

Abstract Submitted
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1 Higgs search result in the tau-pair decay mode with ATLAS

XIN CHEN, The University of Wisconsin — The search for the fermionic decay modes of Higgs boson is being extensively pursued at LHC, especially in the tau-tau mode. This decay mode is one of the most sensitive channels for a SM Higgs, as well as for the MSSM Higgs signature. The direct observation of the fermionic mode is a confirmation of the Higgs mechanism that also gives mass to fermions. We review the recent search result of SM $H \rightarrow \tau\tau$ in different tau decay sub-channels with the LHC Run 1 data collected by ATLAS at $\sqrt{s}=7$ and 8 TeV p-p collisions, with focus on the analysis strategy, background estimation methods and result interpretation. We also give the challenges and outlook of Run 2 data analysis in the tau pair decay mode.

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