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The new ODMB for the Phase II upgrade of the CMS endcap muon system

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The proton-proton collision rate at the High Luminosity LHC will impose significant challenges on the data acquisition system used to read out the CMS Muon Cathode-Strip Chambers (CSCs). These chambers are located in the endcap regions of the CMS detector, and those closest to the beam line encounter a particularly high particle flux. To address these issues, a major upgrade of the electronics used in the CSC system has been undertaken. A key part of this upgrade is the development of new Optical Data-acquisition MotherBoards (ODMBs), which collect both the anode-wire and cathode-strip data. The ODMBs feature powerful Xilinx Field Programmable Gate arrays and include interfaces with high-speed optical transceivers operating at up to 12.5 Gb/s. The requirements, design, implementation, and testing of the ODMBs will be discussed, and the performance of prototype boards will be presented.

In-person participation

Yes

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