

Publicacions més rellevants de la línia de recerca:
Integrals singulars i rectificabilitat

Referència: Tolsa, X. Uniform rectifiability, Calderón-Zygmund operators with odd kernel, and quasiorthogonality. *Proc. Lond. Math. Soc.* (3) **98** (2009), no. 2, pp. 393–426.

Abstract: In this paper we study some questions in connection with uniform rectifiability and the L^2 boundedness of Calderón-Zygmund operators. We show that uniform rectifiability can be characterized in terms of some new adimensional coefficients which are related to the Jones' β numbers. We also use these new coefficients to prove that n -dimensional Calderón-Zygmund operators with odd kernel of type \mathcal{C}^2 are bounded in $L^2(\mu)$ if μ is an n -dimensional uniformly rectifiable measure.

Referència: Tolsa, X. Bilipschitz maps, analytic capacity, and the Cauchy integral. *Ann. of Math.* (2) **162** (2005), no. 3, pp. 1243–1304.

Abstract: Let $\varphi : \mathbb{C} \rightarrow \mathbb{C}$ be a bilipschitz map. We prove that if $E \subset \mathbb{C}$ is compact, and $\gamma(E)$, $\alpha(E)$ stand for its analytic and continuous analytic capacity respectively, then $C^{-1}\gamma(E) \leq \gamma(\varphi(E)) \leq C\gamma(E)$ and $C^{-1}\alpha(E) \leq \alpha(\varphi(E)) \leq C\alpha(E)$, where C depends only on the bilipschitz constant of φ . Further, we show that if μ is a Radon measure on \mathbb{C} and the Cauchy transform is bounded on $L^2(\mu)$, then the Cauchy transform is also bounded on $L^2(\varphi\#\mu)$, where $\varphi\#\mu$ is the image measure of μ by φ . To obtain these results, we estimate the curvature of $\varphi\#\mu$ by means of a corona type decomposition.

Referència: Bruna, J., Melnikov, M. On translates of the Poisson kernel and zeros of harmonic functions. *Bull. Lond. Math. Soc.*, **39** (2007), no. 2, pp. 317–326.

Abstract: We characterize the systems of translates of the Poisson kernel spanning $L^p(\mathbb{R})$, $1 \leq p \leq \infty$. An equivalent formulation in terms of discrete uniqueness sets for harmonic functions is given, together with a Blaschke-type condition for the zero variety of bounded harmonic functions in the unit disk.