

PNJL model at zero temperature: The three-flavor case

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We propose a three-flavor version of the Polyakov-Nambu-Jona-Lasino (PNJL) model at zero temperature regime, by implementing a traced Polyakov loop (Φ) dependence in the scalar, vector and 't Hooft channel strengths. We study the thermodynamics of this model, named as PNJL0, with special attention for the first-order confinement/deconfinement phase transition for which Φ is the order parameter. For the symmetric quark matter case, an interesting feature observed is a strong reduction of the constituent strange quark mass (M_s) at the chemical potential related to point where deconfinement takes place. The emergence of Φ favors the restoration of chiral symmetry even for the strange quark. We also investigate the charge neutral system of quarks and leptons in weak equilibrium.

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