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**Search for light pseudoscalar Higgs bosons in 2HDM using 13 TeV LHC Data** KYLE TOS, University of California Davis — A search for a light pseudoscalar higgs boson ( $a_1$ ) is performed within the framework of two higgs doublet model extensions of the standard model. Using the 2016 LHC data collected at  $\sqrt{s} = 13$  TeV by the CMS experiment, this search looks for  $gg \rightarrow H \rightarrow a_1 a_1 \rightarrow \tau\tau$ , where  $H$  can be the 125 GeV state or a heavier state. Due to the large mass difference between the  $H$  and the  $a_1$ , the two  $\tau$ 's will be highly boosted and collimated, failing the standard CMS tau reconstruction algorithm. Therefore, we devise a dedicated di-tau technique to increase reconstruction efficiencies, particularly at  $R \lesssim 0.5$ .

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