

Distribution of ordinal patterns

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Ordinal time series analysis is a new promising approach to the qualitative investigation of long and complex time series. The idea behind it is to consider the order relation between the values of a time series instead of the values themselves. Roughly speaking, a given time series is transformed into a series of so called ordinal patterns describing the up and down in the original series. Then the distribution of ordinal patterns obtained is the base of the analysis.

The talk is devoted to the ordinal pattern distributions underlying a fractional Brownian motion (fBm) and ergodic one-dimensional dynamical systems, respectively. For these model classes we discuss estimating probabilities of ordinal patterns from their sample frequencies. On this base we provide estimators of the Hurst exponent for fBm and give new insights into the relationship of the Permutation entropy introduced by Bandt and Pompe and the Kolmogorov-Sinai entropy for one-dimensional dynamical systems.