

UNICAMP – IMECC
Departamento de Matemática

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Título: Power variations of heavy tailed jump diffusions

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Resumo. We analyze the behavior of power variation functionals on jump diffusions driven by α -stable Lévy noise. These functionals measure the roughness of paths and hence are stochastic quantities indexed by a time parameter. In fact they form α -stable Lévy processes themselves. Their laws are solely determined by the driving noise - not influenced by the absolutely continuous drift part of the potential gradient.

In statistical terms of a model selection problem, these findings allow a fitting procedure for an α -stable noise component. For corresponding minimum distance estimates convergence rates and asymptotic distributions are given.

Dynamical systems of this type can be derived from simple models of earth's energy balance. It is widely accepted in climate physics literature that these models interpret qualitative aspects of paleoclimatic data. However an originally assumed Gaussian nature of the noise is nowadays called into question, and efficient testing methods for heavy tailed alternatives are required.

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