

Abstract Submitted
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Design, Construction and Commissioning of the Upgrade Radiation Damage and 4-anode PMT LED Monitoring Systems of the CMS Hadron Forward Calorimetry OHANNES KAMER KOSEYAN, The University of Iowa, CMS COLLABORATION — Being at the highest radiation areas of the CMS detector, the HF calorimeter is equipped with the radiation damage monitoring system of the quartz fibers. A certain number of quartz fibers are equipped with a special laser system where both the incident laser light intensity and the intensity of the laser light after traversing the quartz fiber can be measured with the same PMT in the same event. We have designed two new systems; 1- LED driver and light distribution systems to monitor the gain and stability of the 4 Anode PMTs that were installed during the HF-Phase I upgrades and a new on-line fiber radiation monitoring system. The new LED calibration unit concept is based on the fast LED driver and the control circuit residing on a mezzanine mounted onto the QIE board. Optics mix the light and distribute the light to the photodetector. We take LED measurements with high and low intensities to monitor the behavior and stability of 4-anode PMTs. 2- A new laser device was designed, constructed, and installed on the HF calorimeters. The module utilizes laser diode technology and is based on HF Phase I LED calibration unit concept. Optics mix the light and distribute the light to four output fibers. The module is completely compatible with HF Phase I electronics, software, and is installed in the HF front-end crates which are integrated to the HF calorimeters. The basic operational integrity of the recently produced LED and Raddam modules was tested extensively in the laboratory prior to installation.

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