

Speaker: Dr. Abhas Mitra, Adjunct Professor, Homi Bhabha National Institute
Title: How mathematical Physics betrayed physical reality over past half a century
Date: Friday, December 30, 2016
Time: 4pm
Venue: Main Lecture Theatre (AG-66), TIFR, Homi Bhabha Road, Colaba, Mumbai

Abstract:

Even a simple 2-body problem cannot be solved in General Relativity, and the Schwarzschild Black Hole corresponds to a single static point particle. Most of the exact solutions are discovered rather than derived. The Big Bang solution is derived by assuming perfect isotropy and homogeneity. On the other hand physical processes in real universe are associated with any number of complexities like inhomogeneity, viscosity, flow of heat and radiation, ever evolving equation of state. But for the sake of obtaining some exact solutions or presentable, theoretical physicists ignore most of such effects and in addition employ various analytical simplifications. Such physically hollow mathematical and numerical studies have consolidated both the Black Hole and Big Bang Paradigms. Moreover sweeping analogies without any physical basis initially led to the correspondence between area of an Event Horizon with Black Hole entropy and which later became one of the pillars of Quantum Gravity. The subtle errors and inconsistencies of such approaches will be highlighted. Simultaneously, the likely physical reality in such cases, backed by exact peer reviewed theoretical research and supporting latest observations will be discussed.

About the Speaker:

Dr. Abhas Mitra started his career as an observational Gamma Ray Astronomer in Kashmir and initiated theoretical research on several areas of astrophysics. He pioneered research on the physics of Cosmic Gamma Ray Bursts in India. Later he started frontline research on general relativistic gravitational collapse and cosmology. He has delivered 3 TEDx Talks and many public lectures in leading Tech Fests.