

# Multiscaling and rough volatility

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In this talk, I will discuss one of the main elements that define the complexity of economic and financial time series: their multiscaling behaviour. Multiscaling is one of the acknowledged stylized facts in the literature [1]. The source of the measured multifractality in financial markets has been long debated [2,3]. In this talk I will discuss the origin of multiscaling in financial time-series, investigate how to best quantify it [4,5] and I will introduce a new methodology that provides a robust estimation and tests the multi-scaling property in a statistically significant way [6].

I will show results on the application of the Generalized Hurst exponent tool to different financial time-series, and I will show the powerfulness of such tool to detect changes in markets' behaviours, to differentiate markets accordingly to their degree of development, to assess risk and to provide a new tool for forecasting [7].

I will also show results to assess the interplay between price multiscaling and volatility roughness, defined as the (low) Hurst exponent of the volatility process [8] and finally I will discuss some new results on the origin of the multiscaling in rough volatility models [9].

## References:

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