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Polyakov–Nambu–Jona-Lasinio model:: Revisited

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QCD-inspired non-perturbative models provide an effective approach to study strongly interacting matter at high temperature and/or high density. The simultaneous onset of confinement and chiral symmetry-breaking phenomena in lattice QCD (LQCD) simulations inspired their coupling in effective models.

The Polyakov-Nambu-Jona-Lasinio or the PNJL model is one such QCD-inspired non-perturbative model. The physics reflected from the behavior of thermodynamic observables extracted from this model, gives an insight into QCD.

LQCD results have been recently obtained in the continuum limit which consequently lowers the transition temperature. This motivates us to modify the effective potential in the PNJL model.

Analysis of important thermodynamic observables with this potential encouragingly show a similarity on comparison to LQCD continuum data. We use this modified potential to sketch the phase diagram.

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