María López-Fernández

Short biography

María López-Fernández is an Associate Professor of Mathematics at the University of Málaga, Spain, since February 2021. She obtained her PhD in Mathematics from the University of Valladolid in 2005, under the joint supervision of César Palencia and Christian Lubich. After postdoctoral appointments at Universidad Autónoma de Madrid, an Assistant Professorship at the University Carlos III of Madrid, and a JAE DOC post doctoral position at the Spanish National Research Council (CSIC), she was a Lecturer at the University of Zurich (2010–2014) and a Visiting Professor at the Gran Sasso Science Institute in L'Aquila, Italy, (2014–2015). She was awarded a Ramón y Cajal fellowship in 2013. After holding research and faculty positions at Sapienza University of Rome, where she was appointed Associate Professor in 2018, she joined the University of Málaga as Associate Professor in 2021. She was awarded a Leonardo Fellowship from the BBVA Foundation in 2022. Her research focuses on the design, analysis and efficient implementation of numerical methods for evolutionary partial differential equations with non local terms, with a wide range of applications, such as fluid dynamics, mathematical biology, chemical reactions, quantum physics, financial mathematics, acoustics, electromagnetism, etc.

Short abstract of the Lecture:

In this talk I will introduce modern numerical complex analysis techniques for the efficient approximation of evolution problems that involve memory terms of convolution type. An essential tool of these methods is the Laplace transform and its numerical inversion. The direct application of this tool will be discussed, followed by an introduction to convolution quadrature methods. Several applications will be discussed, including models in financial mathematics, pharmacology, viscoelasticity or the scattering of acoustic waves.