



detector seminar

SPEAKER: Archana Sharma (CERN)
TITLE: **Micro-pattern gaseous detectors for Upgrade of the CMS Muon system**
DATE: Fri 05/02/2016 11:00
PLACE: Council Chamber

ABSTRACT

Large Hadron Collider (LHC) Upgrades after second and the third Long Shutdown (LS2 + LS3), the LHC luminosity will approach values of $2.1034\text{cm}^{-2}\text{s}^{-1}$ and $5.1034\text{cm}^{-2}\text{s}^{-1}$ respectively. These conditions will severely affect the performance of the CMS muon system, especially in the very forward region where the magnetic field is low. Harsh expected background environment together with high pile-up conditions makes muon tracking and triggering very challenging in this region. In the technical proposal recently submitted, the CMS collaboration considers the upgrades in the aforesaid forward region with two additional muon detectors, GE1/1 and GE2/1 stations, to be installed in LS2 and LS3 respectively focusing on the region $1.6 < |\eta| < 2.4$ to increase redundancy and enhance trigger and reconstruction capabilities. To take advantage of the pixel tracking coverage extension, a new detector, the ME0 station, is proposed behind the new forward calorimeter to be installed in LS3, covering up to $|\eta| = 3$ or more. For GE1/1 and the GE2/1 stations, the well established GEM technology will be adopted as its high spatial resolution allows to combine tracking and triggering capabilities. The GE1/1 project is now entering the construction phase the present status will be reviewed, and the significant achievements from the start of the R&D in 2009 until the final pre-production series of Triple GEM detectors will be discussed.

For the ME0 station the Collaboration is considering a new micro-pattern gaseous detector able to handle the very demanding spatial, time resolution and rate capability. In this seminar the status and plans of the R&D will also be presented.

Organised by: F. Hahn