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Upgrade of a data acquisition system for SciBar Cosmic Ray Telescope (SciCRT) at Mt. Sierra Negra, Mexico

Saturday 1 August 2015 15:30 (1 hour)

SciCRT (SciBar Cosmic Ray Telescope) is a new project to observe cosmic rays via a full active scintillator tracker. Our aim is to detect high energy solar neutrons produced by the interaction between accelerated ions and the solar atmosphere and to observe the anisotropy of galactic cosmic-ray muons. In the previous ICRC in Brazil, we reported that the detector has been installed at Mt. Sierra Negra (4,600 m above sea level) in April, 2013.
We also reported that the current VME-based data acquisition (DAQ) system does not have enough ability to deal with all the galactic cosmic-ray background neutrons at such a high altitude mountain. Moreover the readout noise makes the current DAQ process complicated.
Therefore we have developed a fast readout DAQ system, optimized to our experimental environment with the KEK electronics system group. We employed a hardware-based network processor (SiTCP) developed for high energy physics. We have developed a brand-new back-end board based SiTCP and tested it at Mt. Sierra Negra in 2014. Then we determined the final design for the new back-end board. We plan to replace the muon and a part of the neutron DAQ system with the new DAQ system in the middle of 2015.
We will introduce the configuration of the new DAQ system and report new results from the experiment with the new DAQ system at Mt. Sierra Negra, which is planned to be installed in June 2015.

Collaboration

– not specified –

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