



Contribution ID: 489

Type: **Oral Presentation**

Upgrade of the CMS Hadron Outer Calorimeter with SIPMs

Friday 10 June 2011 15:00 (20 minutes)

The CMS Hadron Outer Calorimeter (HO) is undergoing an upgrade to replace the existing photodetectors (HPDs) with SIPMs. The chosen device is the Hamamatsu 3X3mm 50 μ m pitch MPPC. A system has been developed to be a “drop-in” replacement of the HPDs. A complete control system of bias voltage generation, leakage current monitoring, temperature monitoring, and temperature control using solid state Peltier coolers has been developed and tested. 108 channels of the system have been installed into CMS and operated for more than 1 year. The complete system of more than 2000 channels is in production and will be installed in the next LHC long shutdown scheduled for 2013.

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Session Classification: Experimental Detector Systems

Track Classification: Experimental Detector Systems