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Pileup Mitigation at CMS Level-1 Trigger for the HL-LHC

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The high luminosity operation of the LHC will deliver collisions with a luminosity about 10 times the original design value. This poses a big challenge for trigger and data acquisition in real-time due to nearly 200 overlapping collisions, called pile up, within a bunch crossing. The CMS experiment will revamp its trigger structure as part of the required upgrade, to have tracker and more granular calorimeter data available for the first layer (Level 1, L1) of the trigger deployed in custom hardware including high-end FPGAs, SoM etc.. The *correlator units* at L1 will further process the information from each sub-detector to make a global event description through the particle flow (PF) approach. Disentanglement of the pileup particles from those of interesting physics processes is achieved by implementing the Pile-Up Per Particle (PUPPI) algorithm at L1. We present the strategy for implementation of PUPPI and PF at the L1, focusing on the Hadron Forward Calorimeter detector of CMS.

Alternate track

1. Detectors for Future Facilities, R&D, Novel Techniques

I read the instructions above

Yes

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