

Special Issue

From Time Series to Stochastic Dynamic Models

Message from the Guest Editors

When dynamical equations describing a complex system are not known, as, e.g., for many systems considered in real world, we need a top-down approach to understand its complexity and modeling. We welcome contributions that have focus on the question in the field of complex systems: Given a fluctuating (in time or space), uni- or multi-variant sequentially measured set of experimental data, with a data-based approach how should one analyze the data, assess underlying deterministic trends and nonlinearities, uncover characteristics of the fluctuations and construct a stochastic evolution equation? The answer to this question yields important information on the dynamical properties of the system under consideration. Foreseen contributions include the following:

- Construction of a stochastic dynamical equation from time series
- Data-based construction of a potential function from time series, whose valleys represent stable attractors of the dynamics
- Characterizations of local (time-dependent) stochastic behaviors of a given nonstationary time series

Guest Editors

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