
Applied Mathematics Seminar



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Extreme events in dynamical systems

Understanding extreme events, such as severe weather, climatic or financial events is a major challenge. In this talk I will explain some of the mathematical approaches used in understanding extreme events, such as finding their probability distribution. We will assume that the underlying time series process is modelled by a deterministic dynamical system, such as a discrete time map or differential equation. These latter processes have some dependency, and so any results known about extremes for independent, identically distributed (i.i.d) random processes cannot immediately be transferred to dynamical systems. As part of the talk, I will review relevant extreme value theory associated to the i.i.d case. I will then discuss this theory for dynamical systems, illustrating with examples from low dimensional chaotic maps.

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