

CMS Muon System Upgrade for High Luminosity LHC

The CMS Muon system is undergoing a comprehensive upgrade to prepare for the High-Luminosity LHC (HL-LHC), ensuring optimal performance under significantly increased particle rates and luminosity. These upgrades target both the detectors and electronics to enhance tracking, triggering, and overall efficiency in the challenging conditions of high pileup and background rates. Key upgrades include enhancements to the existing Drift Tubes (DT), Cathode Strip Chambers (CSC), and Resistive Plate Chambers (RPC), along with the addition of new muon stations in the endcap regions. To extend pseudorapidity coverage and boost momentum resolution, new Gas Electron Multiplier (GEM) and improved Resistive Plate Chamber (iRPC) detectors are being deployed in the endcap region, where background rates are highest. These new technologies offer superior spatial and time resolution, as well as increased rate-handling capability, ensuring robust performance in the HL-LHC environment. This contribution will provide an overview of the CMS Muon system upgrades, with the ongoing activities and plans for the next phase of high-energy physics research.

Workshop topics

Detector systems

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