

The CMS ECAL upgrade for the High-Luminosity LHC

Friday 19 July 2024 15:15 (15 minutes)

The High Luminosity upgrade of the CERN LHC (HL-LHC) will deliver unprecedented instantaneous and integrated luminosities to the detectors and an average of up to 200 simultaneous interactions per bunch crossing is expected. The CMS detector is undergoing an extensive Phase-2 upgrade program to prepare for these severe conditions and a major upgrade of the electromagnetic calorimeter (ECAL) is foreseen. While a new detector will be installed in the endcap regions, the ECAL barrel crystals and photodetectors are expected to sustain the new conditions. However, the entire readout and trigger electronics system will be replaced to cope with the challenging HL-LHC environment and increased trigger latency requirements. This talk will present the design and status of the individual components of the upgraded ECAL barrel detector, and the results of energy and time resolution measurements with a full readout chain prototype system in recent test beam campaigns.

Alternate track

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Yes

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Session Classification: Operation, Performance and Upgrade (incl. HL-LHC) of Present Detectors

Track Classification: 12. Operation, Performance and Upgrade (incl. HL-LHC) of Present Detectors