

ON POTENTIAL THEORY OF SUBORDINATE KILLED PROCESSES

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Let W^D be a killed Brownian motion in a domain $D \subset \mathbb{R}^d$ and S an independent subordinator with Laplace exponent ϕ . The process Y^D defined by $Y_t^D = W_{S_t}^D$ is called a subordinate killed Brownian motion. It is a Hunt process with infinitesimal generator $\phi(-\Delta|_D)$, where $\Delta|_D$ is the Dirichlet Laplacian. In this talk I will present several potential-theoretic results for Y^D under a weak scaling condition on the derivative of ϕ . These results include the scale invariant Harnack inequality for non-negative harmonic functions of Y^D , sharp estimates of the Green function and the jumping kernel, and a scale invariant boundary Harnack principles with explicit decay rates. I will also discuss same questions in case when the killed Brownian motion is replaced by a killed subordinate Brownian motion satisfying certain scaling conditions.

(Joint work with P.Kim and R.Song)