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Dissipation-Induced Ordering in a Non-Markovian Open Dicke Model MARCO SCHIRO, ORAZIO SCARLATELLA, Institut de Physique Theorique, Universite' Paris Saclay, CNRS, CEA, F-91191 Gif-sur-Yvette, France — We consider the Dicke model, describing an ensemble of N two-level systems interacting with a light field, and investigate the effect of a non-Markovian environment. We find, in the thermodynamic limit, a dissipation-induced superradiant phase transition as the coupling to the bath is increased, in striking qualitative contrast with the result obtained in a Markovian, memory-less, environment. We argue this to be the mean field limit of a genuine dissipative quantum phase transition, of spin-boson nature, existing in this system for any finite N .

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