

# Department of Theoretical Physics

## Free Meson Seminar

<i>Speaker</i>	:	Victor Roy (VECC, Kolkata)
<i>Topic</i>	:	The effect of shear and bulk viscosity on charged hadrons $p_T$ spectra and $v_2$ in heavy ion collision: A hydrodynamic model study
<i>Day, Date &amp; Time</i>	:	Thursday, September 22, 2011 at 2:30 p.m.
<i>Place</i>	:	AG 69

### *Abstract*

Understanding the transport properties of the medium formed in high energy heavy-ion collisions is a recent topic of interest. So far the focus has been primarily to study the effect of  $\eta/s$ . However recent lattice QCD and hadron resonance gas (HRG) calculations have shown that the bulk viscosity to entropy density ( $\xi/s$ ) is finite through out the evolution of the system, with a maximum value at  $T_c$ .  $\xi$  is expected to reduce the pressure gradient of the system as well as affect the rate of cooling, both of which can have observable consequences on experimentally measured quantities like elliptic flow and  $p_T$  spectra.

We have considered a realistic temperature dependence of  $\xi/s$  as an input to 2+1D viscous hydrodynamics evolution of the system for fixed values of  $\eta/s$ . The correction to the equilibrium distribution function is also incorporated. We calculate the charged hadron elliptic flow and  $p_T$  spectra for heavy-ion collisions and observe the elliptic flow gets reduced and particle yields get enhanced at higher  $p_T$  relative to ideal case. A detailed comparison of our calculation to the measured centrality dependence of  $v_2$  and  $p_T$  spectra of charged hadrons at RHIC energies will be presented.)

*(Nilmani Mathur)*