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Search for the Higgs boson in final states with tau-jets IAN HOWLEY, University of Texas, Arlington, D0 COLLABORATION — Using 9.7 fb^{-1} of data collected using the D0 detector at the Fermilab Tevatron collider, we present a search for the standard model Higgs boson in final states of a lepton (e or μ), a hadronically decaying tau lepton and at least two jets. Several Higgs boson production and decay processes contribute in different proportions as a function of Higgs boson mass. Subsamples of enriched $H \to W^+W^-$ and $H \to \tau^+\tau^-$ events are created and a new multivariate method is discussed that reduces the variability of boosted decision tree (BDT) trainings across the mass spectrum. The ratio of 95% C.L. Higgs boson cross section lower limits from the data to that expected in the standard model is obtained for both subsamples separately and combined. This limit is the most stringent measurement involving $H \to \tau^+\tau^-$ from the Tevatron.

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