Vous êtes conviés au séminaire qui se tiendra

le jeudi 20 juin à 14h00 dans la salle BSP 407

Ergodic Violation in Subdiffusive Systems

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Anomalous diffusion is observed in a wide range of systems from micro- to macroscopic scales. In particular, due to recent advances in single particle tracking methods anomalous diffusion has been observed in living biological cells. Single particle trajectories are usually evaluated in terms of time averages of the observed time series. In this talk I will show that in anomalous diffusive systems the information encoded in these time averages may differ from the ensemble averages of the same physical observables, an apparent violation of ergodicity. Thus, in terms of the time averaged mean squared displacement a process may appear to follow the laws of normal Brownian motion, while in reality it is governed by laws of anomalous diffusion. After an introduction to normal and anomalous diffusion I will discuss the theoretical framework to treat such non-ergodic situations and show that these phenomena are indeed observed in experiments. Moreover, I will introduce new techniques to quantitatively analyse single particle tracking data.