Area Seminar

Title	Phase diagram and Fluctuations using PNJL model.
Date and Time	21/07/2011 16:00:00
Speaker	Paramita Deb Univ. of Kolkata
Area	Theoretical Physics
Venue	Room No. 469

Abstract

The investigation of the properties of strongly interacting matter at large temperatures and densities is a very active field of research at present.In order to understand the experimantal data from RHIC, LHC, we need a proper theoretical framework. To study the properties of stronglyinteracting matter theoretically, one of the most popular model is Polyakov loopextended Nambu-Jona-Lasinio (PNJL) model. In our work we have investigated thethermodynamic properties like pressure, energy density, specific heat, speed ofsound with this model. We have also studied the phase diagram of PNJL model withsix-quark and eight-quark interactions. The introduction of eight-quark interaction shifts the critical end point (CEP) to the lower chemical potential and highertemperature, which is more closer to the lattice data. Fluctuations and correlations are important signatures of any physical system. We have calculated the fluctuations and correlations of baryon, charge and strangeness quantum number with respect to temperature. The second derivative of pressure show a steep rise near the transition region, which indicates the increase of fluctuation near the transition region. All the fourth order fluctuations show peaks near the transition temperature for six-quark and eight-quark interaction. We have also studied the spectral functions of scalar and pseudoscalar channels just above the transition temperature. The non degenracy between the spectral functions of two channels indicates that U(A)_1 symmetry is not restored just above the transition temperature.