

[Ernesto Mordecki](#)

Tentative Program

In this four lectures we describe some aspects of jump modelling in nace. The departure point is the classical Black-Scholes models, a review of its achievements and drawbacks and discuss the generalizations that have been considered in the literature, mainly stochastic volatility models and Lévy models, reviewing also some related mathematical.

In our second lecture we center in mathematical models of nancial markets driven by Lévy processes. Our models has two assets, one deterministic and the other driven by a Lévy process. We discuss option pricing in this context, with emphasis in practical aspects, as Esscher transform, option pricing through fourier integral for European Options. Our main reference is the book "Financial Modelling with jump processes" by Cont and Tankov, Chapman and Hall 2004.

The third lecture we review the pricing problem for American options in models with jumps. We present a connection between the optimal stopping problem for Lévy process and the barrier problem for a Lévy process, and we explore this connection in the more general framework of Hunt processes, and discuss some possible new directions of research in this context.

We plan to close our series with a fourth lecture centered in the modelling problem through Lévy processes from the point of view of the implied volatility and the smile property. We depart reviewing the concept of duality and symmetry in Lévy Markets, also review some related changes of numeraries used to obtain prices of exotic options in terms of Vanilla options in Lévy models, and nally discuss some ongoing work in modelling the skewness in Lévy markets.