

BMO solvability and absolute continuity of harmonic measure

Abstract

We show that for a uniformly elliptic divergence form operator L , defined in an open set Ω with Ahlfors-David regular boundary, BMO-solvability implies scale invariant quantitative absolute continuity (the weak- A_∞ property) of elliptic-harmonic measure with respect to surface measure on $\partial\Omega$. We do not impose any connectivity hypothesis, qualitative or quantitative; in particular, we do not assume the Harnack Chain condition, even within individual connected components of Ω . In this generality, our results are new even for the Laplacian. Moreover, we obtain a converse, under the additional assumption that Ω satisfies an interior Corkscrew condition, in the special case that L is the Laplacian.

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