

Abstract Submitted
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Sudden Decoherence Transitions for Quantum Discord¹ HYUNGGJUN LIM, ROBERT JOYNT, University of Wisconsin-Madison
— We formulate the computation of quantum discord in terms of the generalized Bloch vector, focusing on the case of 2 qubits. This provides useful insights on the time evolution of quantum coherence for the open stem, particularly the comparison of entanglement and discord. We introduce a numerical method for calculating quantum discord for a special class of multipartite states. In agreement with previous work in low-dimensional cases (L. Mazzola et al., Phys. Rev. Lett. 104, 200401 (2010)), we find situations in which there is a sudden transition from classical to quantum decoherence characterized by the discord remaining relatively robust (classical decoherence) until a certain point from where it begins to decay quickly whereas the classical correlation decays more slowly (quantum decoherence). We propose a general condition to observe this phenomenon.

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