



Quantifying the scaling properties of finite length Levy flights- the role of outliers.

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We address the generic problem of extracting the scaling exponents of a stationary, self-affine process realised by a timeseries of finite length, where information about the process is not known a priori. Estimating the scaling exponents relies upon estimating the moments, or more typically structure functions, of the probability density of the differenced timeseries. If the probability density is heavy tailed, outliers strongly influence the scaling behaviour of the moments. From an operational point of view, we wish to recover the scaling exponents of the underlying process by excluding a minimal population of these outliers. We test these ideas on a synthetically generated symmetric alpha-stable Levy process and show that the Levy exponent is recovered in up to the 6th order moment after only approximately 0.1-0.5% of the data are excluded. The scaling properties of the excluded outliers can then be tested to provide additional information about the system.