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Tau Identification with Deep Neural Networks at the CMS Experiment

Wednesday 21 October 2020 00:40 (20 minutes)

The reconstruction and identification of tau leptons decaying into hadrons are crucial for physics studies with tau leptons in the final state at the LHC. The recently deployed tau identification algorithm using deep neural networks at the CMS experiment for the discrimination of taus from light flavour quark or gluon induced jets, electrons, or muons is an ideal example for the exploitation of modern deep learning neural network techniques. With this algorithm a significant suppression of tau misidentification rates has been achieved for the same identification efficiency as compared to previous algorithms at the LHC, leading to considerable performance gains for physics studies with tau leptons. This new multi-class deep neural network based tau identification algorithm at CMS and its performance with proton collision data will be discussed.

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