

1057-35-116

Björn Bennowitz, Kaj Nyström, John Lewis and Andrew L Vogel* (alvogel@syr.edu),
215 Carnegie, Syracuse University, Syracuse, NY 13244. *Dimension of p -harmonic measure in space*. Preliminary report.

Let $\Omega \subset \mathbb{R}^n$, $n \geq 3$, and let p , $1 < p < \infty$, $p \neq 2$, be given. In this paper we study the dimension of p -harmonic measures that arise from non-negative solutions to the p -Laplace equation, vanishing on a portion of $\partial\Omega$, in the setting of δ -Reifenberg flat domains. In particular, we prove, for $p \geq n$, that there exists $\tilde{\delta} = \tilde{\delta}(p, n) > 0$ small such that if Ω is a δ -Reifenberg flat domain with $\delta < \tilde{\delta}$, then p -harmonic measure is concentrated on a set of σ -finite H^{n-1} -measure. The situation is more interesting when $1 < p < n$ as we show by examples involving certain Wolff snowflakes. Our results complement work of the first three authors in \mathbb{R}^2 (along with Pietro Poggi-Corradini) where similar results for the dimension p -harmonic measure were obtained in a Jordan domain bounded by a quasicircle and in simply connected domains. (Received January 15, 2010)