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The CMS muon upgrade in preparation of the HL-LHC

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The muon system of the CMS experiment mostly uses gas-based detectors. These detectors will suffer during the planned upgrade of the LHC also called HL-LHC. Therefore the upgrade of the detector system and trigger components are needed to tackle the enormously challenging conditions posed by the HL-LHC. New detectors will be added to improve the performance in the critical forward region $1.6 < \eta < 2.4$ which employs Gas Electron Multiplier (GEM) technology aiming at suppressing background triggers while maintaining high trigger efficiency. Further enhancements are foreseen with a second GEM station and with two stations of new generation RPCs, having low resistivity electrodes. These detectors will combine tracking and triggering capabilities and can stand particle rates up to a few kHz/cm^2 . We summarise the project plans, current status, and its physics benefits.

Summary

On behalf of the CMS Muon Collaboration

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