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## Overview and recent results of the CMS Muon System Upgrade

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In view of the High Luminosity phase of the Large Hadron Collider (HL-LHC), that is expected to deliver an instantaneous luminosity 5 times higher with respect to the present value, the muon spectrometer of the CMS experiment will undergo specific upgrades targeting both the detectors and the electronics with the goal to cope with the new challenging data-taking conditions and to improve the present tracking and triggering capabilities. The detector upgrades will mainly concern the deployment of new stations based on triple gas electron multiplier (GEM) and improved resistive plate chambers (RPC) technology. The new stations, featuring improved time and spatial resolution and enhanced rate capability, will be installed in the endcap of the muon system, where the background rate is expected to be higher. Nevertheless, the simulation study demonstrates that the new stations will allow to reach higher efficiencies with a modest background rate delivered at the first trigger level. The upgrade of the electronics will target instead the present system, based on drift tubes (DT), cathode strip chambers (CSC) and RPC. Radiation-hard components, extensively tested at the Gamma Irradiation Facility (GIF++), will be installed on those detectors operating since 2008. This contribution will describe the upgrades of the different subsystems of the CMS muon spectrometer; we will report the results of the CSC electronics upgrade, the first performance of the new electronics of the DTs, assessed during the Run 2 slice test and the aging test performed on both. The production, qualification and installation of a first station based on triple-GEM detectors (GE1/1) and the first results of its commissioning will be described along with an overview of the design, R&D and first performance of new stations based on triple-GEM (GE2/1, ME0) and iRPC detectors (RE3/1 and RE4/1) that will be installed around 2023.

### Is this abstract from experiment?

Yes

### Internet talk

Yes

### Name of experiment and experimental site

CMS, CERN (Geneva)

### Is the speaker for that presentation defined?

Yes

### Details

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