XX Encuentros de Análisis Real y Complejo
Cartagena, 26-28 de mayo de 2022

CONNECTIONS BETWEEN THE SOLVABILITY OF THE DIRICHLET PROBLEM AND FLATNESS OF THE BOUNDARY FOR PDE IN SETS WITHOUT CONNECTIVITY

PABLO HIDALGO-PALENCIA

Abstract. During the last decades, many researchers have made progress in their understanding of the solvability of the Dirichlet problem for elliptic operators in rough domains. These works show that the connectivity of the set plays an important role since, under strong connectivity conditions, the L^p-solvability of the Dirichlet problem or some good behavior of the elliptic measure are equivalent to certain good geometrical properties of our boundary, measuring its flatness. In this talk, we will review these connections and present some extensions to them: concretely, we no longer assume any connectivity and still get (some, sometimes weakened, versions of) these connections. As an application, we also obtain some perturbation results. This is joint work with M. Cao and J.M. Martell.

Instituto de Ciencias Matemáticas CSIC-UAM-UC3M-UCM, Consejo Superior de Investigaciones Científicas, C/ Nicolás Cabrera, 13-15, E-28049 Madrid, Spain

and

Departamento de Análisis Matemático y Matemátia Aplicada, Facultad de Matemáticas, Universidad Complutense de Madrid, Plaza de Ciencias, 3, E-28040 Madrid, Spain

E-mail address: pablo.hidalgo@icmat.es