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Search for Standard Model $H \rightarrow \tau\tau$ Decays using a new τ identification algorithm PIERLUIGI TOTARO, INFN, Trieste (Italy), CDF COLLABORATION — Clean and efficient identification of τ leptons is required for a number of CDF Run II analyses such as $W \rightarrow \tau\nu$ and $Z \rightarrow \tau\tau$ production cross section measurements, top quark dilepton studies, and searches for both SUSY particles and MSSM Higgs bosons. Improved τ lepton identification can also be used to help improve the sensitivity of standard model Higgs boson searches by increasing the number of final states available to the analyses. We present a new τ lepton identification method based on a Boosted Decision Tree (BDT) approach, which like other multivariate methods can provide higher selection efficiency as a function of the associated fake rate with respect to what one obtains using a rectangular set of selection criteria. The performance of the new algorithm, which gives an improvement on order of 15% over the current CDF τ identification algorithm, will be shown.

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