



ICTS COLLOQUIUM

- Title : Modeling the Death of Massive Stars
- Speaker : Christian Ott, California Institute of Technology, Pasadena, US
- Date : Thursday, June 27, 2013
- Time : 4:00 p.m.
- Venue : ICTS Lecture Hall, IISc Campus, Bangalore
- Abstract : Core-collapse supernovae from massive stars are among the most energetic events in the universe. They liberate a mass-energy equivalent of $\sim 15\%$ of a solar mass in the collapse of their progenitor star's core. The majority ($\sim 99\%$) of this energy is carried away by neutrinos, while ($\sim 1\%$) is transferred to the kinetic energy of the explosive outflow. A smaller, yet still tremendous amount of energy is emitted in electromagnetic and gravitational waves. The stellar collapse phenomenon and its range of outcomes pose a formidable challenge to computational modeling. I discuss this challenge and review recent progress made in the multi-dimensional modeling of the physical mechanism(s) believed responsible for converting the gravitational energy liberated in collapse into energy of the explosion. I outline how detections of gravitational waves and neutrinos from the next nearby core-collapse event can help to observationally probe dynamics and thermodynamics of the supernova engine.

(This colloquium is part of the ICTS Program on Numerical Relativity and the ICTS-IISc Joint Program)

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