

EVIDENCE FOR DECAYS OF THE HIGGS BOSON TO TAU LEPTONS AT ATLAS

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ABSTRACT

EVIDENCE FOR DECAYS OF THE HIGGS BOSON TO TAU LEPTONS AT ATLAS

Alexander Tuna

H.H. Williams

This thesis presents evidence for Higgs decays to tau leptons with the ATLAS experiment at the Large Hadron Collider. Special emphasis is given to the VBF $H \rightarrow \tau_\ell \tau_{\text{had}}$ category of the analysis. The data correspond to 25 fb^{-1} of proton collisions with $\sqrt{s} = 7$ or 8 TeV. The $H \rightarrow \tau\tau$ search strategy, predictions, and results are described. Prospects for the $H \rightarrow \tau\tau$ analysis, both in the near- and long-term, are also discussed.

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Preface

My time as a graduate student has been an incredible journey of Higgs bosons and tau leptons. I am forever indebted to the Penn Army, the ATLAS Collaboration, my friends, and my family for their help and support. Let's keep the party going in Run-II.

Alexander Tuna
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