

# Quantum renormalization of coherence measure in transverse Ising model

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Received: 07.12.2018    Final revised: 07.12.2017    Accepted: 13.02.2019

## Abstract

In this paper, we investigate quantum renormalization group theory in transverse Ising model on one-dimensional chain of spin-1/2 particles. To this end, recursion relations are employed for quantum renormalization of coherence measure at ground state. Coherence measure diagram in terms of intensity of transverse field for more renormalization steps shows the detection of quantum phase transition point for transverse Ising model, which implies that the coherence measure can be a good indicator of quantum phase transition in transverse Ising model. Moreover, we obtain the divergent behavior that governs the first derivative of the coherence measure behavior near the critical point. Although the coherence measure depends on the basis of writing the density matrix, the results show that the quantum phase transition point detected by coherence measure is independent of the selected basis.

**Keywords:** quantum renormalization, coherence measure, quantum phase transition, Ising model.

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