colmea

Colóquio Interinstitucional
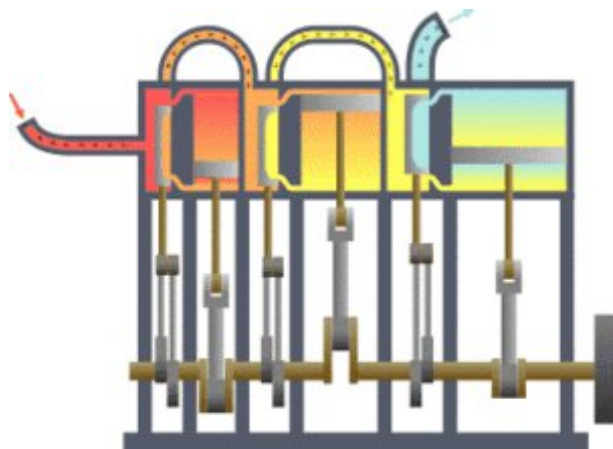# Modelos Estocásticos e Aplicações

Quarta-feira, 10 de setembro de 2014

Programa

**14:00 - 15:20 – Stefano Olla (Univ. Paris Dauphine)**

From Dynamics to Thermodynamics

Thermodynamics is one of the most established and successful physical theory, applied to most macroscopic systems that satisfy the 0-the principle, i.e. the existence of equilibrium states. But the "connection" to microscopic dynamics following the laws of mechanics (classical or quantum), is still controversial. The classical approach is to understand thermodynamics as a limiting process, where time is rescaled with space, that follows the evolution of slow observables (energy, volume,...). These observables typically characterize the equilibrium states. Such limits are usually called hydrodynamic limits and quasi-static limits. I will illustrate the mathematical program (still open) to obtain such limits for the most simple model, the one dimensional Fermi-Pasta-Ulam chain of oscillators. Depending on the external agents acting on the system (heat bath or forces) we obtain in the large space-time limit, the thermodynamic isothermal or adiabatic transformations from one equilibrium to an other.

15:40 - 17:00 – Zdzislaw Burda (Univ. of Krakow)

Localization of Maximal Entropy Random Walk
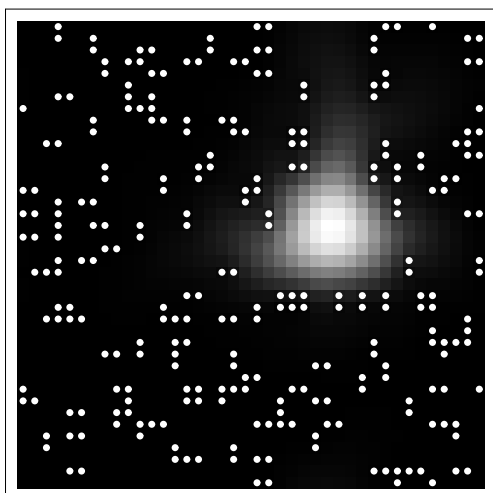
We define a new class of random walk processes which maximize entropy. This maximal entropy random walk is equivalent to generic random walk if it takes place on a regular lattice, but it is not if the underlying lattice is irregular. In particular, we consider a lattice with weak dilution. We show that the stationary probability of finding a particle performing maximal entropy random walk localizes in the largest nearly spherical region of the lattice which is free of defects. This localization phenomenon, which is purely classical in nature, is explained in terms of the Lifshitz states of a certain random operator.

17:00 – Discussão e lanche

Local

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