

Some properties of exponential integrals of Levy processes and examples

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Abstract

The improper stochastic integral $Z = \int_0^\infty \exp(-X_{s-}) dY_s$ is studied, where (X_t, Y_t) , $t \geq 0$ is a Lévy process on \mathbb{R}^{1+d} with X_t and Y_t being \mathbb{R} -valued and \mathbb{R}^d -valued, respectively. The condition for existence and finiteness of Z is given and then the law $\text{law}(Z)$ of Z is considered. Some sufficient conditions for $\text{law}(Z)$ to be selfdecomposable and some sufficient conditions for $\text{law}(Z)$ to be non-selfdecomposable but semi-selfdecomposable are given. Attention is paid to the case where $d=1$, X_t is a Poisson process, and X_t and Y_t are independent. An example of Z of type G with selfdecomposable mixing distribution is given

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