

Kohji Nishimura

Tokyo Institute of Technology

Inference of the ground state of spin-glass Hamiltonians using quantum fluctuations

We study the retrieval of the ground state of the spin-glass Hamiltonian by using data only from another Hamiltonian whose interactions are corrupted by noise. We show numerically that applying certain quantum fluctuation to a noisy Hamiltonian helps recover the ground state of the original noiseless Hamiltonian. This result implies that we may keep the transverse field finite at the end of quantum annealing to obtain more reliable data. An analytical approach by using mean-field approximation is also discussed. This work has been done in collaboration with Hidetoshi Nishimori.