Nonlinear Sciences > Chaotic Dynamics

Fast detection of nonlinearity in short and noisy time series

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We introduce a statistical method to detect nonlinearity and nonstationarity in time series, that works even for short sequences and in presence of noise. We test speed and discrimination power of the method in a wide variety of time series, either from models and from real data sets. Application to the annual sunspot index rejects the null hypothesis of an underlying stationary linear stochastic process with a higher confidence interval than the nonlinear prediction error, the best known nonlinear discriminator up to date.

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