

STATISTICAL PHYSICS SEMINAR

June 5th, 2019.
Wednesday, 11.00

ELTE TTK Northern Building 2.54

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The role of the surrogate time series in exoplanetary dynamics

One of the main purposes in extrasolar planetary research is to determine whether the system in question is chaotic. The framework of nonlinear time series analysis provides a powerful method to scrutinize the data recorded from the system, even if we have no prior information about the underlying dynamics. A natural way to describe the stability is to obtain the dynamical invariants such as Lyapunov exponents or correlation dimension. However, a reliable determination of these measures requires fairly long and noiseless time series that are usually unavailable in real-world situations. To overcome this difficulty one can introduce surrogate time series together a null hypothesis we want to test against. Surrogate time series are basically a random copy of the system maintaining certain properties defined by the null hypothesis. Discriminating statistics can then be applied to the original data and the surrogates to decide nonlinearity. In this talk different kind of surrogation methods are going to be discussed together with their strengths and weaknesses. Possible application to exoplanetary dynamics will be also presented.

1117. Budapest, Pázmány Péter sétány 1/A (Északi tömb)

Room 2.54

<http://glu.elte.hu/~statfiz/index.html>