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Harmonic measure with lower dimensional boundaries

Abstract: This will describe joint work with Max Engelstein, Joseph Feneuil, and Svitlana Mayboroda. Let Γ be an Ahlfors-regular set of dimension $d < n-1$ in $\mathbb{R}^n$, and set $\Omega = \mathbb{R}^n \setminus \Gamma$ (a nice, well connected domain). We define a reasonable notion of harmonic measure on $\Gamma = \partial\Omega$, still defined in terms of a locally elliptic differential operator of order 2, but which is degenerate at the boundary and depends on Γ. We study the mutual absolute continuity of this harmonic measure and d-dimensional Hausdorff on Γ, in terms of geometric regularity properties of Γ such as (hopefully) uniform rectifiability.