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Performance of the prototype readout system for the CMS endcap hadron calorimeter upgrade

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The CMS experiment at the CERN Large Hadron Collider (LHC) will upgrade the photon detection and readout systems of its hadron calorimeters (HCAL) through the second long shutdown of the LHC in 2018. The upgrade includes new silicon photomultipliers (SiPMs), SiPM control electronics, signal digitization via the Fermilab QIE11 ASIC, data formatting and serialization via a Microsemi FPGA, and data transmission via CERN Versatile Link technology. The first prototype system for the endcap HCAL has been assembled and characterized on the bench and in a test beam. The design of this new system and prototype performance is described.

Summary

The CMS experiment at the CERN Large Hadron Collider (LHC) will upgrade the photon detection and readout systems of its barrel and endcap hadron calorimeters (HCAL) through the second long shutdown of the LHC in 2018. The upgrade includes new silicon photomultipliers (SiPMs), SiPM and detector control electronics, signal digitization via the Fermilab QIE11 ASIC, data formatting and serialization via a Microsemi FPGA, and data transmission via CERN Versatile Link technology. The first prototype system for the endcap HCAL has been assembled and characterized on the bench and in a test beam. The design of this new system and prototype performance is described.

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