

Seminario de análisis matemático y aplicaciones
Analisi matematikoa eta aplikazioak mintegia

Homogeneous kernels and rectifiability in the plane

VASILEIOS CHOUSIONIS

Universitat Autònoma de Barcelona

ABSTRACT: Let $E \subset \mathbb{C}$ be a Borel set with finite length. By a theorem of David and Léger, the $L^2(E)$ -boundedness of the singular integral associated to the Cauchy kernel (or even to one of its coordinate parts $x/|z|^2, y/|z|^2, z = (x, y) \in \mathbb{C}$) implies that E is rectifiable. We extend this result to any kernel of the form $x^{2n-1}/|z|^{2n}, z = (x, y) \in \mathbb{C}, n \in \mathbb{N}$. We thus provide the first non-trivial examples of operators not directly related with the Cauchy transform whose $L^2(E)$ -boundedness implies rectifiability. We will also discuss the more delicate case of harmonic homogeneous kernels with zeros.

This is a joint work with J. Mateu, L. Prat and X. Tolsa.

LUGAR / LEKUA:

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