

Occupation times of refracted Lévy processes with jumps having rational Laplace transform

Lan Wu, Jiang Zhou

School of Mathematical Sciences, Peking University, Beijing 100871, P.R.China

Abstract

We extend our previous research in Zhou and Wu (2015) to more general jump diffusion processes, whose jumps have rational Laplace transform. We also consider a refracted Lévy process without Gaussian component, which has not been investigated in Zhou and Wu (2015) and under which some interesting results are obtained. We remark that this extension is non-trivial. Actually, to derive our main results in this paper, we should make some modifications on the approach used in Zhou and Wu (2015). We have to say that the modified method is so novel that some important equations can be obtained without much effort. In addition to deriving formulas that can be used to compute the expectation of the total time of deducting fees as in Zhou and Wu (2015), we also obtain a very interesting identity. We conjecture that this identity holds for an arbitrary Lévy process, and we believe that this identity will play an important role in the research on occupation times of refracted Lévy processes.

Keywords: Occupation times; Refracted Lévy process; State-dependent fee; Rational Laplace transform; Wiener-Hopf factorisation.

References

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*Speaker. Phone: +8618810515809