Mourgoglou, Mihalis (Universidad del País Vasco & Ikerbasque, Spain) Harmonic measure and quantitative rectifiability

Abstract: The past few years there has been a renaissance of new results of harmonic measure in domains in the Euclidean space in connection with the (uniform) rectifiability of the boundary of the domain. The connection between boundedness of Riesz transform and quantitative rectifiability due to the celebrated result of Nazarov, Tolsa and Volberg, the theory of Calderón-Zygmund operators for non-homogeneous measures, as well as techniques that are used in free boundary problems, have played a significant role in the flourishing of this field. In the present talk we will present some recent advances in "quantitative" one-phase and two-phase free boundary problems for harmonic measure, and time permitting, some PDE characterizations of quantitative rectifiability.