

## Contribution submission to the conference Heidelberg 2022

**Tau reconstruction exploiting machine learning techniques at CMS** — ●ZE CHEN — DESY, Hamburg, Germany

Reconstruction of hadronically decaying tau leptons (denoted as  $\tau_h$ ) in the CMS experiment at the Large Hadron Collider has been historically performed with the Hadron-plus-strip (HPS) algorithm. In the HPS algorithm, the  $\tau_h$  final state signature is identified by combining information from charged hadrons, reconstructed by their associated tracks, and  $\pi_0$  candidates, obtained by clustering photon and electron candidates in rectangular regions, called "strips". As of the LHC Run 2, deep-learning techniques have been implemented to improve the identification of genuine  $\tau_h$  leptons and reduce contributions from backgrounds. This talk covers a study to improve the tau decay mode reconstruction using machine learning techniques. Its efficiency is shown and compared to the one of the HPS algorithm.

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