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BESSEL POTENTIALS, GREEN FUNCTIONS AND EXPONENTIAL FUNCTIONALS ON HALF-SPACES

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Abstract: The purpose of the paper is to provide precise estimates for the Green function corresponding to the operator $(I-\Delta)^{\alpha/2}$, $0<\alpha<2$. The potential theory of this operator is based on Bessel potentials $J_\alpha=(I-\Delta)^{-\alpha/2}$. In probabilistic terms it corresponds to a subprobabilistic process obtained from the so-called *relativistic* α*-stable process.* We are interested in the theory of the *killed process* when exiting a fixed half-space. The crucial role in our research is played by (recently found) an explicit form of the *Green function* of a half-space. We also examine properties of some exponential functionals corresponding to the operator $(I-\Delta)^{\alpha/2}$.

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