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**Marie A Snipes\*** (snipesm@kenyon.edu). *Brownian motion and distributions of harmonic measure in planar domains.*

The harmonic measure distribution function (HMD function) of a planar domain gives information about the behavior of Brownian motion in the domain. Specifically, given a domain  $D$  containing the origin, the HMD function  $h(r)$  gives the probability that a Brownian particle starting at 0 first hits the boundary of  $D$  within distance  $r$  of 0. For any domain,  $h(r)$  is a right-continuous function that increases from 0 towards 1. A long-term goal is to determine whether any such function can arise as the HMD function of some domain, and if possible, to explicitly construct the domain. We will survey results in this direction, focusing on the case where the HMD function is a step function. This is joint work with Lesley Ward. (Received August 10, 2010)