

CMS RPC background studies during LHC run II

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The CMS muon system is operating in the conditions of increasing instantaneous luminosity. During run2 the energy of the collisions in the center of mass is 13 TeV. This leads naturally to very high level of the radiation from different sources –collision and beam induced background and activation of the materials, as well. Particles that scatter around in the cavern and are reflected back to the muon system may affect the electronics and also the efficiency and rate capabilities of the detectors. Because of this adding additional shielding layers and investigation of their effect is important and necessary part of the detector performance analysis. The RPC hit rate and currents as function of the instantaneous luminosity have been studied in order to monitor the performance of RPCs, to analyze the background in different detector parts and to investigate an attenuation of it after the installation of new shielding layers. The extrapolation to the HL-LHC conditions will be presented as well.

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