Name of research institute or organization:

University of Rome "La Sapienza", Department of Physics

Title of project:

Study of detector to measure cosmic ray flux at large zenith angle

Project leader and team:

Prof. Maurizio Iori, project leader
Dr. A. Sergi, Prof. D. Fargion

Project description:

Measurements were performed at High Altitude Jungfraujoch Station to understand detector characteristics and performance. These studies also aimed at the understanding of the possible source of background from inclined atmospheric showers at large zenith angles. Towers with different tile sizes have been installed: two are instrumented with scintillating tiles of dimension of 12.5x12.5x2 cm^3 and placed parallel to each other about 50 cm apart, while another tower has tile of 20x20x1.4 cm^3 and was installed at a distance of 20 m. With this setup a measurement of cosmic ray flux was performed using two towers pointing at different zenith angles between 80-100 degrees and compared to results from other experiments at sea level.

At large zenith angles our measurements are unique, only one other experiment at sea level has investigated this region. These results have been also used to write a Proposal, to be submitted on February 2006, of a large surface detector array designed to detect Ultra high Energy tau neutrino fluxes.

Key words:

Cosmic rays, tau neutrino flux

Scientific publications and public outreach 2005:

Journal articles

M. Iori, A. Sergi, D. Fargion, M. Gallinaro and M. Kaya, Study of a detector array design to measure Ultra High Energy, tau neutrino fluxes, astro-ph/ and submitted to Physics Journal G

Seminar

M. Iori, Detection of UHE tau neutrinos with a surface detector array, Carnegie Mellon University, December 12, 2005

Address:

University of Rome "La Sapienza"
P.zza A. Moro 5
00198 Rome Italy

Contacts:

Maurizio Iori
Tel.: +39 06 49914422
Fax: +39 06 4957697
e-mail: Maurizio.iori@roma1.infn.it