Entropy production, quantum measurements, and some collision

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The act of measuring a system has profound consequences of dynamical and thermodynamic nature. In particular, the degree of irreversibility ensuing from a non-equilibrium process is strongly affected by measurements aimed at acquiring information on the state of a system of interest. In this talk, I discuss a recently proposed unifying formalism for the description of the thermodynamics of continuously monitored systems, where measurements are only performed on the environment connected to a system, by way of collisional models. I then discuss the particular case of Gaussian quantum systems, comparing the collisional framework with a more intuitive phase-space picture, applied to the experimental inference of the stochastic entropy production rate for a continuously monitored mesoscopic optomechanical oscillator.

References

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