

# A search for heavy neutral and charged BSM Higgs bosons in the $bbWW$ final state at the ATLAS detector

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Two-Higgs-Doublet-Models are theoretical extensions of the standard model that can account for some of its unanswered questions, for example the source of the matter/antimatter asymmetry in the Universe. They predict 5 bosons, the scalar/pseudoscalar  $H/A$  and the charged  $H^+$  and  $H^-$ , alongside the  $h$  (the standard model Higgs boson). This talk will present the (currently blind) search for the decay of  $A/H \rightarrow H^+W^- \rightarrow btw^- \rightarrow bbWW$  (+charge conjugate) at the ATLAS detector, a decay mode which has never previously been searched for. The search covers the mass ranges  $300 < m_A < 1000$  GeV and  $200 < m_{H^+} < 800$  GeV. The recent tensions at 400 GeV between the ATLAS and CMS results in  $A \rightarrow tt$  searches therefore also motivate this search. This talk will cover the theory and motivations behind the search, and the techniques and challenges of the analysis.

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