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Entanglement and diffusive behavior of a driven Floquet system coupled to noise[1] BENJAMIN M. FREGOSO, JUSTIN WILSON, VICTOR GALITSKI, JQI, UMD — Attempting to improve the persistence of quantum effects in systems interacting with a bath, we consider a periodically-driven quantum system and focus on its quantum dynamics in the Floquet space. As a toy model, we first consider a harmonic oscillator interacting with a bath and investigate the diffusive behavior in the statistics of observables in the presence of a periodic driving force and analyze the system within the Floquet theory. We then extend this analysis to look at the entanglement of two oscillators interacting with a bath, and investigate whether a periodic driving force can improve the persistence of entanglement between the two systems. We discuss possible experimental realization of our exactly-solvable model with trapped ions. We discuss a Lie-algebraic contraction scheme to map the oscillator properties to spin the systems in an environment. Extensions of our theory to more complicated driven quantum systems will also be discussed. This research is supported by JQI-PFC.

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