



Contribution ID: 139

Type: **Oral Presentation**

Measurement of hadron masses in 2-color finite density QCD

Thursday, August 11, 2022 12:30 PM (20 minutes)

We investigate hadron masses in two-color QCD with $N_f = 2$ at low temperature and finite density using lattice simulation. We calculate π and ρ meson masses and find the flipping of the spectral ordering of these two mesons near the transition between the hadronic and superfluid phases.

Furthermore, we measure hadron masses with isospin $I = 0$ and $J^P = 0^\pm$. According to the analysis of the linear sigma model of finite-density two-color QCD with a diquark gap, the meson, diquark, and antidiquark states in such channels are mixed due to the $U(1)_B$ symmetry breaking in the superfluid phase. Our lattice study provides the two-point functions, which are consistent with the above prediction.

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Session Classification: Non-zero Density

Track Classification: QCD at Non-zero Density