

Christopher Scaduto

Curriculum Vitae

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Academic appointments

Associate Professor of Mathematics, University of Miami, 2025–present

Assistant Professor of Mathematics, University of Miami, 2019–2025

Assistant Professor and NSF Postdoctoral Fellow, Simons Center for Geometry and Physics at Stony Brook University, 2016–2019

NSF Postdoctoral Fellow, Brandeis University, 2015–2016

Education

Ph.D. in Mathematics, University of California, Los Angeles, 2015

B.Sc. in Applied Mathematics, Columbia University, 2009

Research support

Simons Travel Grant, 2025–2030

NSF FRG: Collaborative Research in Gauge Theory, 2020–2025. Principal Investigator

NSF Mathematical Sciences Postdoctoral Fellowship, 2015–2019. Principal Investigator

Honors and awards

Pacific Journal of Mathematics Dissertation Prize, 2015

Heaviside Wealth Management Award, 2015

Stephen J. Girsky Fellowship Award, UCLA, 2014

Publications

1. *Instantons, special cycles, and knot concordance*. With Aliakbar Daemi, Hayato Imori, Kouki Sato, and Masaki Taniguchi. *Geometry & Topology*, 2025.
2. *Equivariant aspects of singular instanton Floer homology*. With Aliakbar Daemi. *Geometry & Topology*, 2024.
3. *On definite lattices bounded by a homology 3-sphere and Yang–Mills instanton Floer theory*. *Geometry & Topology*, 2024.

4. *Chern–Simons functional, singular instantons, and the four-dimensional clasp number*. With Aliakbar Daemi. Journal of the European Mathematical Society, 2024.
5. *Framed instanton homology of surgeries on L -space knots*. With Tye Lidman and Juanita Pinzón-Caicedo. Indiana University Mathematics Journal, 2022.
6. *Associative submanifolds and gradient cycles*. With Simon Donaldson. Surveys in Differential Geometry, 2021.
7. *Niemeier lattices, smooth 4-manifolds and instantons*. Mathematische Annalen, 2020.
8. *An odd Khovanov homotopy type*. With Sucharit Sarkar and Matthew Stoffregen. Advances in Mathematics, 2020.
9. *On definite lattices bounded by integer surgeries along knots with slice genus at most 2*. With Marco Golla. Transactions of the American Mathematical Society, 2019.
10. *Newstead’s Mayer–Vietoris argument in characteristic 2*. With Matthew Stoffregen. International Journal of Mathematics, 2019.
11. *The cohomology of rank two stable bundle moduli: mod two nilpotency and skew Schur polynomials*. With Matthew Stoffregen. Canadian Journal of Mathematics, 2019.
12. *Nilpotency in instanton homology, and the framed instanton homology of a surface times a circle*. With William Chen. Advances in Mathematics, 2018.
13. *Two-fold quasi-alternating links, Khovanov homology and instanton homology*. With Matthew Stoffregen. Quantum Topology, 2018.
14. *Klein-four connections and the Casson invariant for nontrivial admissible $U(2)$ bundles*. With Matthew Stoffregen. Algebraic & Geometric Topology, 2017.
15. *Instantons and odd Khovanov homology*. Journal of Topology, 2015.

Preprints and accepted papers

16. *On symplectic aspects of $SU(2)$ character varieties for punctured surfaces*. With Aliakbar Daemi; arXiv:2609.28907 (2026). Preprint; submitted.
17. *The mapping class group action on the odd character variety is faithful*. With Aliakbar Daemi; arXiv:2503.13350 (2025). Preprint; submitted.
18. *Unoriented skein exact triangles in equivariant singular instanton Floer theory*. With Aliakbar Daemi; arXiv:2409.16390 (2024). Preprint; submitted..
19. *Rank three instantons, representations and sutures*. With Aliakbar Daemi and Nobuo Iida; arXiv:2402.10448 (2024). To appear in Forum of Mathematics, Pi.
20. *Metric stretching and the period map for smooth 4-manifolds*. arXiv:2309.16820 (2023). Preprint; submitted.
21. *Computing v -invariants of Joyce’s compact G_2 -manifolds*. arXiv:2008.07239 (2020). Preprint.

Teaching and advising

Courses taught at UM. Point-set topology; Differential Topology; Topics in Topology; Linear Algebra; Survey of Modern Algebra; Calculus III; Ordinary Differential Equations; Finite Mathematics.

Advising. Advisor to two Ph.D. students and several dozen undergraduate mathematics majors. Advised several graduate reading courses in topics such as gauge theory and symplectic topology.

Dissertation committees. Christopher Anderson (2020), Nikoloas Karatzas (2026).

Selected invited lectures

AMS Special Session: Geometric and Analytic Aspects of Gauge Theory, GWU, October 3, 2026
 Geometry/Topology Seminar, Washington University in St. Louis, April 20, 2026
 Gauge Theory and Floer Homology, Simons Center for Geometry and Physics, April 29, 2025
 Geometry-Topology Seminar, University of Maryland, March 3, 2025
 Rutgers Gauge Theory Conference, May 13, 2024
 Gauge Theory Seminar, Rutgers University, December 8, 2023
 Instantons and Foams, Massachusetts Institute of Technology, May 18, 2023
 Gauge Theory and Topology Seminar, Harvard University, February 24, 2023
 Workshop on Gauge Theory, Miami Beach, April 18, 2022
 Topology Seminar, Princeton University, March 4, 2021
 Topology Seminar, Stanford University, May 19, 2020
 Topology Seminar, University of Texas at Austin, November 5, 2018
 Gauge Theory and Applications, University of Regensburg, July 25, 2018
 Geometry and Topology Seminar, Massachusetts Institute of Technology, March 5, 2018
 Gauge Theory in Fukuoka, Japan, February 19, 2018
 Gauge Theory and Low-dimensional Topology, Simons Center, April 28, 2017

Selected professional activities

Co-organizer, Workshop on Gauge Theory & Low-dimensional Topology, Miami (2024).
 Co-organizer, IMSA Spring Emphasis Semester, Low-Dimensional Topology and Gauge Theory, and its Gauge Theory and Low Dimensional Topology conference, University of Miami (2023).
 Lecturer of a five day mini-course in the workshop *Involutions in Gauge Theory and Algebraic Geometry*, University of Nantes (2023).
 Co-organizer, Workshop on Gauge Theory, Miami (2022).
 Co-organizer, University of Miami Topology Seminar (2019–present).

Selected academic service

Referee for over a dozen mathematical journals.
 Grant reviewer for the National Science Foundation (US) and the Simons Foundation.
University of Miami. College Curriculum Committee (2021–present); Graduate Curriculum Committee (2022–2023); several hiring committees; Faculty marshall at several graduation ceremonies.

Personal

Born in New Jersey, USA.
 Dual citizen: USA and Italy.