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Quantitative absolute continuity of harmonic measure

Abstract: Quantitative (scale-invariant) absolute continuity of harmonic measure, with respect to surface measure on the boundary of a domain Ω, is equivalent to the solvability of the Dirichlet problem with data in some L^p space, $p < \infty$, and also turns out to be closely related to quantitative rectifiability properties of $\partial\Omega$. Thus, the study of such absolute continuity properties combines some geometric measure theoretic considerations with techniques of harmonic analysis and of PDE/potential theory. In this course, we plan to start with some basic background material, e.g., construction of harmonic measure via Perron's method, and continuity of solutions up to the boundary, and then proceed to present some geometric criteria which yield the desired quantitative absolute continuity property of harmonic measure.