UNIVERSITÀ DI PARMA

Ciclo di lezioni per il corso di dottorato

Prof. Carlos Viviescas

Universidad Nacional de Colombia

terrà due lezioni sulla

Non-equilibrium thermodynamics of microscopic systems

Program:

Part 1. Fluctuation theorems and entropy production

A basic introduction to non-equilibrium thermodynamics of physical systems is presented, together with the fundamental concepts and ideas necessary for the understanding of the production of entropy and the formulation of classical fluctuation theorems. In the last part, basic elements of quantum mechanics necessary for a formulation of equivalent quantum fluctuation theorems are offered.

Part 2. Continuously measured open quantum systems

The basics ideas behind the dynamics of quantum systems weakly coupled to an environment are introduced, and a description of the system's Markovian evolution is offered. Emphasis is then put to systems for which the environment is coupled to detectors that are continuously monitored, in order to introduce an intuitive formulation of quantum trajectories for the system.

Part 3. Work, heat, and weak measurements

We use the quantum trajectory formalism to construct a framework for the study of the non-equilibrium thermodynamics of weakly measured quantum systems, showing how to recover quantum fluctuation theorems. In this framework, we conclude by showing how the concepts of work and heat can be related with the ways the weak measurements are performed.

ore: **19 novembre 2019 14:30-16:30**
20 novembre 2019 16:30-18:00

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