

Fluctuation dissipation and response in out of equilibrium systems

Sergio Ciliberto, rieur de Lyon

In this lecture we will discuss two aspects of the applications of recent theoretical results for out of equilibrium systems to experiments. In the first part of the talk we will describe an experiment in which the modified fluctuation-dissipation-theorems for non-equilibrium steady state, which have been recently theoretically derived, are tested by studying the position fluctuations of a colloidal particle, whose motion is confined in a toroidal optical trap. The role of the statistical error is discussed.

In the second part of the talk we will describe an experiment, where an AFM tip is driven in a steady out equilibrium state by random force. We study the applications of fluctuations theorem as a function of the ratio of the variance of the external force with respect to the fluctuations induced by the thermal bath.