

Studies of MET Regression with Machine Learning Technique for Phase-2 Upgrade of CMS Level-1 Trigger System

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Collecting the high quality datasets efficiently at High Luminosity LHC (HL-LHC) will be a challenge in the high pileup environment of 200 proton-proton collisions per beam crossing. To deal with the large size of the dataset from the HL-LHC, the Phase-2 Upgrade of the Level-1 (L1) trigger system at the CMS experiment is essential. We will present updated results on the MET regression with machine learning technique for CMS Phase-2 Level-1 trigger. The missing transverse energy (MET) is calculated based on the PF and PUPPI algorithms for the L1 correlator trigger. The goal of the study is to improve the MET based on PF and PUPPI algorithms using the machine learning method. In this talk, the performance of the L1 MET trigger using machine learning techniques based on various training models and loss functions will be presented.

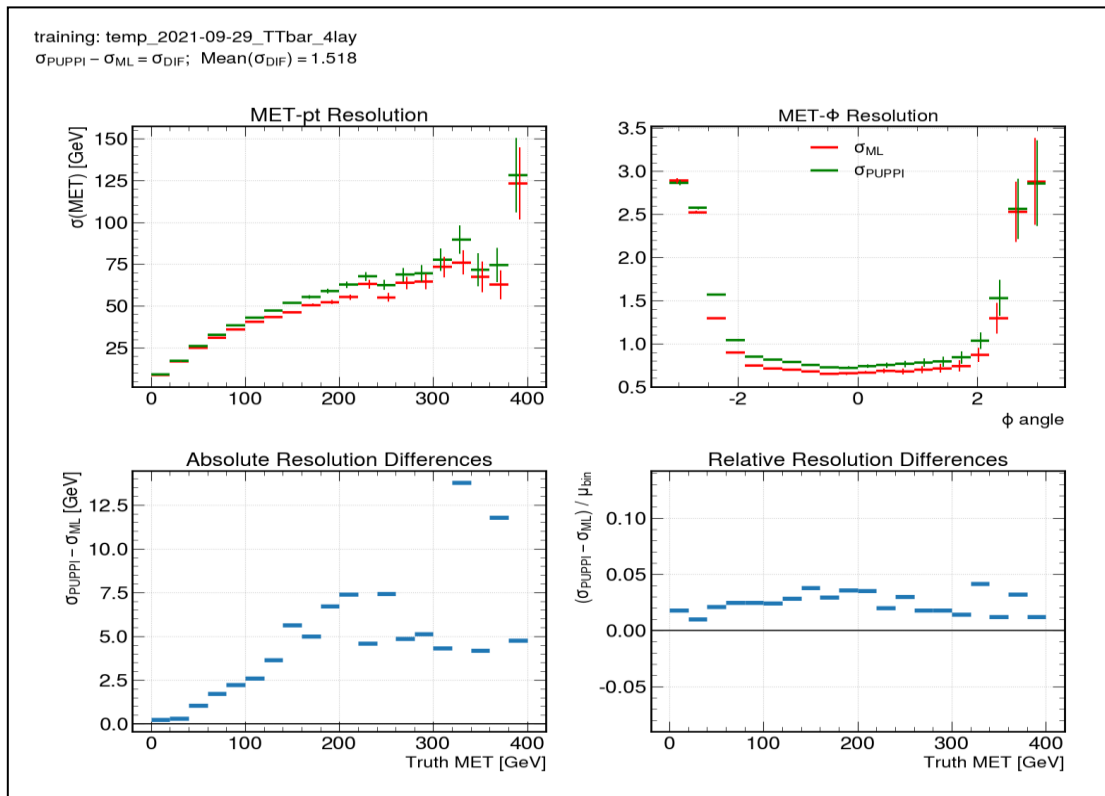


Figure 1 MET resolution comparison between ML and PUPPI