

Tomoyuki Obuchi

Tokyo Institute of Technology

Complex semiclassical analysis of the Loschmidt amplitude and dynamical quantum phase transitions

We propose a new computational method of the Loschmidt amplitude in a generic spin system on the basis of the complex semiclassical analysis on the spin-coherent state path integral. By applying this, dynamical transitions in the time evolution of the Loschmidt amplitude will be examined for the infinite-range transverse Ising model with a longitudinal field in a quantum quench setting. The corresponding dynamical phase diagrams will be shown. Possible examination in experiments or application of the present method to a performance analysis of quantum annealing will be discussed.