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Matthew Badger* (mbadger@math.washington.edu), Department of Mathematics, University of Washington, Box 354350, Seattle, WA 98195-4350. *Free boundary regularity for harmonic measure from two sides.*

We use tools from geometric measure theory to catalog fine behavior of harmonic measure (roughly the probability that a randomly drawn curve hits a subset of the boundary) in a nice class of domains $\Omega \subset \mathbb{R}^n$, $n \geq 3$. If the harmonic measures on the interior and exterior of the domain are mutually absolutely continuous and satisfy an additional mild hypothesis, then at every point the boundary looks locally like the zero set of a homogeneous harmonic polynomial. (Received September 18, 2010)