İTÜ Matematik Seminerleri

Laws of rare events for random dynamics

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Abstract

Extreme Value Laws (EVL) and Hitting/Return Time Statistics (HTS/RTS) are two approaches in studying the statistical properties of rare events. By rare events, we mean that the probability of the event is small. It is showed that these two approaches are linked under certain conditions.

In this talk, we will explain how we get laws of rare events for randomly perturbed dynamical systems using the link between EVL and HTS/RTS. Mainly, we will consider random perturbations of uniformly expanding systems, such as piecewise expanding maps of the circle, and show that for additive absolutely continuous (w.r.t. Lebesgue) noise, the limiting distribution is standard exponential for any point in the phase space.

Our main ingredient will be decay of correlations against all L^1 observables in a suitable Banach space and we get our results by means of the first return time from a set to itself.

Tarih: 2 Ocak 2015, Cuma

Saat: 14:30

Yer: Matematik Bölümü, B-326