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Upgradation of CMS Detector at the LHC with GEM Detector

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By the end of the year 2022, the LHC is expected to reach a total integrated luminosity of $300 fb^{-1}$ of the data. The high luminosity upgrade of the LHC is foreseen during a third long shutdown to further increase the instantaneous luminosity to $5 \times 10^{-34} cm^{-2} sec^{-1}$. The muon system of CMS detector consists of DTs in barrel, CSCs in the endcaps and RPCs that provide redundant trigger and fine position measurement in both barrel and endcap regions. On the other hand, the forward region of the endcaps is instrumented only with the CSCs. The muon system aims to provide efficient and fast identification of muons, however the possible degradation of CSC performance due to the sustained operation in a high rate environment could drastically affect the entire muon system. In order to improve and maintain the forward muon triggering and muon reconstruction at high luminosity, CMS detector is planned to be equipped with an additional layer of new technology based set of muon detectors, called Gas Electron Multiplier (GEM). In the talk, various activities carried out by Panjab University group in the fabrication and testing of GEM detectors will be discussed.

What is your experiment?

CMS Experiment

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