

Latinxs and Hispanics in Mathematical Sciences



Photo courtesy of Allison Fisher

"Hispanic Heritage Month is a reminder of the sacrifices my family has made for my sister and me. It is a reminder to honor those who are not as fortunate, and to honor my loved ones I never had the chance to say goodbye to. I reflect on the contradictions of the experience: sometimes feeling neither from here nor there, and sometimes feeling deeply connected to both. It reminds me that millions share the same—but different—experiences, and that I am in a unique position to help future generations of students feel they belong."

Dr. Enrique Alvarado

Assistant Professor
University of Texas, El Paso

Enrique Alvarado is a Mexican-American born into a family from Mexicali, the capital of Baja California and a desert city along the U.S.-Mexico border known for its intense heat. Enrique spent his early childhood in Mexicali, crossing the border to attend school, and spending his days playing with his sister and cousins en casa de la Abuelita o de la Nani, surrounded by the love of his extended family. Although Enrique and his sister were fortunate to be shielded from many of the hardships their parents had faced in Mexico, their parents understood the opportunities that life in the United States could offer them. When Enrique was seven, his father accepted a job in Bellevue, Washington, and the family of four moved north to begin a new life. Adjusting to life in the States, far from his extended family, was the most difficult experience of Enrique's childhood.

After high school, Enrique earned a B.S. in Mathematics from Gonzaga University before completing his Ph.D. in (Applied) Mathematics at Washington State University. He then held postdoctoral positions at the University of California, Davis, for three years and at Iowa State University for two. Enrique is now back in desert country, beginning his first year as a tenure-track Assistant Professor in the Department of Mathematical Sciences at the University of Texas, El Paso.

Alvarado's research focuses on the development and application of geometric variational methods for understanding complex structures in materials and data. Alvarado is a highly collaborative mathematician, with a strong interest in interdisciplinary research. This interest began during his doctoral studies at Washington state, where he spent the last two years as a Research Assistant for Aurora Clark's computational chemistry lab. There, he used tools from geometric measure theory to identify and quantify protrusions on liquid-liquid interfaces. He is currently studying microstructures arising in materials science. Using tools from the theory of functions of bounded variation, he and his collaborators are developing general and computationally efficient variational models for capturing and comparing diverse microstructures seen within materials. A second component of his research lies in applied topology. In particular, he studies Mapper, and Reeb graphs, which have been successfully used to summarize the large-scale structure of complex datasets. In practice, these constructions often require users to choose several hyper-parameters, which can substantially affect the resulting graphical representation of the dataset. His work uses ideas from metric geometry and optimization to better understand these choices and develop principled methods for automating parameter selection.

During his postdoctoral years, Alvarado taught courses including Real Analysis, and Algebraic Topology. At UT El Paso, he looks forward to continuing to teach pure and applied mathematics courses, including a special topics course in applied mathematics in the Spring.

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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