

(1+1)-dimensional QCD at finite density with matrix product states

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We study the zero-temperature and finite-density phase of QCD in 1+1 dimensions on the basis of Hamiltonian lattice QCD and matrix product states. We variationally approximate the wave function of the ground state with nonzero chemical potential using the density matrix renormalization group and compute physical observables such as equation of state, chiral condensate, and quark distribution function, where conventional lattice QCD simulations suffer from the sign problem. Physical implication of our results is also discussed.

Theory / experiment

Theory

Group or collaboration name

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