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Using the magnetic equation of state to determine the curvature of the chiral phase transition line of (2+1)-flavor QCD

Thursday, 6 June 2024 11:00 (30 minutes)

We analyze the variation of the chiral phase transition temperature as a function of the baryon number and strangeness chemical potentials by calculating the leading order curvature coefficients in the light and strange quark flavor basis as well as in the conserved charge (B, S) basis. Making use of scaling properties of the magnetic equation of state (MEoS) and including diagonal as well as off-diagonal contributions in the expansion of the energy-like scaling variable that enters the parametrization of the MEoS, we explore the variation of the chiral phase transition temperature T_c along different lines in the (μ_B, μ_S) plane. We also show that close to the chiral limit the strange quark mass behaves like an energy-like variable in scaling relations for pseudo-critical temperatures and the chiral phase transition temperature decreases with decreasing strange quark mass.

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Quarks

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