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Study of the phase diagram of 1+1d Z(N) multi-flavor gauge theory at finite density using Tensor Networks and Quantum Simulations

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The phase diagram of QCD at finite density remains largely unknown due to the sign problem. We propose a 1+1 dimensional model which mimics some of the features of QCD in order to study how quantum computers can avoid the sign problem and allow computations at the finite density. The model is a Z(3) gauge theory coupled to 3 flavors of staggered fermions, and it features baryon-like excitations in addition to meson-like bound states. We present the study of the phase diagram of this model using tensor networks.

Topical area

Quantum Computing and Quantum Information

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