



Contribution ID: 1105

Type: Poster

Large scale SiPM testing for the Cosmic Muon Veto detector

Friday, 8 July 2022 20:10 (20 minutes)

A Cosmic Muon Veto (CMV) detector using extruded plastic scintillators is being built around the mini-Iron Calorimeter (mini-ICAL) detector at the transit campus of the India based Neutrino Observatory, Madurai. The extruded plastic scintillators will be embedded with wavelength shifting (WLS) fibres which emitted photons of longer wavelengths and propagate those to silicon photo-multipliers (SiPMs). The SiPMs detect these photons, producing electronic signals. The CMV detector will require more than 700 scintillators to shield the mini-ICAL detector, and will require about 3000 SiPMs for the readout. The design goal for the cosmic muon veto efficiency of the CMV is $>99.99\%$ and fake veto rate less than 10^{-5} . Hence, every SiPM used in the detector needs to be characterised to satisfy the design goal of the CMV. A large-scale testing system was developed, using an LED driver, to measure the gain and noise rate of each SiPM, and thus determine its over-voltage (V_{ov}). The test data and the analysed characteristics of about 3.5k SiPMs will be presented in this paper.

In-person participation

Yes

Primary author: JANGRA, Mamta (Tata Institute of Fundamental Research)

Co-authors: MAJUMDER, Gobinda (Tata Institute of Fundamental Research (IN)); GOTHE, Kiran (Tata Institute of Fundamental Research); SARAF, Mandar (Tata Institute of Fundamental Research); PARMAR, NandKishore (Tata Institute of Fundamental Research); SHAH, Raj (HBNI); BHEESETTE, Satyanarayana (Tata Institute of Fundamental Research); SHINDE, R.R. (Tata Institute of Fundamental Research); RAO, Shobha (Tata Institute of Fundamental Research); UPADHYA, Suresh (Tata Institute of Fundamental Research); DATAR, Vivek (The Institute of Mathematical Sciences); GLENZINSKI, Douglas (Fermilab); BROSS, Alan (Fermilab); PLA-DALMAU, Anna (Fermi National Accelerator Laboratory); ZUTSHI, Vishnu (Northern Illinois University); GROUP, Craig; DUKES, E Craig (Virginia University, VA, US)

Presenter: JANGRA, Mamta (Tata Institute of Fundamental Research)

Session Classification: Poster Session

Track Classification: Detectors for Future Facilities, R&D, novel techniques