

Improved RPC (iRPC) detector for CMS data taking in HL-LHC

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In view of the challenging data taking of CMS in HL-LHC Collisions, an extensive upgrade is underway for the CMS Muon System to ensure its optimal performance in muon triggering and reconstruction. The key role of RPCs as dedicated muon detectors will provide relevant timing information, profiting of their time resolution, to secure sub-bunch crossing event timestamp. To meet the requirements of LHC Phase-2, the RPC system will be expanded up to 2.4 in pseudo-rapidity. The forward Muon system's upcoming RE3/1 and RE4/1 stations will feature improved RPCs (iRPC). Distinguished by a unique design and geometry, including a 2D strip readout, these iRPCs represent a significant advancement over the current RPC system. The enhancements include the use of thinner electrodes, a narrower 1.4 mm gas gap, and improved FEB allowing a 30 fC threshold. At the end of 2023, two iRPC chambers were installed in the CMS detector. Present talk provides a full summary of the iRPC project.

Alternate track

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Yes

Primary authors: CMS; BUONTEMPO, Salvatore (INFN Napoli (IT))

Presenter: BUONTEMPO, Salvatore (INFN Napoli (IT))

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