REGULARIZED DISTANCES AND HARMONIC MEASURE IN CO-DIMENSION GREATER THAN ONE

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The past thirty years have seen several advances in characterizing the geometry of a co-dimension one set by the behavior of singular operators on that set and the boundary behavior of harmonic functions in complement of that set. We will talk about recent extensions of some of these characterizations to higher co-dimension, using the behavior of a regularized distance function. However, we will also discuss a surprising situation, in which the regularized distance function is itself a solution to a degenerate elliptic operator, giving us results in sharp contrast with those in the co-dimension one setting. This is joint work with Guy David (Paris Sud) and Svitlana Mayboroda (University of Minnesota).