

Overdetermined elliptic boundary value problems in uniformly rectifiable domains

Artur Andrade

Temple University - USA

This talk focuses on the analysis of overdetermined boundary value problems (OBVP). These problems model various physical phenomena and are characterized by the imposition of Dirichlet and Neumann-type boundary conditions. Specifically, we examine the OBVP for second-order, homogeneous, constant complex coefficient, weakly elliptic systems in non-smooth domains, with boundary data in Whitney-Lebesgue spaces with integrability exponent in the interval $(1, \infty)$. Our analysis contains integral representation formulas, jump formulas, characterization of admissible boundary data, and the existence and uniqueness of solutions for OBVP in uniformly rectifiable domains. This is a joint work with Dorina Mitrea (Baylor University), Irina Mitrea (Temple University), and Marius Mitrea (Baylor University).

In Special Session 3 on Geometric Variational Problems in Smooth and Nonsmooth Metric Spaces at the Mathematical Congress of the Americas 2025.