IFAE2011 Incontri di Fisica delle Alte Energie



Contribution ID: 76

Type: not specified

Neutrino Telescopes

Friday, 29 April 2011 10:10 (20 minutes)

In recent years the astro-particle community is involved in the realization of experimental apparatuses for the detection of high energy neutrinos originated in cosmic sources or produced in the interaction of Cosmic Rays with the Cosmic Microwave Background. For neutrino energies in the TeV-PeV range, the optical Ĉerenkov technique is considered optimal. Water (or Ice)-Ĉerenkov technique is based on the detection of the charged leptons generated in the neutrino charged current weak interactions with the medium surrounding the detector. Those detectors measure the visible Ĉerenkov photons originated by charged particles propagating at velocities greater that the speed of light through a transparent medium and consist of array of photomultipliers. The charged particle track can be reconstructed measuring the time of arrival of the Ĉerenkov photons on the photomultipliers.

There are several experiments currently taking data based on the Ĉerenkov detection technique. The Ice-Cube detector, located in the South Pole, has been recently completed and is now taking data in its final configuration composed of about 5000 photomultipliers; it is the biggest neutrino telescope currently working. ANTARES is an underwater detector composed of about 900 PMTs and is the biggest neutrino telescope operating in the northern hemisphere. There is a European consortium called Km3Net planning to build a kilometer cubic scale detector in the northern hemisphere complementary to the IceCube detector. The consortium is formed around the institutes currently involved in the ANTARES, NESTOR and NEMO pilot projects. Km3Net has recently released a technical design report and is now working to prepare the production phase. An overview of the current status of those experiments will be given.

Presenter: SIMEONE, Francesco (RM1) **Session Classification:** Fisica dei Neutrini

Track Classification: Fisica dei neutrini