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Search For a Light Pseudoscalar Higgs Boson with Boosted Topologies at CMS

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A search is performed for a light pseudoscalar Higgs boson (a) motivated by the theoretical framework of two higgs doublet plus singlet models (2HDM+S). This search uses 2016 LHC data collected at 13 TeV by the CMS experiment, and analyses the decay channel H->a a->mu mu tau tau, with H being either the 125 GeV state or heavier Higgs boson. Final state tau leptons feature a boosted and collimated topology due to the difference between the H and a masses. Thus, a novel algorithm for this special final state is designed to increase the identification efficiency. Expected limits are derived in the context of four types of 2HDM+S models for H(125), and are complementary to current CMS results with resolved final state particles. Model-independent expected limits for heavier H masses are also presented.

Session

Thesis Presentations (30+10 min)

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