



## Sergio Ciliberto

CNRS research director

Ecole Normale Supérieure de Lyon, FR

### **Title of the lecture:**

Experiments in Stochastic Thermodynamics: Short History and Perspectives

### **Format:**

TBA

### **Summary:**

We summarize in this series of lectures the experiments which have been performed to test the theoretical findings in stochastic thermodynamics such as fluctuation theorem, Jarzynski equality, stochastic entropy, out-of-equilibrium fluctuation dissipation theorem, and the generalized first and second laws. We briefly describe experiments on mechanical oscillators, colloids, biological systems, and electric circuits in which the statistical properties of out-of-equilibrium fluctuations have been measured and characterized using the above-mentioned tools. We discuss the main findings and drawbacks. Special emphasis is given to the connection between information and thermodynamics. The perspectives and followup of stochastic thermodynamics in future experiments and in practical applications are also discussed.

### **References:**

1. S. Ciliberto et al., J. Stat. Mech. (2010) P12003
2. S. Ciliberto et al., PHYSICAL REVIEW X **7**, 021051 (2017)