Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Energy flow between two hydrodynamically coupled particles kept at different effective temperatures[1] SERGIO CILIBERTO, ENSL-CNRS, ANTOINE BERUT, ENSL, ARTYOM PETROSYAN, ENSL-CNRS, EQ 2 TEAM — We measure the energy exchanged between two hydrodynamically coupled micron-sized Brownian particles trapped in water by two optical tweezers. The system is driven out of equilibrium by random forcing the position of one of the two particles. The forced particle behaves as it has an "effective temperature" higher than that of the other bead. This driving modifies the equilibrium variances and cross-correlation functions of the bead positions: we measure an energy flow between the particles and an instantaneous cross-correlation, proportional to the effective temperature difference between the two particles. A model of the interaction which is based on classical hydrodynamic coupling tensors is proposed. The theoretical and experimental results are in excellent agreement.

[1]ERC-Outeflucop

Sergio Ciliberto
ENSL-CNRS

Date submitted: 14 Nov 2014 Electronic form version 1.4