Contribution ID: **131**   Type: **Poster**

Triggering on electrons, photons, tau leptons, Jets and energy sums at HL-LHC with the upgraded CMS Level-1 Trigger

Monday 15 July 2019 19:40 (20 minutes)

The High-Luminosity LHC will open an unprecedented window on the weak-scale nature of the universe, providing high-precision measurements of the Standard Model as well as searches for new physics beyond the standard model. The Compact Muon Solenoid (CMS) experiment is planning to replace entirely its trigger and data acquisition system to achieve this ambitious physics program. Efficiently collecting those datasets will be a challenging task, given the harsh environment of 200 proton-proton interactions per LHC bunch crossing. The new Level-1 trigger architecture for HL-LHC will improve performance with respect to Phase I through the addition of tracking information and subdetector upgrades leading to higher granularity and precision timing information. In this poster, we present a large panel of trigger algorithms for the upgraded Phase II trigger system, which benefit from the finer information to reconstruct optimally the physics objects. Dedicated pile-up mitigation techniques are implemented for lepton isolation, particle jets and missing transverse energy to keep the rate under control. The expected performance of the new trigger algorithms will be presented, based on simulated collision data of the HL-LHC. The selection techniques used to trigger efficiently on benchmark analyses will be presented, along with the strategies employed to guarantee efficient triggering for new resonances and other new physics signals.

Primary author: MEYER, Arnd (Rheinisch Westfaelische Tech. Hoch. (DE))

Presenter: CAILLOL, Cecile Sarah (University of Wisconsin Madison (US))

Session Classification: Wine & Cheese Poster Session

Track Classification: Detector R&D and Data Handling