

Shruthi Sridhar

Curriculum Vitae

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Employment

- 2024 - current **University of Richmond**, *Teaching Faculty of Mathematics and Director of Calculus Instruction*
2023 - 2024 **Santa Clara University**, *Assistant Teaching Professor*
Fall 2021 **Mercer County Community College**, *Adjunct Faculty*

Education

- 2018 - 2024 **Ph.D. Mathematics**, *Princeton University*, Advisor: David Gabai
Thesis: Families of Arcs in 4-Manifolds and Maps of Configuration Spaces
2019 **M.A Mathematics**, *Princeton University*
2014 - 2018 **B.A. Mathematics**, *Cornell University*, summa cum laude

Teaching Experience

University of Richmond

- Fall 2024 **MAT 211** Calculus 1
MAT 212 Calculus 2
Putnam Preparation
Spring 2025 **MAT 212** Calculus 2
MAT 102 Finite Mathematics

Santa Clara University

- Fall 2023 **Math 13 and Math 14** Multivariable Calculus sequence, **Math 9L** Precalculus Lab
Winter 2024 **Math 11** Calculus 1, **Math 9** Pre-calculus, **Math 9L** Precalculus Lab
Spring 2024 **Math 8** Statistics, **Math 12** Calculus 2

Mercer County Community College

- Fall 2021 **MAT 146** Precalculus

Princeton University

Graduate Instructor

- Spring 2022 **Math 202** Linear Algebra
Fall 2021 **Math 203** Advanced Vector Calculus
Fall 2020 **Math 175** Multivariable calculus for Life Sciences

Teaching Assistant

- Math 560** Graduate Algebraic Topology
Math 365 Topology

Cornell University

- 2015-2018 **Tutor at the Math Support Center**
2016 **Course Assistant for Math 1021** Support course for Linear algebra
Fall 2016 **Grader for Math 1105** Finite Math for Life Sciences

Research interests

Low dimensional topology, knotted surfaces, 4-manifolds, embedding spaces, configuration spaces, cobordism groups, TQFTs

My thesis project is expanding work by Gabai and Budney to study homotopy groups of embedding spaces in 4-manifolds using invariants coming from embedding calculus.

Papers

- 2024 **Families of embedded arcs in 4-manifolds**, (In preparation)
- Mar 2024 **Nested cobordisms, Cyl-objects and Temperley-Lieb algebras**, with M. Calle, R. Hoekzema, L. Murray, N. Pacheco-Tallaj, C. Rovi, <https://arxiv.org/abs/2403.01067>, (Submitted)
- Aug 2021 **Cyclic Sieving for Cyclic Codes**, with A. Mason, V. Reiner, <https://arxiv.org/abs/2004.11998>, Finite Fields and Their Applications. 73. <https://doi.org/10.1016/j.ffa.2021.101846>
- Sep 2019 **Support Equalities Among Ribbon Schur Functions**, with M. Gaetz, W. Hardt, The Electronic Journal of Combinatorics , Volume 26 Issue 3. <https://doi.org/10.37236/8229>
- May 2018 **Densities of Hyperbolic Cusp Invariants**, with C. Adams, R. Kaplan-Kelly, M. Moore, B. Shapiro, J. Wakefield, Proceedings of the American Mathematical Society. 146. [10.1090/proc/14068](https://doi.org/10.1090/proc/14068)

Awards

- 2021 **Community College Teaching Fellowship**, joint partnership between Princeton University and Mercer County Community College
Received a stipend and shadowed Prof. Jamie Fleischner in Spring 2021 and discussed pedagogy and teaching in a community college setting
- 2019 **Outstanding Poster Award**, Joint Math Meetings
- 2018 **Kieval Prize**, Cornell University
Awarded to 2-4 top graduating seniors in the Cornell Mathematics Department
- 2018 **Phi Beta Kappa**, Cornell University
- 2018 **Alice T Schafer Prize**, Honorable Mention
Awarded annually to 3-5 women mathematics undergraduate students from all over America
- 2017, 2015 **William Lowell Putnam Exam**, Top 200
- 2016 **Outstanding Presentation Award**, MAA MathFest
- 2014 - 2018 **Tata Scholarship**, Cornell University

Professional Development and Extracurricular activities

- 2024 **San Jose Math Circle Presenter**, Santa Clara University
◦ Designed and conducted exploratory activities about platonic solids to build problem solving skills for advanced middle school students
- 2023-24 **Teaching Circle**, Santa Clara University
◦ Weekly meetings with other faculty to discuss strategies and reflections about teaching
- 2020 - 2021 **Mentor**, Undergraduate Directed Reading Program, Princeton University
◦ Created a curriculum for 9 - 10 week reading course for an undergraduate student
◦ Met weekly to discuss exercises and other questions
◦ Advised and edited the student's expository report at the end of the semester
- 2020 - 2023 **Teaching Transcript Program**, Princeton University
◦ Pedagogy and teacher training program
- 2018 - 2022 **Mentor**, Mentoring Mobius program, Princeton University
◦ Co-hosted monthly meetings with 4-5 math undergraduates to discuss math, classes, careers, internships, and other topics
- 2019 - 2022 **Member**, Math Department Graduate Student Committee, Princeton University
◦ Met with the Directors of Graduate Study once a semester to discuss concerns in the math department, offer suggestions, and plan events.
◦ Organized Friday Social events twice a month
◦ Organized the 2-3 day visit for admitted graduate students in March every year

- 2018 **Undergraduate mentor**, *AWM mentoring program*, Cornell University
- 2018 **Volunteer**, *Expanding Your Horizons*, Cornell University
 - Helped run math exploration activities for middle school girls during the weekend workshop

Invited Talks

- Nov 2023 **University of Virginia Geometry Seminar**, *Homotopy Groups of Embedding spaces*
- Mar 2023 **Spring Topology and Dynamical Systems Conference**, *Homotopy groups and Embedding Spaces*
- Apr 2021 **Cornell University Homotopy Group Student Seminar**, *Embedding Calculus and Configuration Spaces*
- Jun 2020 **GROOT seminar (online)**, *Knotted 3-balls in S^4*

Research Collaborations

- Current **Women in Topology IV**, *Nested Cobordisms and TQFTs*
- Summer 2017 **University of Minnesota - Twin Cities, REU**, *Schur Functions*
- Summer 2016 **SMALL REU, Williams College**, *Hyperbolic Knot Theory*
- Summer 2015 **Cornell SPUR REU program**, *Jacobians of Matroids*
- Spring 2015 **Independent Study at Cornell University**, *Spanning Trees of Ribbon Graphs*

Selected Workshops and Conferences Attended

- Aug 2024 **"What's your trick? A Non-Traditional Conference in Low-Dimensional Topology"**, *BIRS*
- Feb 2024 **AIM SQuaREs Research Collaboration**, *Caltech University*
- Jul 2023 **Stability in Topology, Arithmetic, and Representation Theory Workshop**, *Purdue University*
- May 2023 **Formalization of Mathematics, SL-Math (formerly MSRI)**
Learnt "Lean", a proof-checking programming language and worked on a formalization project in topology.
- Jun 2022 **Topological Data Visualization Workshop**, *Virtual Participant*
- Jul 2019 **Graduate Summer School on Quantum Field Theory and Manifold Invariants**, *Park City Math Institute (PCMI)*
- Apr 2019 **Workshop on Moduli spaces of manifolds, MIT Talbot workshop**
Gave a talk on isotopy classes of diffeomorphisms of highly connected manifolds.

Skills

Programming Languages: Lean 4.0, Java, Sage, C++, $\text{\LaTeX}$