# Information engine fueled by first-passage times

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I will consider the thermodynamic properties of an information engine that uses feedback control to extract work from a manipulated stochastic system. I will discuss the fluctuation theorems that involve the information associated with the feedback-controlled stochastic trajectories. Such an information turns out to be based on the first-passage-time distribution. I will then discuss the experimental verification of the above results with a se tup consisting of a cantilever submitted to an electrostatic feedback force. I will finally show that the fluctuation theorems extend beyond the specific app lication to such an experiment.

[1] A. Archambault, C. Crauste-Thibierge, A. Imparato, C. Jarzynski, S. Ciliberto, L. Bellon, Information Engine Fueled by First-Passage Times, Phys. Rev. Lett 135, 147101 (2025)