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Finite density equation of state of QCD by means of resummed perturbation theory

Monday, 16 September 2013 12:00 (30 minutes)

I will report on recent perturbative studies of the hot and dense QCD equation of state, via two different resummed perturbation theories.

Using Hard-Thermal-Loop perturbation theory (HTLpt), the full one-loop pressure as well as various diagonal quark number susceptibilities are derived.

In addition, the same quantities are computed by resummation of the well known four-loop finite density equation of state, obtained via dimensional reduction.

A detailed comparison of these results, for various numbers of flavors, with lattice data is performed, with emphasis on the good agreement down to the phase transition region.

Finally, the convergence of the high-temperature truncation, approximation which is needed at higher-loop order in HTLpt, is analysed.

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Session Classification: Talks and Discussions