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Physics motivations and expected performance of the CMS muon system upgrade with triple-GEM detectors

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For the LHC High Luminosity phase (HL-LHC) the CMS GEM Collaboration is planning to install new large size triple-GEM detectors in the forward region of the muon system ($1.5 < |\eta| < 2.2$) of the CMS detector. The muon reconstruction with triple-GEM chambers information included have been successfully integrated in the official CMS software, allowing physics studies to be carried out. The new sub-detector will be able to cope the extreme particle rates expected in this region along with a high spatial resolution. The resulting benefit in terms of triggering and tracking capabilities has been studied: the expected improvement in the performance of the muon identification and track reconstruction as well as the expected improvement coming from the lowering of the muon pT trigger thresholds will be presented. The contribution will review the status of the CMS upgrade project with the usage of GEM detector, discussing the trigger, the muon reconstruction performance and the impact on the physics analyses.

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