

THEORETICAL PHYSICS SEMINAR

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Title: Properties of Quark-Gluon-Plasma produced in relativistic heavy ion collisions

Speaker: Dr. Vinod Chandra, IIT Gandhinagar

Date/Time/Venue: 24th September (Thursday)/2:30 PM/ Room No. 469

ABSTRACT

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There are strong indications that relativistic heavy ion collision experiments at BNL/LHC (CERN) have produced the hottest and the most liquid state of the matter. In fact, the shear viscosity to entropy density ratio for the matter there, turns out to be the lowest among all the known fluids. This state of the matter is commonly known as quark-gluon-plasma (QGP). At the theoretical front, its existence can be attributed to the confinement-deconfinement phase transition in Quantum Chromodynamics (QCD: the underlying theory of the strong interaction). The QGP is expected to exist a few micro-second after the big-bang. Relativistic dissipative hydrodynamical modeling of the space time evolution of the QGP has been highly successful in understanding the physics of the strong interaction. The shear viscosity, bulk viscosity, of the QGP and the equation of state (computed using lattice QCD/improved pQCD) need to be specified at the beginning of the hydrodynamical evolution of the QGP. The prime focus will be on the understanding of shear and bulk viscosities of the QGP from the view point of transport theory. We shall also highlight the impact of these viscosity coefficients on the physics of the strong interaction.

All are welcome to attend