

Latinxs and Hispanics in Mathematical Sciences



Photo courtesy of Andrew Ortegaray

Andrew Ortegaray

Graduate Student

University of California, Santa Barbara

Andrew Ortegaray (he/him) is a Ph.D. student in mathematics at the University of California, Santa Barbara, where he works with Zhenghan Wang. His research brings together topology, geometry, quantum information, and computation. At the center of Andrew's research is the question of how topological and geometric structure can help protect quantum information from errors, often using large-scale computation to test ideas and find patterns worth explaining theoretically. He combines formal proof with computational experiments, using large-scale computation to identify patterns and mathematics to explain them.

Andrew was born and raised in Los Angeles in a family with roots in Mexico and Nicaragua. Andrew is the youngest of three siblings. He earned a B.S. in mathematics and physics from the California Institute of Technology. There, working with Matilde Marcolli helped him see mathematics as something creative and exploratory: a place to play with the unknown, chase connections, and ultimately, solve puzzles. Before graduate school, he worked on computational mathematics at Wolfram Research and as a Starlink Analyst at SpaceX. Those experiences strengthened his interest in moving between analytic mathematical ideas and concrete computational work.

Andrew also cares deeply about how mathematics is shared. He has taught and mentored students at several stages, from K-12 students preparing for Olympiad-style mathematics and the AMC 12 to undergraduates beginning independent research. Across these settings, he tries to make difficult ideas approachable without pretending they are easy and to help others become more comfortable with questions whose answers are not immediately clear.

In addition to his research, Andrew is a committed teacher and mentor in mathematics. In the classroom, he creates an inquiry-based environment, where he presents students with carefully selected examples and often prompts them to uncover mathematical rules and relationships independently before introducing them to the formal definitions and proofs. He finds this approach creates productive struggle and allows students not only to grapple with mathematical ideas, but also to gain confidence in their reasoning and approach. The same philosophy shapes his mentoring. Through the UCSB Mathematics REU, Cal-Bridge, and the UCSB Mathematics Directed Reading Program, Andrew has supported undergraduate students' jump into higher mathematics. He breaks large research and reading projects into background lessons and guided play. Notably, he has also mentored undergraduate group projects involving topology and quantum error correction and helped students turn their work into public talks and conference posters.

"For me, Hispanic Heritage Month is a time for pride, gratitude, and connection. The month offers an opportunity to share the stories of those who came before us and those who have persevered through struggles comparable to or greater than our own. At its best, it reminds us to talk about our histories and the contributions that are too often overlooked. In times like these, I think this month can help us find strength in our pasts and be stronger together."

Lathisms was founded in 2016 in order to showcase the contributions of Latinx and Hispanic mathematicians during Hispanic Heritage Month, which is celebrated in the United States from September 15 and October 15 every year. During this time, we feature/reveal a prominent Latinx/Hispanic mathematician daily. See all the featured mathematical scientists at LATHISMS.ORG.

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