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 \(\alpha\)-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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The full text is available here