

Quantum jump approach for work and dissipation in a two-level system

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We apply the quantum jump approach to address the statistics of work in a driven two-level system coupled to a heat bath. We demonstrate how this question can be analyzed by counting photons absorbed and emitted by the environment in repeated experiments. We find that the common non-equilibrium fluctuation relations are satisfied identically. The usual fluctuation-dissipation theorem for linear response applies for weak dissipation and/or weak drive. We point out qualitative differences between the classical and quantum regimes.