

Perturbative study of the QCD phase diagram for heavy quarks at nonzero chemical potential

Wednesday, July 13, 2016 2:15 PM (30 minutes)

We investigate the phase diagram of QCD with heavy quarks at finite temperature and chemical potential in the context of background field methods. In particular, we use a massive extension of the Landau-DeWitt gauge which is motivated by previous studies of the deconfinement phase transition in pure Yang-Mills theories. We show that a simple one-loop calculation is able to capture the richness of the phase diagram in the heavy quark region, both at real and imaginary chemical potential. Moreover, dimensionless ratios of quantities directly measurable in numerical simulations are in good agreement with lattice results.

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Session Classification: Parallel Track 2