

ASTRONOMY SEMINAR

April 15, 2011

Speaker : Swastik Bhattacharya
DAA-TIFR

Title : Massless scalar fields in Gravitation theory

Day, Date & Time : Monday, 18 April, 2011 at 16.00 hrs

Venue : TAP Seminar Room (A269)

(A. Gopakumar)

Abstract

Massless scalar fields has been of considerable interest in the context of Gravitation theory. In this talk, we shall consider many aspects of this field. First, we shall give a sufficient condition for the dispersal of a massless scalar field in the dynamical case in the theory of General Relativity and then demonstrate this by the example of Roberts solution. Then we shall discuss a static solution of massless scalar field coupled to gravity which has no strong curvature singularity. Finally, we shall consider a vacuum solution of scalar-tensor theory as a toy model of the universe and assume that the galaxies move along the world lines of the test particles. We shall show that in this case, it is possible to achieve accelerated expansion of the universe without violating the energy conditions and shall briefly discuss the implication of this for the dark energy problem.