

Study of SiPMs for calorimetry applications in the DUNE Near Detector complex

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DUNE experiment at Fermi National Accelerator Laboratory is mainly devoted in study of neutrino mass ordering and CP symmetry violation in the leptonic sector. The experiment comprises three main components: a high-intensity neutrino source, a massive Far Detector situated 1.5km underground at the Sanford Underground Research Facility in South Dakota, about 1300km far from neutrino source, and a composite Near Detector installed just downstream of neutrino source. The KLOE experiment lead-scintillating fiber electromagnetic calorimeter is expected to be reused in the Near Detector. The study here presented aims to evaluate the possibility of replacing the Photomultiplier Tubes (PMT) used for reading the KLOE calorimeter with Silicon Photomultipliers (SiPM). To compare both readout approaches, signals induced by cosmic rays have been collected on one side of a block of the KLOE calorimeter by SiPM arrays, and on the opposite one by conventional PMTs. Efficiency, stability, and timing resolution of SiPMs have been studied and compared with similar PMTs performances.

Collaboration

SAND

Role of Submitter

I am the presenter

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