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C. Van den Broeck to R. Toral

Stochastic thermodynamics for heat transfer via micro-canonical Ising model.

We rewrote and enlarged a previous manuscript on kangaroo processes, which was in the form of a letter. The manuscript has been submitted to PRE. The main new ingredient is the full calculation of the cumulant generating function and the large deviation function for two examples in stochastic thermodynamics, namely an harmonic oscillator and a Fermionic system in contact with two heat baths.

We continued our work on a Kangaroo process with a balastic component and clarified under which conditions the fluctuation theorem is valid. We completed a preliminary draft. A manuscript will be submitted soon.

We discussed what needs to be done further on the heat transfer via a micro-canonical Ising model. A manuscript on this subject is in preparation. We will meet again on the occasion of a workshop in San Diego in July 2014. This should allow us to complete this paper.

Finally, we explored some new problems that can be addressed as the outcome of the aforementioned research. We will in the future extend the discussion of kangaroo processes to both energy and particle flux. The advantage is that one can move away from tight coupling between both fluxes without additional mathematical difficulties.

We will of course acknowledge support of EPSD in all these papers.