
Barcelona Analysis Seminar**2021–2022**

URL (*provisional*). <https://sites.google.com/view/seminari-analisi-barcelona/2021-2022>**Date.** November 22, 2021**Time.** 15:00 CET**Room.** CRM A1 (Universitat Autònoma de Barcelona)**Online streaming** (Microsoft Teams). [Click here to join](#).

The regularity problem for the Laplace equation in rough domains

Mihalis Mourgoglou

Universidad del País Vasco

In this talk I will present some recent advances on Boundary Value Problems for the Laplace operator with rough boundary data in a bounded corkscrew domain in \mathbb{R}^{n+1} whose boundary is uniformly n -rectifiable and its measure theoretic boundary agrees with its topological boundary up to a set of n -dimensional Hausdorff measure zero. In particular, I will discuss the equivalence between solvability of the Dirichlet problem for the Laplacian with boundary data in $L^{p'}$ and solvability of the regularity problem for the Laplacian with boundary data in an appropriate Sobolev space $W^{1,p}$, where $p \in (1, 2+\varepsilon)$ and $1/p + 1/p' = 1$. As chord-arc domains satisfy the aforementioned geometric assumptions, our result answers a question posed by Carlos Kenig in 1991. This is joint work with Xavier Tolsa.