



Forschergruppe 877

**Universität Leipzig**  
Fakultät für Physik und  
Geowissenschaften  
Institut für Theoretische Physik

## **TKM-/FOR 877-Seminar**

Am Dienstag, dem 20.01.2015 um 14:00 Uhr spricht

**Dr. Matteo Polettini**  
(University of Luxembourg)

über

### **The stochastic thermodynamics of efficiency fluctuations: Exact results and perspectives**

Efficiency quantifies how worth a local gain at the expense of a global loss is. In the early times of the industrial revolution, the question of the efficiency of steam machines gave birth to thermodynamics as a science. While large thermodynamic machines work in a typical manner, the behavior of small machines, e.g. at the molecular scale, can vary dramatically from realization to realization, and thus their efficiencies might fluctuate.

I will introduce the basic ideas of a theoretical framework, called Stochastic Thermodynamics, that describes the thermodynamics of small systems subject to fluctuations, with special emphasis on recent developments in the study of efficiency statistics. The theory of efficiency fluctuations is enormously richer than the macroscopic thermodynamic one. In particular, I will argue that fluctuations might enhance efficiency towards its Carnot limit at nonequilibrium phase transition.

**Ort:** ITP, Brüderstraße 16, SR 113

*Interessenten sind herzlich eingeladen!*