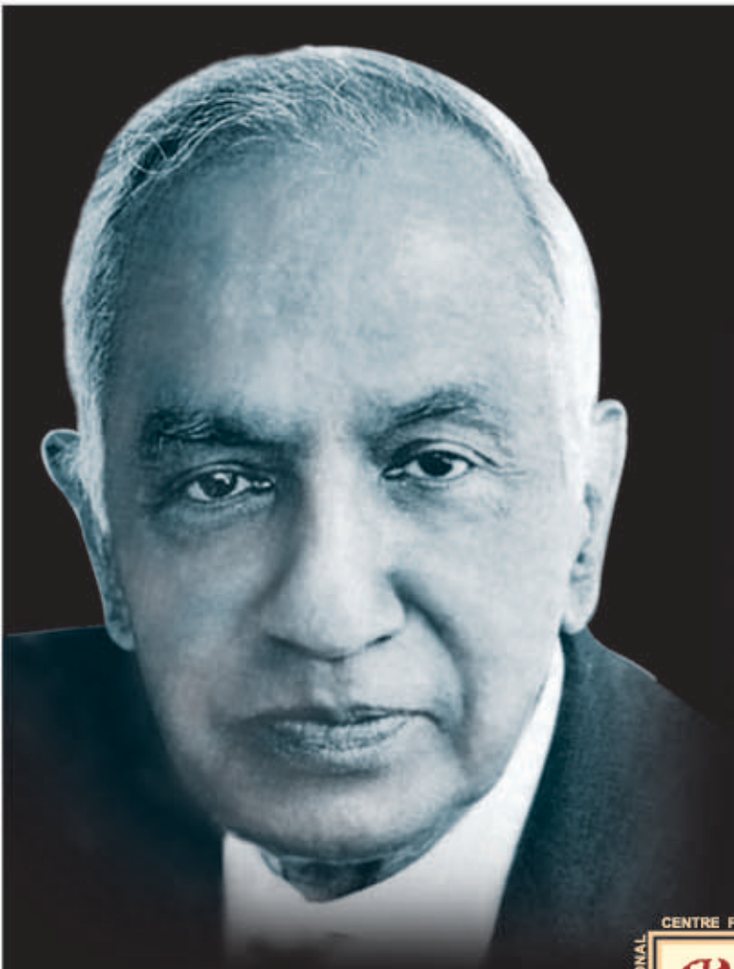

First S. Chandrasekhar Lecture

S N Bose National Centre for Basic Sciences

Kolkata

The S N Bose National Centre for Basic Sciences introduces an Annual Lecture named after the India born Astrophysicist, Professor S Chandrasekhar, Nobel Laureate. Professor Chandrasekhar is most well known for introducing "Chandrasekhar Limit for the Mass of White Dwarfs". This Annual Lecture aims at bringing the Astrophysics enthusiasts of the country together with eminent astrophysicists of the World.

20th February, 2008
at 3.30 pm

Venue

PURBASHREE
Bharatiyam Cultural Multiplex
Eastern Zonal Cultural Centre
IB-201, Sector III, Salt Lake
Kolkata 700 106

The Way Stars Die

ABSTRACT

Stars shine until they exhaust their fuel supply. There are three general endpoints for stellar evolution: white dwarfs, neutron stars and black holes. These possibilities are the result of some general principles of physics, involving quantum mechanics, nuclear physics and Einstein's theory of General Relativity. The talk will weave a historical account, beginning with S. Chandrasekhar's discovery of the white dwarf mass limit, with the physical ideas and the observational evidence, through the theory of supernova explosions, neutron star formation, up to present questions and speculations about the result of the collapse of massive stars and Gamma Ray Bursts (GRBs). Evidence from Hubble Space Telescope and other modern instruments to x-ray, gamma-ray, and neutrino detectors will be used to illustrate the discussion.

About the Speaker : Professor William David Arnett graduated from the Yale University in 1965 and was an Assistant Professor of Rice University (1969-71), Associate Professor of University of Texas, Austin (1971-1974), Professor of University of Illinois, Urbana (1974-1976), Professor of the University of Chicago (1976-1986), B. & E. Sunny Distinguished Service Professor of University of Chicago (1986-1989), Regents Professor of Steward Observatory, University of Arizona (1987- present).

Professor Arnett pioneered the use of numerical simulations on computers to explore supernova explosions, and the formation of neutron stars and black holes, including the effects of neutrino transport and neutrino-antineutrino pairs and flavors. He performed the first quantitative studies of thermonuclear explosive synthesis of the elements and their isotopes, from neon to iron. First quantitative description of thermonuclear supernovae prior to and through explosion was also obtained. He discovered analytic solutions describing the supernova light curve, including the effects of radioactive decay, thus reconciling the theory of Type I and Type II supernovae. He performed the first multi-dimensional simulations of supernova instabilities and of pre-supernova oxygen burning.

About the Guest of Honour : Roy Patrick Kerr is a New Zealand born mathematician who is best known for discovering the famous Kerr vacuum, an exact solution to the Einstein field equation of general relativity, which models the gravitational field outside an uncharged rotating massive object, or even a rotating black hole. In 1962, he moved to the University of Texas at Austin, where in 1963, he discovered his famous exact vacuum solution. In 1965, with Alfred Schild, he introduced the Kerr-Schild spacetimes. In 1971, Kerr returned to the University of Canterbury, where he remained until his retirement in 1993. Currently, he is the Lifschitz Professor of International Centre for Relativistic Astrophysics, Italy.

He will chair the session and present an informal talk on

"Unveiling Einstein's Secrets"