



سخنرانی علمی

Topological and Geometrical Properties of Stochastic Data Sets: From Theory to Computational Approaches

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Abstract

Complexity is ubiquitous behavior in the nature. In various field of researches ranging from mathematics, Physics to social sciences, especially due to the initial conditions mainly and mostly because of other relevant phenomena such as interaction effects, stochasticity in contrast to deterministic behavior are emerged. Mentioned property is widely experienced in generated data in 1, 2 and 3 dimensions or even more. In principle the probabilistic frame-work according to statistical points of view, is able to introduce the robust method not only in data analysis but also in preparing reliable strategies to predict the evolution and for characterization of underlying processes. In this talk, I will rely on stochasticity nature of various fields in various dimensions, and attempt to set up one-point, two-point and corresponding cross-correlation of some topological and geometrical features like local extrema and up-crossing. Indeed, I am going to convince the audience, it is almost possible to find proper method in order to extract information from a set of data, before using a typical method as trial and error. As examples, I will focus on (1+1)-dimension scattered Laser Light through Nanofluid and (2+1)-dimension cosmic microwave background radiation series. I will show that mentioned statistics are able to find exotic features hidden in the underlying data sets.

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مکان: فرمانیه - خ لواسانی - بعد از برج کوه نور - نبش خ فرین - پژوهشگاه دانشهای بنیادی - ط ۲ - کلاس C.