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Upgrade of the CMS muon system

Friday 2 September 2022 12:20 (20 minutes)

From 2018 to the beginning of 2022, the CMS experiment has performed the Long Shutdown 2 (LS2) upgrade campaign, aiming at adapting the detectors for the future conditions foreseen for High Luminosity Large Hadron Collider (HL-LHC) phase. This project has the main objective of increasing the instantaneous luminosity up to a factor of five beyond the design LHC instantaneous luminosity (5·10ˆ34 cmˆ{-2}sˆ{-1}), enlarging the statistics available for the search of physics beyond the Standard Model.
In particular, CMS has started an upgrade campaign of its muon spectrometer. During LS2 the GE1/1 station, based on the Gas Electron Multiplier (GEM) technology has been installed in the endcap region, covering the pseudorapidity range $1.55 < |\eta| < 2.18$. These detectors are characterized by a high radiation hardness and rate capability, and, because of this, the installation of other two GEM stations is foreseen in the future (GE2/1 and ME0), to improve the muon reconstruction in the endcaps and to extend the coverage of the muon system up to $\eta \tilde{} 2.8$.
In this talk, the different upgrades performed on the muon subsystems, till the start of Run 3 data taking phase, and the future upgrades planned for HL-LHC will be presented, such as the installation of improved Resistive Plate Chambers (iRPC) in the CMS endcap region and the production of the future GEM stations. Moreover, the plans for already installed Drift Tubes (DT), Cathode Strip Chambers (CSC) and RPC subsystems, will be discussed. These focus on the frontend electronics, adapting it to sustain a particle rate ten times higher of the design value.

Is this abstract from experiment?

Yes

Name of experiment and experimental site

Compact Muon Solenoid (CMS), CERN

Is the speaker for that presentation defined?

Yes

Details

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Internet talk

Maybe

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