

Name of research institute or organization:

Department of Physics, University of Rome Sapienza

Title of project:

Test of a prototype for a new concept of an EAS detector

Project leader and team:

Prof. Maurizio Iori, project leader

Prof. J. Russ, Prof. M. Merafina, E. Arslan, Ass. Prof. H. Denizli, Ass. Prof. M. Kaya, A. Yilmaz

Project description:

In the summer of 2011 we started to take data and test the prototype shown in Fig. 1 and located on Sphinx terrace. The present station is designed to be a component of a large array located on an inclined plane to detect extra galactic neutrinos (10-100 PeV) using the skimming strategy. This strategy uses the Earth's crust as a target to produce a tau lepton that emerges from the ground after the neutrino interaction. To study the development of the emerging tau shower we have designed a trigger board able to select horizontal tracks. The test of the prototype was made using horizontal cosmic rays. During this year we started a DAQ by using a 4 channel Domino Ring Sampler (DRS4) developed by Dr. Stefan Ritt (Paul Scherrer Institute, Villigen, Switzerland) and Trigger Board developed in Rome-INFN by M.I. consisting of a low level threshold (5mV) discriminator with AND-OR logic. The light is detected by PhotoMultipliers. In the fall of 2011 we plan to start installing SiPM devices already tested in another prototype located in KIT.



Figure 1. *Detector installed on the Sphinx terrace in April 2010*

Preliminary results were presented at the 27th and 28th Turkish Physical Society Meeting, Ref [1,2] .

Key words:

Neutrino, tau, horizontal cosmic rays, scintillator

Internet data bases:

http://terminus.roma1.infn.it/new_site/tauwer/index.htm

Collaborating partners/networks:

Carnegie Mellon University, Pittsburgh, PA 15213 USA, Abant Izzet Baysal University, Bolu, Turkey, University of Kafkas, Kars, Turkey

Scientific publications and public outreach 2011:

Conference papers

[1] Yilmaz A., Denizli H., Iori M., “Preliminary Test Results of a Prototype Detector at Sphinx Observatory Center”, Turkish Physical Society 27th International Physics Congress, 14-17 September 2010, Istanbul, Turkey.

[2] Yilmaz A. et al, Turkish Physical Society 28th International Physics Congress September 6-9, 2011, Bodrum, Turkey.

Address:

Department of Physics
University of Rome La Sapienza
P.za A. Moro 5
I-00185 Rome

Contacts:

Maurizio Iori
Tel.: +39 06 4991 4422
Fax: +39 06 4957697
e-mail: Maurizio.iori@roma1.infn.it