

Abstract Submitted
for the APR15 Meeting of
The American Physical Society

Triple GEM detector sensitivity simulations with Geant4 for the CMS Forward Muon Upgrade at CERN LHC FLORIAN ZENONI, Univ Libre De Brussels, CMS GEM COLLABORATION — Triple Gas Electron Multiplier (GEM) detectors are being developed for the forward muon upgrade of the CMS experiment in Phase 2 of the CERN LHC. After the second long LHC shutdown, their implementation will take place for the GE1/1 system in the $1.5 < |\eta| < 2.2$ region of the muon endcap. This upgrade aims at controlling muon level-1 trigger rates, thanks to their high performance in extreme particle rates ($\sim \text{MHz}/\text{cm}^2$). Moreover, the GEM technology can improve the muon track reconstruction and identification capabilities of the forward detector. The Triple GEMs will work in a hostile radiation background (several hundreds of Hz/cm^2) mostly made of photons, neutrons, electrons and positrons. To understand how this background could affect the detectors' functionality it is important to know the sensitivity to these kinds of radiation. The goal of this work is to estimate the sensitivity of Triple GEMs to background particles in the CMS cavern environment, thanks to the latest updates of GEANT4, a toolkit for the simulation of the passage of particles through matter.

Florian Zenoni
Univ Libre De Brussels

Date submitted: 12 Jan 2015

Electronic form version 1.4