Accepted Manuscript

Quantitative approach to multifractality induced by correlations and broad distribution of data

Rafał Rak, Dariusz Grech

PII: S0378-4371(18)30603-4
DOI: https://doi.org/10.1016/j.physa.2018.05.059
Reference: PHYSA 19599

To appear in: *Physica A*

Please cite this article as: R. Rak, D. Grech, Quantitative approach to multifractality induced by correlations and broad distribution of data, *Physica A* (2018), https://doi.org/10.1016/j.physa.2018.05.059

Highlights:

Semi-analytic description of three main ingredients of the observed multifractal features of time series are studied in details: the effect of finite length of data, linear autocorrelations, nonlinear autocorrelations ('true' multifractality) and the effect of broad data distributions. The latter effect is the main goal of this paper to search for. We calculated the spread of spurious multifractality related to broad data distribution as a function of scaling exponent of the PDF power law describing the tail part of distribution for large values of normalized variable |x|. We succeeded to do this both for probability distributions from Levy and Gaussian regimes.