

HARMONIC MEASURE AND RECTIFIABILITY

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Abstract

The classical theorem of F. and M. Riesz established absolute continuity of harmonic measure with respect to arc length measure, for a simply connected domain in the complex plane with a rectifiable boundary. C. Bishop and P. Jones gave a counterexample to show that such a result may fail in the absence of some topological hypothesis (e.g., simple connectedness). In this talk we will present some versions of this result and its converse. We will study the connection between the good properties of harmonic measure (with respect to surface measure) associated with a given open set and the good properties of the boundary expressed in terms of its rectifiability. Taking into account the Bishop-Jones example we will address these problems in different scenarios with or without some topological hypothesis (e.g, scale-invariant or quantitative connectivity).