Contribution ID: **248** Type: **Poster**

Characterization of SiPMs for cryogenic applications

Monday, 25 May 2015 16:19 (0 minutes)

The development of liquefied noble gas-based detectors is mandatory for experiments dedicated to study physics beyond the Standard Model. For this purpose, it is fundamental to provide a mean to detect the Vacuum Ultra Violet (VUV) scintillation light, produced after the passage of ionizing particles inside the detector sensitive volume, which is used for trigger, timing and calorimetry purposes. Besides the traditional cryogenic Photo-Multiplier Tubes (PMTs), one possibility is to adopt Silicon Photo-Multipliers (SiPMs). We present a comparison of the performance of several SiPM models at various cryogenic temperatures, from 60 K up to room temperature, with particular emphasis on the LAr, LN2 and LXe temperatures. SiPMs were characterized in terms of breakdown voltage, gain, pulse shape response, dark count rate and correlated noise. The experimental set-up relied on a laser source at 405 nm hitting the SiPM under test, which was hosted on a custom cold finger with adjustable temperature inserted inside a vacuum chamber. Results will be used to provide a reliable solution for a cryogenic SiPM to be adopted in the next generation of liquefied noble gas-based detectors.

Primary authors: ROSSELLA, Massimo (PV); Dr CERVI, Tommaso (University of Pavia (Italy))

Co-authors: MENEGOLLI, Alessandro (PV); FALCONE, Andrea (PV); RASELLI, Gian Luca (PV); SIMONETTA, Marcello (PV); TORTI, Marta (PV); BONESINI, Maurizio Giorgio (MIB)

Presenter: ROSSELLA, Massimo (PV)

Session Classification: Photo Detectors and PID - Poster Session

Track Classification: S2 - Photon Detector and PID