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Electrons and photons at High Level Trigger in CMS for Run II

The CMS experiment has been designed with a 2-level trigger system. The first level is implemented using custom-designed electronics. The second level is the so-called High Level Trigger (HLT), a streamlined version of the CMS offline reconstruction software running on a computer farm. For Run II of the Large Hadron Collider, the increase in center-of-mass energy and luminosity will raise the event rate to a level challenging for the HLT algorithms. New approaches have been studied to keep the HLT output rate manageable while maintaining thresholds low enough to cover physics analyses. The strategy mainly relies on porting online the ingredients that have been successfully applied in the offline reconstruction, thus allowing to move HLT selection closer to offline cuts. Improvements in HLT electron and photon definitions will be presented, focusing in particular on: updated clustering algorithm and the energy calibration procedure, new Particle-Flow-based isolation approach and pileup mitigation techniques, and the electron-dedicated track fitting algorithm based on Gaussian Sum Filter.

Primary author: BIN ANUAR, Afiq Aizuddin (University of Malaya (MY))

Presenter: BIN ANUAR, Afiq Aizuddin (University of Malaya (MY))

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