Daniel Santiago

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Education

Massachusetts Institute of Technology

Bachelor of Science in Pure Mathematics

RESEARCH EXPERIENCE

MIT Summer Program for Undergraduate Research

• Worked with graduate student Michael Law and undergraduate Isaac Lopez on a project generalizing the Positive Mass Theorem.

SMALL REU at Williams College

• Researched knotoids and links in handlebodies in the Knot Theory group at SMALL under Professor Colin Adams.

MIT Undergraduate Research Opportunities Program

• Studied explicit examples of cusp formation in the Plebanski-Demianski family of Einstein Metrics with Professor Tristan Ozuch and undergraduate Carlos Alvarado.

Research in Factorization Theory

• Worked with Professor Reyes M. Ortiz at the University of Puerto Rico on research in τ_n -factorizations over the integers.

PUBLICATIONS AND PRE-PRINTS

- Adams, C., Bonat, A., Chande, M., Chen, J., Jiang, M., Romrell, Z., Santiago, D., Shapiro, B. and Woodruff, D., 2022. Hyperbolic Knotoids. arXiv preprint arXiv:2209.04556. Submitted.
- Adams, C., Bonat, A., Chande, M., Chen, J., Jiang, M., Romrell, Z., Santiago, D., Shapiro, B. and Woodruff, D., 2022. Generalizations of Knotoids and Spatial Graphs. arXiv preprint arxiv:2209.01922. Submitted.
- Alvarado, C.A., Ozuch, T. and Santiago, D. , 2022. Families of degenerating Poincaré-Einstein metrics on ⁴. arXiv preprint: arXiv:2206.07993. To appear in Annals of Global Analysis and Geometry.
- 4. Adams, C., and Santiago, D., 2023. Composition Properties of Hyperbolic Links in Handlebodies. New York Journal of Mathematics, 29, 1097-116.
- 5. Law, M., Lopez, I., and Santiago, D. Positive Mass Theorems for Weighted Manifolds and Smooth Metric Measure Spaces. In Preparation.

AWARDS

- Hartley Rogers Jr. Prize for best paper in the 2023 MIT Summer Program for Undergraduate Research. Received with Michael Law and Isaac Lopez.
- NSA First Mathematics Award at 2019 Intel International Science and Engineering Fair
- Fourth Mathematics Award at 2019 Intel International Science and Engineering Fair

Cambridge, MA Expected June 2024

June 2022 – August 2022

June 2023 – August 2023

Cambridge, MA

Cambridge, MA

September 2021 – June 2022 Cambridge, MA

August 2019-May 2020 Mayagüez, PR

WORK AND READING EXPERIENCE

Grader	February 2022 - May 2022 <i>Cambridge, MA</i>
• Worked as a grader for the Introduction to Topology Class (18.901) at MIT	-
MIT Mathematics Directed Reading Program	January 2022, January 2023 Cambridge,MA
• Read <i>Topics in Heat Equations</i> under the supervision of Julius Baldauf.	
• Read Lawson and Michelson's <i>Spin Geometry</i> under the supervision of Nat	alia Pacheco-Tallaj.
MIT Undergraduate Research Opportunities Program	July 2021- August 2021 Cambridge,MA
• Read about Riemannian metrics with constant Gauss curvature in dimension	on 2 with Professor Tristan Ozuch.
Expository Papers	
1. The Spherical Bernstein Problem in S^3 . Final Paper for the Seminar	r in Geometry course at MIT.
Conference Presentations	
1. Pi Mu Epsilon poster presenter at 2023 Joint Mathematics Meetings. Knotoids.	. Presented on the project <i>Hyperbolic</i>
Community & Leadership	
Staff Member in MIT Undergraduate Math Association	2020-2021, September 2022-Present

Cambridge, MA

• Working as Committee Head of the Diversity, Equity, Inclusion and Outreach Committee of the Undergraduate Math Association. Help organize events and plan activities of the Association.

TECHNICAL SKILLS

Languages: Bilingual (English and Spanish) Computer Skills: LAT_EX, Wolfram Language, Python