Contribution ID: **144** Type: **Poster**

Phase 1 Upgrade of the CMS Forward Calorimeter

Tuesday, 27 September 2016 17:58 (1 minute)

The CMS experiment at the Large Hadron Collider at CERN is upgrading the photo-detection and readout system of the forward hadronic calorimeter (HF). The phase-1 upgrade of the CMS forward calorimeter requires the replacement of the current photomultiplier tubes, as well as the installation of a new front-end readout system. The new PMTs contain a thinner window as well as multi-anode readout. The front-end electronics will use the QIE 10 ASIC which combines signal digitization with timing information. This talk will describe the major components of the upgrade as well as the current status.

Summary

This talk describes the phase 1 upgrade of the forward hadronic calorimeter (HF) for the CMS experiment at the Large Hadron Collider at CERN. The phase 1 upgrade of HF subsystem will entail the replacement of the photomultiplier tubes on the detector, as well as the installation of a new front-end and back-end readout system. The new PMTs contain a thinner window as well as multi-anode readout, which reduce the background from anomalous signals caused by particles passing through the phototubes. The multi-anode readout of the PMTs requires additional front end readout channels, necessitating an upgrade to the front-end electronics. The front-end electronics will use the QIE 10 ASIC which combines signal digitization with timing information, which also can be used to reduce the impact from anomalous signals. The talk will describe the motivations, major components, and current status of the phase 1 upgrade.

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Session Classification: POSTER

Track Classification: Systems