

Department of Theoretical Physics

Free Meson Seminar

<i>Speaker</i>	:	Amaresh Jaiswal
<i>Topic</i>	:	Third-order dissipative hydrodynamics from kinetic theory
<i>Day, Date & Time</i>	:	Thursday, November 24, 2011 at 2:30 p.m.
<i>Place</i>	:	AG 69

Abstract

Relativistic hydrodynamics has been used to study hot and dense nuclear matter created in heavy-ion collisions with considerable success. The theory is formulated as an expansion in gradients of velocity with ideal hydrodynamics being zeroth-order and non-ideal effects appearing in higher order theories. Relativistic Navier-Stokes theory which is a dissipative first-order theory has acausal behaviour. This is rectified in the second-order Israel-Stewart theory. It is thus of interest to formulate a third-order theory and quantify its differences from existing theories.

An attempt to derive a third-order theory from entropy consideration has already been made. However this fails to capture all the terms in the evolution equations and hence is incomplete. A complete formulation of third-order viscous hydrodynamics from kinetic theory will be presented and numerical results for the boost-invariant Bjorken flow will be discussed.

(Nilmani Mathur)