

Abstract Submitted
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Density matrix Loschmidt echo and quantum discord in quantum phase transitions YANCHAO LI, Beijing Computational Science Research Center (CSRC), STATE KEY LABORATORY FOR SUPERLATTICES AND MICROSTRUCTURES, INSTITUTE OF SEMICONDUCTORS, CAS COLLABORATION, BEIJING COMPUTATIONAL SCIENCE RESEARCH CENTER (CSRC) TEAM — We introduce the concept of the Loschmidt echo (LE) to the space of the reduced density matrix of spin and fermionic systems to study the relationship between the density matrix Loschmidt echos (DMLEs) and quantum phase transitions (QPTs). Our results show that the DMLEs are remarkably influenced by the criticality of the system, and the method is a convenient way to study QPT. Meanwhile, we compare quantum discord and DMLE calculations, aiming to explore the difference and connection between them in identifying QPTs.

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