

Search for heavy diboson resonances in semileptonic final states

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Many theories beyond the Standard Model predict the existence of new heavy bosons. Some of them can decay into SM dibosons (WW, WZ, ZZ, Wh, and Zh) in semi-leptonic final states. This work is the second round of the analysis that combines two separate analyses: VV and Vh (V is either Z or W boson). Harmonization of VV and Vh and all the leptonic channels is done to make it less complex, but without losing the sensitivity. Apart from harmonization between previous analyses there are several new developments added: newer jet reconstruction algorithms, Multi-Class Tagger, W/Z tagger. This talk will focus on the analysis development and anticipated sensitivity to various BSM signals. The data used are proton-proton collisions at $\sqrt{s} = 13$ TeV at the LHC, corresponding to a total integrated luminosity of 139/fb collected by the ATLAS detector during the collider's Run 2.

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