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The Phase 2 upgrade of CMS Drift Tubes (DT) detectors for high luminosity LHC

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The Large Hadron Collider (LHC) will undergo a major upgrade in the mid - 2020s referred as High Luminosity LHC (HL-LHC) to extend its operability by another decade and in addition to increase its luminosity with the aim to increase the potential for new discoveries. In order to meet the experimental challenges of unprecedented proton-proton luminosity causing expected increase of both radiation and rates, the experiments have to upgrade its electronics and detector performance. Drift Tubes (DT) detectors in the CMS muon barrel region, serving both as offline tracking and triggering device, are also planning the upgrade of its current readout and trigger electronics with the new On-Board electronics (OBDT), to withstand the high rate environment of HL-LHC. During Long Shutdown 2 (LS2), prototypes of the new electronics were installed in four DT chambers with the same azimuthal acceptance, instrumenting a demonstrator of the HL-LHC DT upgrade (DT slice-test) and integrated into a central data acquisition and trigger systems. A series of tests aiming to optimise installation in LS3 were performed. This report summaries the present status of the slice test, as well as its performance assessed with cosmic-ray events.

Collaboration

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