

LABORATORI NAZIONALI DEL GRAN SASSO

SEMINAR ANNOUNCEMENT

**On June 21, 2007 at 14:30, Ricard Tomas from Institut de Fisica
Corpuscular, CSIC-Universitat de Valencia will give a seminar
entitled:**

“Supernova Neutrinos: A Phenomenological Overview”

Abstract:

Core-collapse Supernovae (SNe) are one of the most energetic explosive events known. These occur at the end of a massive ($M > 8 M_{\text{sun}}$) star's lifetime, and implies an energy release of the order of $1.e53$ erg. From a particle physics point of view neutrinos turn out to be essential in such events. First they are thought to play a key role during the explosion phase and in the posterior cooling and deleptonization of the star. On the other hand they are responsible to carry away around 99% of the total energy emitted. Therefore these neutrinos could be easily detected in the case of a nearby supernova in the existent or planned neutrino detectors, what could provide a lot of information about both neutrino properties and the supernova itself. In this talk I will give an overview on the phenomenology involving these neutrinos. I will review the main features of the neutrino spectra and their propagation through the SN envelope, as well as the current uncertainties related. Then I will describe the expected signal in the case of a future galactic SN, and its implications in the determination of neutrino properties and SN physics.

(“E. Majorana” room)