



Dr. Xavier Ros Oton

Universitat de Barcelona

Spain

Xavier Ros-Oton is an ICREA Research Professor at the Universitat de Barcelona since 2020. Prior to that, he was an Assistant Professor at Universität Zürich, as well as an R. H. Bing Instructor at the University of Texas at Austin. He is a mathematician who works on PDE. He is the PI of an ERC Starting Grant (2019-2024), and has received several awards for young mathematicians in Spain, as well as the Scientific Research Award from the Fundación Princesa de Girona in 2019. Furthermore, in 2021 he was awarded the Stampacchia Gold Medal, an international prize awarded every three years in recognition of outstanding contributions to the Calculus of Variations. In 2022, he was elected member of the Spanish Royal Academy of Sciences.

Title: The singular set in the Stefan problem

Abstract: The Stefan problem, dating back to the XIXth century, is probably the most classical and important free boundary problem. The regularity of free boundaries in the Stefan problem was developed in the groundbreaking paper (Caffarelli, Acta Math. 1977). The main result therein establishes that the free boundary is C^∞ in space and time, outside a certain set of singular points.

The fine understanding of singularities is of central importance in a number of areas related to nonlinear PDEs and Geometric Analysis. In particular, a major question in such a context was to establish estimates for the size of the singular set. The goal of this talk is to present some recent results in this direction for the Stefan problem, which we obtained in a joint work with A. Figalli and J. Serra.