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Searches for Heavy Resonances Decaying to a W or Z Boson and a Higgs Boson with the ATLAS experiment

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The discovery of the Higgs boson by the ATLAS and CMS experiments at the LHC has led to a new set of questions regarding the completeness of the Standard Model (SM). Many different theoretical scenarios have been proposed to alleviate the fine-tuning of the SM required by the measured value of the Higgs boson mass by introducing new physics at the TeV scale, within reach of the LHC. Many of these scenarios incorporate new heavy vector bosons, a neutral Z' and two charged W'^{\pm} , that can be expected to couple to the SM bosons. Final states composed of a Higgs and a vector boson are therefore potential windows to new heavy resonances with TeV masses. In such kinematic regimes, one can take advantage of the large branching ratio of the Higgs boson to $b\bar{b}$, employing jet substructure and b-tagging techniques as discovery tools. In this presentation, the latest search results from the ATLAS experiment are shown, targeting WH and ZH final states. The full 2015+2016 LHC proton-proton dataset at $\sqrt{s} = 13$ TeV is used.

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