You are invited to the Seminar by

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A Zoo of Slow Dynamics

Tuesday, January 8th at 14:00

Physics Department, Seminar Room (3rd floor)

Abstract

It is quite intuitive that disorder causes things to slow down, but we will see that different kinds of disorder exhibit different characteristics.

We start by discussing the most general definition of slow dynamics, namely subdiffusion, where the mean squared displacement grows sublinearly with time. In this context one analyzes the dynamics of an individual object slowed down by its surrounding (static) environment. Different physical realities may lead to subdiffusive behavior. The objective will be to determine the relevant underlying physical reality from experimental data of singe trajectories. To this end we present a set of tools, focusing on a test for discerning between ergodic models. We will also consider the case of subordinated models.

Next we discuss glasses, physical systems exhibiting collective slow processes, which are due to the interaction with a disordered and dynamic environment. Glassy behavior is ubiquitous and universal, exhibited also in protein dynamics. We will specifically discuss the electron glass, presenting a model that successfully explains memory effects demonstrated by 'two-dip' experiments.