



Contribution ID : 1290

Type : **Poster**

The ANTARES detector: electronics and readout

Monday, 9 July 2007 14:45 (0:00)

Abstract content

The ANTARES collaboration is building an underwater neutrino telescope at 2500 m depth in the Mediterranean Sea. The experiment aims to detect high- energy cosmic neutrinos using a 3D array of 900 photomultipliers distributed along 12 lines. 5 such lines have been operational since January 2007. The PMTs collect the Cherenkov light induced by neutrino-produced charged particles in the water. In this contribution, we will illustrate the electronics and the data acquisition system of the apparatus and discuss their performance. The PMT signals are digitized and time-stamped offshore. The front-end electronics, based on the ASIC Analogue Ring Sampler, is located inside electronics modules which collect data from PMT triplets and control the various calibration/monitoring devices. Bidirectional data communication is maintained between the shore station and the apparatus over a network of optical fibres with a DWDM technique. This is a convenient solution to allow control of the detector from the shore and to guarantee a high-bandwidth for data transport to shore. Common clock signals, GPS-synchronized onshore, are delivered to the whole apparatus on dedicated optical fibres. An onshore computer farm performs the data filtering and, depending on selectable trigger conditions, writes data to disk. Results from the current 5-line apparatus will be shown.

If this papers is presented for a collaboration, please specify the collaboration

ANTARES

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olivo, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 5 (HE part 2), pages 1609-1612

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Session Classification : Posters 3 + Coffee

Track Classification : HE.2.5