Open Talk

19th February, 2018   **4:00 PM**   **Fermion Hall**

SPEAKER
Dr. Santanu Mondal
CONICYT-FONDECYT Post-doctoral Fellow,
Universidad de Valparaíso, Chile

TITLE OF THE TALK
Study of accretion disk dynamics around X-ray binaries using TCAF solution

ABSTRACT

Accreting compact objects are powerful X-ray emitters. The X-ray flux arises from two key accretion flow components: the geometrically thin standard accretion disk and its X-ray corona. The accretion flow that feeds these objects is all but simple - its structure appears to depend on delicate balances of heating and cooling, where the whole system can flatten to a pancake or puff up into a sphere, radiate efficiently or advect all of its energy, live in combinations of these two regimes while varying erratically as red noise or quasi-periodically - all without changing much its total mass accretion rate. The phenomenology of X-ray observations of accreting compact object is therefore very rich and has been exhaustively studied. To date, however, there is little agreement on the physics behind these accretion states. To go beyond the standard model of a stable accretion flow, with no corona and only a parametric viscosity of unknown origin, it is necessary to rely on a promising physical solution. In a Two Component Advective Flow solution low angular momentum sub-Keplerian flow produces hot corona, which up-scatters soft photons from the Keplerian disk. The boundary of corona is also the location of the shock, forms under satisfaction of Rankine Hugoniot conditions. Here we solve a series of equations to get the shock solution and fit the observation of several black hole binaries from different satellites data.

HOST FACULTY
Professor Sandip K Chakrabarti
Senior Professor
Department of Astrophysics & Cosmology
S N Bose National Centre for Basic Sciences