THEORETICAL PHYSICS SEMINAR

Title: Recent developments on Gravitational Collapse Final States

Speaker: Prof. Pankaj Joshi, TIFR Mumbai

Date/Time/Venue: 7th January (Thursday)/11:30AM/ Room No. 469

Abstract

The final fate of massive collapsing matter clouds and their dynamical evolution has been a fundamental topic in black hole physics and its applications to relativistic astrophysics for the past many years. While the general theory of relativity predicts a necessary occurrence of a space-time singularity in such a scenario, the formation of event and apparent horizons in gravitational collapse is very much a subject of current investigations. In fact, it is the formation and behaviour of the apparent horizon that decides whether the singularity of collapse is enveloped in a black hole or whether it may be visible for far away observers in the space-time. We point out that the apparent horizon and trapped surface formation is determined in terms of the initial data for collapse and the allowed evolutions by the Einstein equations. The black hole and naked singularities in gravitational collapse involve key open issues such as genericity and stability aspects related to these outcomes. We shall discuss some of these issues, including recent implications for astrophysics such as the nature and structure of accretion disks around black holes and singularities and very high energy particle collisions around these objects.

All are welcome to attend