ON POTENTIAL THEORY OF
HYPERBOLIC BROWNIAN MOTION WITH DRIFT

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Abstract. Consider the λ-Green function and the λ-Poisson kernel of a Lipschitz domain $U \subset \mathbb{H}^n = \{x \in \mathbb{R}^n : x_n > 0\}$ for hyperbolic Brownian motion with drift. We provide several relationships that facilitate studying those objects and explain somewhat their nature. As an application, we yield uniform estimates for sets of the form $S_{a,b} = \{x \in \mathbb{H}^n : x_n > a, x_1 \in (0,b)\}$, $a, b > 0$, which covers and extends existing results of that kind.

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