PDE Seminar UAM–ICMAT

Friday, October 23, 2026 | **11:30h**

UAM, Departamento de Matemáticas | Módulo 17 - Aula 520

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Boundary regularity for general elliptic operators of order $2s$

Abstract:

Nonlocal operators like the fractional Laplacian play a prominent role in physical models like the Boltzmann equation. Associated nonlocal Dirichlet problems and the regularity of their solutions have been extensively studied in the past decades. We establish optimal boundary regularity for the most general class of (linear and translation invariant) nonlocal elliptic operator of order $2s$. Namely, we consider Lévy operators that are symmetric and their Fourier symbols are comparable to $|\xi|^{2s}$. This was only known when the kernel of the operator (or Lévy measure) is either homogeneous or comparable to that of the fractional Laplacian, with different proofs in each case. Our new proofs extend both at the same time, and work in a very general class of domains, under a C^1-Dini-type condition. Based on a joint article with Xavier Ros-Oton.

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