



INVITATION

to a **TALK** by

Alexia Auffèves

Institut Néel - CNRS, Grenoble, France

Rebuilding quantum thermodynamics on quantum measurement

Thermodynamics relies on randomness. In classical thermodynamics, the coupling to a thermal bath induces stochastic fluctuations on the system considered: Thermodynamic irreversibility stems from such fluctuations [1], which also provide the fuel of thermal engines. Quantum theory has revealed the existence of an ultimate source of randomness: Quantum measurement through the well-known measurement postulate [2].

In this talk I will present recent attempts to rebuild quantum thermodynamics on quantum measurement, from quantum irreversibility to quantum engines extracting work from quantum fluctuations [3,4].

- [1] A. Auffèves, Viewpoint : Nuclear spin points out the arrow of time, *Physics* 8, 106 (2015)
- [2] A. Auffèves, P. Grangier, Recovering the quantum formalism from physically realist axioms, *Scientific Reports* 43365 (2017)
- [3] C. Elouard, D. Herrera-Martí, M. Clusel, A. Auffèves, The role of quantum measurement in stochastic thermodynamics, *npj QI* 10.1038 (2017)
- [4] C. Elouard, D. Herrera-Martí, B. Huard, A. Auffèves, Extracting work from quantum measurement in Maxwell's demon engines, *Phys. Rev. Lett.* 118, 260603 (2017), featured in *Phys.org* and *Nature Research Highlights*

Thursday, November 9th, 2017
11:30 s.t.

Ernst Mach lecture hall, 2nd floor
Boltzmannngasse 5, 1090 Vienna

Hosted by: Philip Walther