Entanglement Generation in Periodically driven XY Model under Stochastic Resetting

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Stochastic resetting in classical stochastic or deterministic processes attracted much attention recently, which proves helpful tool in intermittent search processes (e.g. target search process with brownian motion). Recently, it extends to quantum domain as well. For quantum systems, it accounts for resetting the quantum state to its initial state (or, any other fixed state) at random times in course of time evolution. The stochastic average of density matrix at long time are very different and constitutes Non-Equilibrium Steady State(NESS). We have considered here periodically driven (Floquet) quantum system (XY model with transverse field) under stochastic resetting. Floquet systems are itself of interest as they cast the system out of equilibrium and gives NESS at long time. So, under resetting the NESS corresponding to r (reset rate)=0 gives back the NESS of floquet system without reset. We will mainly focus on the entanglement between two spin and its evolution under Poissonian resetting. And we will show in some cases, stochastic resetting is helpful to enhance the entanglement. For entanglement measurement, we will rely on calculation of concurrence , which is a measure of entanglement of formation for two-qubit mixed state. In the end, we will try to understand the relation between closed quantum dynamics under resetting and effective open quantum dynamics. We will show the renewal equation of density matrix under stochastic resetting can be obtained as a solution of generalized Lindblad Master Equation.