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Studying Chiral Symmetry with SU(2) Gauge Model via Quantum Computer

We employ a variational quantum algorithm to study the chiral condensate of 1+1 dimensional SU(2) non-Abelian gauge theory at different temperatures and chemical potentials. Our algorithm is tested both by classical simulations and on real quantum computers. We observed the breaking and restoration of chiral symmetry. Our simulation results are in good agreement with theoretical calculations and exact diagonalization of the lattice Hamiltonian, underscoring the feasibility of using near-term quantum computers to study finite-temperature QCD systems.

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Short summary

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