

Improved Resistive Plate Chambers for the upgrade of the CMS muon detector

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Several upgrades of the CMS Resistive Plate Chamber (RPC) system are currently being implemented to ensure a highly performing muon system during the upcoming High Luminosity phase of the Large Hadron Collider (HL-LHC) which will have an increased integrated luminosity of 3000 fb^{-1} . An improved version of the existing RPCs (iRPCs) will be installed in the forward region of the 3rd and 4th endcap disks. These iRPCs offer a better spatial resolution of the order of a few cm along the strip direction and the new front-end electronics is designed to fully exploit the intrinsic time resolution of the iRPCs. The performance of the proposed iRPCs has been studied at the CERN Gamma Irradiation Facility (GIF++). A longevity study is ongoing, and main detectors parameters (currents, rate, resistivity) are regularly monitored as a function of the integrated charge. The present overall status of the CMS iRPC project, including also results of the ongoing studies at GIF++ will be presented.

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