

Dyson type formula for pure jump Lévy processes and applications to Finance

JOSEP VIVES

Departament de Matemàtica Econòmica, Financera i Actuarial, Universitat de Barcelona

josep.vives@ub.edu

Resumen. The talk is based on the paper [1] below. We obtain a Dyson type formula for integrable functionals of a pure jump Lévy process. We represent the conditional expectation of a random variable F at a time t as an exponential formula involving Malliavin derivatives evaluated along a frozen path. The series representation of this exponential formula turns out to be useful for different applications, and in particular in quantitative finance. For example, in pricing options under the Poisson-Black-Scholes model or in pricing discount bonds under a Lévy quadratic model.

Palabras clave: Lévy processes, Malliavin calculus, Clark-Ocone formula, Dyson type formula.

References

- [1] S. Jin, H. Schellhorn, J. Vives (2020). Dyson type formula for pure jump Lévy processes with some applications to finance. *Stochastic Processes and their Applications*, 130 (2), 824–844.

Agradecimientos. Proyecto parcialmente financiado por MTM 2015-65092-PMINECO (2016-2018) and MEC MTM 2016-76420-P (2017-2020).

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