

Abstract Submitted
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Open Dicke model: Unusual Dynamics of the Superradiant Transition DANIEL PAZ, MOHAMMAD MAGHREBI, Michigan State University — The interaction of an ensemble of two-level atoms with a single electromagnetic mode, the Dicke model, is a classic problem that exhibits a superradiant phase with a macroscopic population of photons. The transition to a superradiant phase has been recently observed in open driven systems that are subject to dissipation. It is widely believed that these phase transitions are effectively described by purely dissipative classical models with infinite-range interactions. While this is generally the case, I argue that the phase transition at weak dissipation displays qualitatively different dynamics that is not purely dissipative. Therefore, a dynamical crossover emerges as the dissipation is decreased. I also discuss the signatures of this unusual dynamics in available experimental setups.

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