

Title: Testing for linearity in time series

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Abstract: In the first part of the thesis, a necessary theoretical base from time series analysis is explained, which is consequently used to formulate several tests for linearity. According to variety of approaches the theory includes wide range of knowledge from correlation and spectral analysis and introduces some basic nonlinear models. In the second part, linearity tests are described, classified and compared both theoretically and practically on simulated data from several linear and nonlinear models. At the end, some scripts and hints in R language are introduced that could be used when applying tests to real data.

Keywords: linear time series, bispectrum, testing for linearity, nonlinear models