

## Group report: Heavy ion physics

SOURENDU GUPTA

Theory Group, T. I. F. R., Bombay 400 005.

### Participants:

Rahul Basu, Avijit Ganguly, Rajiv Gavai, Rohini Godbole, Sourendu Gupta, N.D. Haridass, Prakash Mathews, Hiranmay Mishra, J. Pasupathy, J. C. Parikh, Hiranmay Mishra, J. Pasupathy, J. C. Parikh, V. Ravindran, Helmut Satz and Vikram Soni.

This working group discussed several aspects of heavy ion physics. Several projects were found to be interesting enough to pursue further. The specific projects chosen for further work are listed below.

1. Braaten-Pisarski Resummation: Hiranmay Mishra and Avijit Ganguly will try to use Braaten-Pisarski resummation to compute the pressure in pure QCD at three loop order. There is some interest in computing the pressure to as high an order in perturbation theory as possible, so that the result can be compared with lattice gauge theory measurements.
2.  $J/\psi$  Transverse Momentum: R. M. Godbole, Prakash Mathews, V. Ravindran, S. Gupta and R. V. Gavai have started a project to use resummed perturbative QCD in order to predict the transverse momentum distribution of  $J/\psi$  and  $\Upsilon$  in the heavy-ion collider mode of LHC. Deviations from such predictions are among the signals of the plasma.
3. Disoriented Chiral Condensates: N. D. Haridass outlined a computation of the critical exponents of the  $O(4)$  sigma model in three dimension. R. Basu and S. Gupta plan to compute the dynamics of disoriented condensates after quenching. This has been suggested recently as a mechanism for Centauro events.