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The extrapolation of the Quark number density by lattice QCD and effective model from imaginary to real chemical potential JUNICHI TAKAHASHI, Kyushu University, HIROAKI KOUNO, Saga University, MASANOBU YAHIRO, Kyushu University — We evaluate quark number densities at imaginary chemical potential by doing lattice QCD calculations on an 8^2*16*4 lattice with clover-improved Wilson quarks of two flavors. The quark number densities are extrapolated to the real chemical potential region by assuming some functional forms. The extrapolated quark number densities are consistent with those calculated at real chemical potential directly by using the Taylor expansion method for the reweighting factors. Moreover, in order to analyze the physical properties of the quark number density at the large real chemical potential, we use the simple effective model. Then, we aim to explore the other physical quantities and phenomena such as chiral condensates and chiral phase transition using our simple model at imaginary and/or real chemical potentials.

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