

Professor Toro Wins Blackwell-Tapia Prize

On behalf of the Blackwell-Tapia Award Committee, the Statistical and Applied Mathematical Sciences Institute is proud to announce that the 2020 winner is Tatiana Toro, the Craig McKibben & Sarah Merner Professor of Mathematics at the University of Washington Seattle.

The Blackwell-Tapia prize is named for David Blackwell and Richard Tapia, two outstanding mathematicians and statisticians. It recognizes excellence in research among people who have promoted diversity within the mathematical and statistical sciences. The first award was made in 2002 to Arlie Petters, and it has been given in even-numbered years since then. The other winners are Rodrigo Banuelos, William Massey, Juan Meza, Trachette Jackson, Ricardo Cortez, Jacqueline Hughes-Oliver, Mariel Vazquez, and Ronald Mickens.

Professor Toro continues this proud history. She is an analyst whose work lies at the interface of geometric measure theory, harmonic analysis and partial differential equations. Her work focuses on understanding mathematical questions that arise in an environment where the known data are very rough. The main premise of her work is that under the right lens, objects, which at first glance might appear to be very irregular, do exhibit quantifiable regular characteristics. With collaborators, she introduced a new framework to study boundary regularity questions for second order partial differential operators. They laid the foundation for what has become a new, rapidly developing area within PDEs. They also brought tools from geometric measure theory to study basic questions about the structure of harmonic measure. Their ideas have provided a new and original approach to understanding the relationship between the geometry of a domain and the regularity at the boundary of the solutions to second order partial differential equations.

Professor Toro was born in Bogotá, Colombia. Both of her parents were the first in their families to attend college. She received her B.S. from the Universidad Nacional de Colombia in Bogotá and her Ph.D. from Stanford University. She has been a member of the Institute for Advanced Study in Princeton, of the Mathematical Sciences Research Institute (MSRI) in Berkeley and a fellow at the Radcliffe Institute for Advanced Study. Her awards include a Guggenheim Foundation Fellowship, two Simons Foundation Fellowships, and the Landolt Distinguished Graduate Mentor Award, from the University of Washington. She is a Fellow of the AMS, and a “Miembro Correspondiente de la Academia Colombiana de Ciencias Exactas, Físicas y Naturales”. This year she was elected as a Member of the American Academy of Arts and Sciences.

She was an invited speaker to ICM 2010 in Hyderabad, India. She delivered an invited address at the Joint Mathematics Meeting in New Orleans, Louisiana in 2011, and the NAM Clayton-Woodard Lecture at the Joint Mathematics Meeting in Seattle, Washington in 2016. In 2020 she was the inaugural AMS Mirzakhani Lecture speaker at the Joint Mathematics Meeting in Denver, Colorado.

Her professional service is a multidimensional endeavor. It includes service to the mathematical community at large, mentoring at different levels of the academic ladder, and outreach to elementary schools. Her commitment toward addressing issues of equity and underrepresentation of certain groups in the mathematical sciences is a guiding principle in each one of these settings. She serves as a member of the Board of Trustees of the Institute for Pure and Applied Mathematics (IPAM) at UCLA, a member of the Board of Directors of the Banff International Research Station (BIRS) and

as co-chair of the Scientific Advisory Committee of MSRI in Berkeley. She is a member of the US National Committees for the International Mathematical Union. She is also a member of the board of the College Assistant Migrant Program (CAMP) at the University of Washington. This program is federally-funded through the U.S. Department of Education's Office of Migrant Education. It is designed to outreach to and support students from migrant and seasonal farmworker families during their first year in college. Inspired by the CAMP students Toro spearheaded an effort to launch the first Latinx in the Mathematical Sciences Conference (LATMATH). This conference took place at IPAM in April 2015. Participants included high school students, undergraduate students, graduate students, postdoctoral scholars and faculty, and researchers in industry and government. In 2018 she co-organized the second Latinx in the Mathematical Sciences Conference funded through the Mathematical Sciences Institutes Diversity initiative. This conference attracted over 250 participants.