

Approximation of law for S.D.E. driven by a Lévy process and applications to statistical problems

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Abstract

In this talk, I will present results on the comparison between the law of X_Δ , where $(X_t)_t$ is solution of a S.D.E. driven by a stable-like Lévy process, and the law of the α -stable process. Under the assumption of a short time asymptotic $\Delta \rightarrow 0$, we find upper bounds for the distance in total variation between these two laws. The proofs of these upper bounds rely on the use of Malliavin calculus for jump processes.

I will also present applications of these results to several statistical problems related to stochastic processes. Especially, I will discuss the context of parametric estimation [1] for S.D.E. driven by an α -stable processes, and the estimation of integrated volatility in presence of α -stable jumps [2].

References

- [1] Emmanuelle Clément, Arnaud Gloter. Joint estimation for SDE driven by locally stable Lévy processes. *Electronic Journal of Statistics*, vol. 14, No. 2, p 2922-2956, 2020.
- [2] Chiara Amorino, Arnaud Gloter, Unbiased truncated quadratic variation for volatility estimation in jump diffusion processes, *Stochastic Processes and their Applications*, Volume 130, Issue 10, 2020, Pages 5888-5939, 2020