



## ICFO Colloquium KRZYSZTOF GAWEDZKI 'Thermodynamics of Fluctuations in Fast Processes'

KRZYSZTOF GAWEDZKI

February 04, 2016

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Thursday, February 4th, 12:00, ICFO's Auditorium

**KRZYSZTOF GAWEDZKI**

Professor, Ecole Normale Supérieure, Lyon

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Krzysztof Gawędzki is a mathematical and theoretical physicist who has worked at Warsaw University, Institut des Hautes Etudes Scientifique near Paris and, most recently, at Ecole Normale Supérieure in Lyon. His interests cover a variety of subjects: quantum field theory, turbulent transport, non-equilibrium statistical mechanics, or topological insulators.

Presently, he is a researcher-emeritus at ENS in Lyon.

Abstract:

Recent years have brought a considerable progress in the understanding of the role played by fluctuations in the non-equilibrium behavior of mesoscopic systems: colloidal particles, polymers in flows, molecular motors, and alike. A theory governing such fluctuations, known under the name of Stochastic Thermodynamics, encompasses several general results extending the laws of thermodynamics to fluctuation dominated situations. For illustration, I shall concentrate on the refinement of the Second Law for processes driven on time scales comparable or shorter than the relaxation time of fluctuations. For classical systems such a refinement is related to the optimal mass transport problem that goes back to the works of Monge and Kantorovich in previous centuries. It provides a short-time improvement of the Landauer principle about memory erasure. An attempt to carry over such results to quantum systems will be also described.

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