

ASYMPTOTIC BEHAVIOUR OF A BESSEL PROCESS IN HALF-LINE

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We consider the Bessel differential operator

$$L^{(\mu)} = \frac{d^2}{dx^2} + \frac{2\mu + 1}{x} \frac{d}{dx}, \quad \mu \in \mathbf{R},$$

in half-line (a, ∞) , $a \geq 0$, and corresponding Dirichlet heat kernel $p_a^{(\mu)}(t, x, y)$ (the fundamental solution of the heat equation $L^{(\mu)} = 2\partial_t$) considered with respect to the reference measure $m^{(\mu)}(dy) = 2y^{2\mu+1}dy$.

We provide asymptotics of the heat kernel for $\frac{xy}{t} \rightarrow \infty$ in the whole range of the space parameters $x, y > a$ and every $t > 0$, which improves the results given in [2] and [3].

This talk is based on forthcoming work [1].

REFERENCES

- [1] K. Bogus *Asymptotic behaviour of the killed Bessel processes*, in preparation (2017).
- [2] K. Bogus, J. Małecki, *Sharp estimates of transition probability density for Bessel process in half-line*. Potential Anal. Vol. 43, Issue 1, p. 1-22 (2015).
- [3] K. Bogus, J. Małecki, *Heat kernel estimates for the Bessel differential operator in half-line*. Potential Anal. Vol. 43, Issue 1, p. 1-22 (2016).