Latinxs and Hispanics in Mathematical Sciences

Tonatiuh Sánchez-Vizuet

"All through my studies and the beginning of my career, I have been very fortunate to have had outstanding mentors guiding my steps and role models that I could identify with. In a multicultural society, the celebration of our Hispanic heritage and the recognition of the contributions made by scientists and mathematicians sharing our cultural background provides the new generations with success stories they can relate with and a vivid example of the joint progress and advancement that can be achieved through the combined efforts of a diverse community."

Tonatiuh Sánchez-Vizuet was born in Mexico City, where he lived until his mid-twenties. There was no STEM background at home but his parents always encouraged his scientific curiosity. From an early age, he got interested in the interplay between mathematics and the description of the physical world, and this interest led him to pursue college studies on theoretical physics. He got his "licenciatura" (roughly equivalent to a master's degree) in Physics from the National Autonomous University of Mexico (UNAM). Convinced that a deeper understanding of the underlying mathematical structure is needed in order to accurately simulate complex physical processes computationally, he decided to shift gears and earned a master's degree in mathematics from UNAM (under the supervision of Antonio Capella) and then a Ph.D. in Applied Mathematics from the University of Delaware (under the supervision of Francisco-Javier Sayas).

After earning his doctoral degree, Sánchez-Vizuet accepted a postdoctoral position at the Courant Institute of Mathematical Sciences at New York University, where he joined the Magneto Fluid Dynamics Division. Under the mentorship of Antoine Cerfon, Sánchez-Vizuet has been working on devising high order numerical methods for the solution of drift-kinetic and magnetic equilibrium equations that appear on the study of the processes occurring in fusion reactors. His research interests revolve around the development, analysis, and implementation of numerical methods for the simulation of physical processes. His work has touched the areas of Godunov-style methods for nonlinear first order conservation laws and gas dynamics, time-domain boundary integral equations and the coupling of Boundary Elements with Finite Elements for the study of linear wave scattering off in homogeneous elastic obstacles, spectral collocation methods applied to drift kinetic problems, and more recently, the application of hybridizable discontinuous Galerkin methods in the context of plasma equilibrium.