

Name of research institute or organization:

Department of Physics, University of Rome Sapienza

Title of project:

Study 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:

During the 2010 we finished the installation of a prototype designed to select horizontal cosmic rays on the Sphinx terrace. The setup is shown in Fig. 1. This location permits to test the large angle cosmic rays flux (about 90°) and compare it with a larger downstream flux in the same data taking period. This prototype is similar to the two towers installed years ago in the Chalet on top of the dorm and by them we collected results that have shown very good capability to separate the upwarding and downwarding cosmic rays between 80 and 100 degrees. The present station is designed to be a component of a large array located on an inclined plane to detect extra galactic neutrinos using the skimming strategy. That requires a compact electronics working outdoors and test of PMT voltage due to temperature excursion. During this year we have 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.



Fig. 1 Detector installed on the Sphinx terrace on April 2010

Preliminary results are summarized in the A. Yilmaz Master Thesis Ref [2] and presented in 27th Turkish Physical Society Meeting Ref [1] last September.

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 2010:

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.

Theses

[2] Yilmaz A., "Study of Prototype Detector for UHE Tau-Neutrino Detection", ay: 2010-2011

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