Relative entropies and hypothesis testing for repeated quantum measurements (and finitely correlated states)

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I will present results concerning the hypothesis testing between to instruments describing quantum repeated measurements. I will particularly focus my presentation on the hypothesis testing of the arrow of time which is related to the distribution of the entropy production. My goal is to explain, first how a mapping to a classical dynamical system (with eventual long range interactions) and the use of sub additive thermodynamic formalism allows us to prove existence and differentiability of the relevant limit entropic quantities, second the relationship between vanishing of the entropy production and quantum detailed balance. That second point will lead me to unravel how these results are relevant for the hypothesis testing for finitely correlated states of spin chains.

The content of this talk is part of a joint work with N. Cuneo, V. Jaksic, Y. Pautrat and C.-A. Pillet.

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