newly created).

Fall 2020, **Instructor** for Math 125g, *Calculus I* (introductory undergraduate calculus).

Spring 2020, **Instructor** for Math 520, *Complex analysis* (graduate complex analysis).

Spring 2020, **Instructor** for Math 535b, *Differential Geometry II* (second semester graduate course in differential geometry, focused on Riemannian, symplectic and Kähler geometry).

Spring 2019, **Instructor** for Math 535b, *Differential Geometry II* (second semester graduate course in differential geometry, focused on Riemannian, symplectic and Kähler geometry, newly recreated).

Spring 2018, **Instructor** for Math 535a, *Differential Geometry I* (first semester graduate course on geometry of manifolds).

Fall 2017, **Instructor** for Math 440, *Topology* (undergraduate upper-level course).

Spring 2017, **Instructor** for Math 535a, *Differential Geometry I* (first semester graduate course on geometry of manifolds).

Stanford University

Summer 2016, **Instructor** for Math 51, *Linear Algebra and Differential Calculus of Several Variables* (two classes).

Spring 2016, **Instructor** for Math 257b, *Topics in symplectic geometry: Aspects of Fukaya categories* (graduate topics course).

Spring 2016, **Instructor** for Math 171, *Fundamental Concepts of Analysis*.

Summer 2015, **Instructor/Supervisor** for Math 360, *Advanced Reading and Research* (reading course for two graduate students each on different topics in symplectic topology: (a) *Floer homology* and (b) *Fukaya categories*).

Winter 2015, **Instructor** for Math 51, *Linear Algebra and Differential Calculus of Several Variables* (two classes).

Spring 2013, **Instructor** for Math 113, *Linear Algebra and Matrix theory* (undergraduate theoretical linear algebra with proofs).

Winter 2013, **Instructor** for Math 215b, *Complex Analysis and Geometry II: Algebraic Topology* (first year graduate course).

Fall 2012, **Instructor** for Math 51, *Linear Algebra and Differential Calculus of Several Variables* (two classes):

Massachusetts Institute of Technology

Summer 2011, **Co-Instructor** for 18.089, *Review of Mathematics (Single and Multivariable Calculus)*.

Winter 2012, **Teaching Assistant** for 18.095, *Mathematics Lecture Series*.

Spring 2011, **Teaching Assistant** for 18.03, *Differential Equations*.

Harvard University

Fall 2005, **Course Assistant** for Math 272a, *Algebraic Topology I*.

Spring 2004, **Course Assistant** for Math 113, *Complex Analysis*.

Postdoctoral researchers mentored

Christopher Kuo, 2022 - 2025, Assistant Professor (NTT) of Mathematics, USC. (subsequent position: Max Planck Institute for Mathematics)

Joseph Helfer, 2021- 2024, Assistant Professor (NTT) of Mathematics, USC. Awarded USC's Zumberge Individual Research Award in 2022 with me as the faculty mentor. (subsequent position: Simons Center for Geometry and Physics, Stony Brook University)

Yuan Gao, 2018-2021, Assistant Professor (NTT) of Mathematics, USC. (subsequent position: University of Georgia)

Nathaniel Bottman, 2019-2020 and Fall 2020, Assistant Professor (NTT) of Mathematics, USC. (subsequent position: w2 at Max Planck Institute for Mathematics. Received TT offer from USC)

Aaron Mazel-Gee, 2017-2020, Assistant Professor (NTT) of Mathematics, USC. Awarded USC's Zumberge Individual Research Award in 2018 with me as the faculty mentor. (subsequent position: Sherman Fairchild Instructor at Caltech)

Graduate Students

Debtanu Sen (PhD student 2019 - 2023, subsequent position after PhD: quantitative analyst at Trailstone Group)

Alec Sahakian (PhD student 2019 - 2023, Masters student 2018-2019, subsequent position after PhD: Instructor at USC)

Jian Zhou (PhD student, 2019 - 2023, subsequent position after PhD: Instructor at USC)

Siyang Liu (PhD student, 2021 - 2025)

Yasin Uskuplu (PhD student, 2021 - 2025)

Sanat Mulay (PhD student, 2021 - 2025)

Haosen Wu (current PhD student 2023 - present, Masters student 2018-2020)

Boxi Hao (current PhD student, 2023 - present)

David O'Connor (current PhD student, 2023 - present)

Service Activities

Departmental Service at USC

Department Chair, Department of Mathematics (2025-present)

Interim Department Chair, Department of Mathematics (2024-2025)

Department Chair Selection Consultative Committee (2022-2023)

Outreach Committee (2022-2023)

Merit Committee (2021-2023)

Developmental Review Committee (2021-2023)

Search Committee (2017-2018, 2019-2022)

NTT Search Committee (2017-2019, 2020-2021)

Qualifying Exam Committee, Geometry and Topology (2017-2019, 2020-2021, chair 2021-2022, chair spring 2023)

Colloquium Committee (co-chair, 2021-2022)

Faculty mentor to Kyler Siegel (Assistant Professor at USC), 2020-current

Oral examination committee for: Dong Zhang (2019), Debtanu Sen (2020, chair), Grant Bowling (2020), Mark Ebert (2021), Wenhan Jiang (2021), Jian Zhou (2021, chair), Alec Sahakian (2021, chair), Jonathan Michala (2023), Jishnu Bose (2023), Yasin Uskuplu (2023, chair), Fan Yang (2024), Haosen Wu (2024, chair).

Ph.D. Defense committee for Bahar Acu (2017), Viktor Kleen (2019), Debtanu Sen (2023 chair), Alexander Sahakian (2023 chair), Jian Zhou (2023 chair).

Master's Committee for Jiajun Yan (2017), David Kim (2021), Fan Yang (2021).

Supervision of reading courses:

Fall 2023: Boxi Hao (second year graduate student)

Spring 2021-Fall 2021 (three terms): Sanat Mulay (second–third year graduate student)

Spring 2021 - Summer 2021 (two terms): Siyang Liu (first year graduate student)

Summer 2021: Alec Sahakian (second year graduate student)

Fall 2020: Alec Sahakian (second year graduate student), Debtanu Sen (fifth year graduate student)

Spring 2020: Jian Zhou (third year graduate student)

Summer 2020: Boxi Hao (masters student) and Fan Yang (masters student)

Summer-Fall 2018 (two terms): Haosen Wu (rising senior) in Summer-Fall 2018, and Alec Sahakian (Masters student in Applied Math)

Workshops/Conference Organization and Mentoring

Summer 2025 (forthcoming): Co-organizer for **Macaulay2 Workshop on Homological Mirror Symmetry and Multigraded Commutative Algebra**, workshop at AIM (Pasadena, CA).

July 2025: Mentor for a weeklong graduate training workshop *Partially wrapped Fukaya categories at Helmsley*, Helmsley, England.

Fall 2024: Co-organizer for a second edition of the **Southern California Symplectothon**.

October 2022: Co-organizer for **Southern California Symplectothon**, a weekend learning workshop in symplectic geometry held at a house in Big Bear Lake, California.

September 2022: Co-organizer for **Introductory workshop on Floer homotopy theory** at the Mathematical Sciences Research Institute (MSRI) as part of a Fall 2022 special program in *Floer homotopy theory*.

September 2022: Co-organizer for **Mirror symmetry and periods**, workshop at ICMS (Edinburgh).

January 2022: Co-organizer for a special session on **Quantum categorical structures in mirror symmetry** at 2022 AMS Joint Mathematical Meetings, Seattle, Washington.

September 2020: Co-organizer for a virtual (Zoom) 4-day workshop titled **Floer-theoretic and algebro-geometric aspects of SYZ mirror symmetry**.

June 2019: Co-Mentor for the **Kylerec 2019 graduate workshop: Sheafy symplectic topology** in Truckee CA.

January 2016: Resident Scientific Committee, **Lefschetz fibrations: rigidity and flexibility** (graduate student training workshop), New Orleans, LA.

January 2016: Co-organizer of special session on **Moduli Spaces in Symplectic Geometry** at 2016 AMS Joint Mathematical Meetings, Seattle, Washington

2008-2013: Co-organizer of the **Talbot workshops**, weeklong graduate student training workshops in Topology and Geometry. Including:

April 2013 *Chromatic Homotopy Theory* (South Lake Tahoe, CA)

May 2012 *Calculus of Functors* (Garden City, UT)

May 2011 *Non-abelian Hodge theory* (Draper, UT)

May 2010 *Twisted K theory and Loop groups* (Breckenridge, CO)

March 2009 *Fukaya categories* (Nags Head, NC)

2010-2011: Co-organizer of the **MIT-RTG Geometry Workshops**, weeklong graduate student training workshops in Geometry. Including:

June 2011 *Fukaya categories via Microlocal Sheaf Theory* (Breckenridge, CO), and

August 2010 *Symplectic Field Theory* (Raymond, ME).

Seminar (co-)Organization

Co-founded and co-organize the **Western Hemisphere Virtual Symplectic Seminar (WHVSS)**, wide-scale weekly virtual (Zoom) research seminar regularly attended by 40-120 participants from around the world, 2020 - present (currently on hiatus).

USC Mathematics Colloquium, 2021-2022.

Topology seminar at USC, 2017-2020, 2021-2023.

Los Angeles Area joint topology seminar (LATOP), 2017-2023.

Symplectic geometry graduate student reading group at USC, 2019 - 2020.

Working group at IAS on *Gamma conjectures in mirror symmetry*, Fall 2016.

Symplectic Geometry seminar at Stanford, 2014-2016.

Student Symplectic Geometry seminar ($S^2 \times S^2$) at Stanford, 2012-2014.

Graduate student seminars at MIT 2009-2011: *Juvitop on Non-abelian Hodge theory* (2011), *Graduate student seminar on Fukaya categories* (2009), Pure Math Graduate Student Seminar (PuMaGraSs) (2009).

Seminars/working groups at MSRI/Berkeley 2009-2010: *Working group on Algebraic structures of holomorphic curves* (Fall 2009, MSRI), *Graduate student seminar on Twisted K theory and Loop group representations* (Fall 2009, UC Berkeley).

K-12 Science Fairs

2017, 2019, 2022, 2024: Served as *Co-chair for Mathematics judging* at the Intel/Regeneron International Science and Engineering Fair (ISEF) in Los Angeles (2017), Phoenix (2019), Atlanta (2022), Los Angeles (2024) (and briefly served as co-chair in 2020 also, prior to the Fair's pandemic cancellation). Managed and recruited a team of 35-40 mathematics judges whose goal was to decide Grand Awards in Mathematics and encourage all participants.

2024: Served as *Top Award Judge* at Regeneron ISEF 2024. With a team of other top award judges, reviewed top-rated projects in all categories to decide on various best of fair awards.

Professional Activities

Served on two NSF grant review panels.

Referee for *Journal of the American Mathematical Society (JAMS)*, *Inventiones Mathematicae*, *Acta Mathematica*, *Duke Mathematical Journal*, *Journal of the European Mathematical Society (JEMS)*, *Geometric and Functional Analysis*, *Geometry and Topology*, *Journal of Differential Geometry (JDG)*, *Quantum Topology*, *Compositio Mathematica*, *Homotopy, Homology, and Applications*, *Algebraic and Geometric Topology*, *Journal of Symplectic Geometry (JSG)*, *Symmetry, Integrability and Geometry: Methods and Applications (SIGMA)*.

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