

Abstract Submitted
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Analysis of quantum Monte Carlo dynamics for quantum adiabatic evolution in infinite-range spin systems¹ JUN-ICHI INOUE, Hokkaido University — We analytically derive deterministic equations of order parameters such as spontaneous magnetization in infinite-range quantum spin systems obeying quantum Monte Carlo dynamics. By means of the Trotter decomposition, we consider the transition probability of Glauber-type dynamics of microscopic states for the corresponding classical system. Under the static approximation, differential equations with respect to macroscopic order parameters are explicitly obtained from the master equation that describes the microscopic-law. We discuss several possible applications of our approach to disordered spin systems for statistical-mechanical informatics. Especially, we argue the ground state searching for infinite-range random spin systems via quantum adiabatic evolution.

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