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Chiral and deconfinement thermal transitions at finite quark spin density in lattice QCD

We study the effect of finite spin quark density on the chiral and deconfinement thermal transitions using numerical simulations of lattice QCD with two dynamical light quarks. The finite spin density is introduced by the quark spin potential in the canonical formulation of the spin operator. We show that both chiral and deconfinement temperatures are decreasing functions of the spin potential. We determine the parabolic curvatures of transition temperatures in a limit of physical quark masses.

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