



Identification of finite dimensional linear stochastic systems driven by Lévy processes

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Abstract—We study the problem of identifying a finite dimensional linear stochastic SISO system driven by a Lévy process. The latter are widely used in modelling financial time series. In a number of important examples the density function of the innovation term is unknown, but its characteristic function is explicitly known, possibly up to a few unknown parameters. In this paper we present and analyze a novel identification method that exploits the information on the characteristic function of the noise. It is obtained by adapting the empirical characteristic function method (ECF for short) developed for i.i.d. samples. We will show that the new method may be more efficient in estimating the system parameters than a plain prediction error method.

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