

LÉVY PROCESS GENERATED BY INFINITELY DIVISIBLE LOGARITHMIC SERIES DISTRIBUTION

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Abstract

Let $L(t)$ be a Lévy process with representative random variable $L(1)$ defined by the infinitely divisible logarithmic series distribution. We study here the transition probability and Lévy measure of this process. We define also the following subordinated processes: $Y(t)$ - Negative-Binomial process $X(t)$ directed by Gamma process and $Z(t)$ - Logarithmic Lévy process directed by Poisson process. The Bernstein functions of $L(t)$ and $Y(t)$ contain the iterated logarithmic function. The Lévy measures of $Z(t)$ is a shifted Lévy measure of $X(t)$. We compare the properties of these processes, knowing that the total mass of corresponding Lévy measure are equal.

Keywords: infinitely divisible logarithmic series distribution, Lévy measure, Bernstein function, Lévy process, Stirling numbers, harmonic numbers