

SOME RELATIONSHIPS BETWEEN POTENTIAL THEORIES OF CLASSICAL AND HYPERBOLIC BROWNIAN MOTION

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We consider hyperbolic Brownian motion on the half-space model \mathbb{H}^n of the real hyperbolic space, i.e. diffusion on \mathbb{H}^n having Laplace-Beltrami operator as its generator. We show relationships between potential theories of hyperbolic Brownian motion and classical Brownian motion for the sets of the form $D \times (0, \infty) \subset \mathbb{H}^n$, where D is a domain in \mathbf{R}^{n-1} . Eventually, we focus on a hyperbolic strip $\{x \in \mathbb{H}^n : x_1 \in (0, a)\}$, $a > 0$ and give explicit formula and uniform estimates of its Poisson kernel.