
Contextuality in quantum thermodynamics

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Abstract

In this work, I will derive the stochastic trajectories for a superconducting qubit in a cavity taking into account the effect of an ideal quantum amplifier. I will then decompose the energy change of the qubit at the single quantum trajectory level, decomposing it into a work and a heat part formally defined by analogy with classical stochastic thermodynamics. Using numerical simulations, I have shown that these quantities depends on the stochastic trajectories unraveling. This shows that defining work and heat requires energy measurements performed in the environment of the system.

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