Contribution ID: **195** Type: **Talk**

Study of high density phase transition in lattice QCD with canonical approach

Thursday, 16 July 2015 08:30 (20 minutes)

The canonical partition function is related to the grand canonical one through the fugacity expansion.
In this talk we perform the fugacity expansion by a method of the hopping parameter expansion in temporal direction.
The canonical partition function is evaluated for Nf=2 QCD upto baryon numbers of nB=30 in a wide range of temperature.
After derivation of the canonical partition function we study the chemical potential dependences of hadronic observables like chiral condensate, quark number density and its susceptibility.
In this talk we report a phase transition found at real chemical potential and its dependence on the quark mass and the volume.

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Session Classification: Nonzero Temperature and Density

Track Classification: Nonzero Temperature and Density