

RE3/1 and RE4/1 chambers integration with Forward region of CMS Muon spectrometer

By 2027, the Large Hadron Collider luminosity should increase from $1.5 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$ to $5 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$. For this purpose two more long shutdown (LS) periods are scheduled to give the machine and the experiments the necessary time to anticipate these luminosity increases: Long Shutdown 2 (LS2) in 2018/2019 and Long Shutdown 3 (LS3) in 2023/2025. During these long shutdown periods the CMS Collaboration intends to upgrade several subsystems. In particular, the muon system of CMS detector will be extended in both Endcaps to ensure efficient muon triggering and reconstruction in that region at high luminosity. In the Endcap regions, CMS detector is using Cathode Strip Chambers (CSCs) as muon tracking and trigger detectors and Resistive Plate Chambers (RPCs) serve as dedicated trigger detectors and improve the muon reconstruction by providing the excellent timing resolution for identification muon particles. At the present, the four Endcap discs are not fully equipped: RPCs are missing completely and cover only Endcap disks up to $|\eta| = 1.6$. During LS3 these Endcap stations will be instrumented further with new RPCs and Gas Electron Multiplier detectors which will be covering the region of $1.8 < |\eta| < 2.4$. Nowadays, the final design of iRPC chambers and the concept to integrate and to install of these new detectors in the CMS Muon System are developed. In this report, the main results of work about the implementation and the installation of new iRPC detectors in the CMS Muon System at high pseudorapidity η region will be presented.

Presenter: VOEVODINA, Elena (Universita e sezione INFN di Napoli (IT))

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