

CAMT Seminar

“Universality of rare fluctuations in turbulence and critical phenomena”

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Location: Main Conference Room (1st floor), Bldg. A12
Center for Atomic and Molecular Technologies (CAMT)
(A12 棟 1 階会議室)

Abstract

Bursty transport phenomena associated with convective motion present universal statistical characteristics among different physical systems. We present here a stochastic univariate model based on a quadratic polynomial of a Gaussian process. It is found that the associated probability distribution function (PDF) recovers a universal distribution that has been observed in the plasma edge density fluctuations in several magnetic confinement devices and in the X-ray intensity fluctuations emitted by the Cygnus X-1 accretion disc plasmas. The same stochastic process recovers the universal scaling between the skewness S and the kurtosis K observed in the density fluctuations of the toroidal plasma device TORPEX (EPFL, Lausanne) and in the sea surface temperature fluctuations. The universality of the process stems from the fact that it describes the statistical properties of fluctuations at the edges in systems that are characterized by convection (accretion).

(Host: Satoshi Hamaguchi Ext:7913)