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Search for heavy resonances in diboson final states with the CMS detector at LHC

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New results on searches for heavy resonances decaying to pairs of Standard Model bosons (WW, WZ, ZZ, WH, ZH, HH) based on the full dataset ($L = 19.7\text{fb}^{-1}$) of proton-proton collisions at $\sqrt{s} = 8\text{ TeV}$ collected by the CMS detector at the LHC are presented. Several New Physics scenarios including extra dimensions, composite Higgs models, and the recently proposed heavy vector triplet (HVT) simplified model predict the existence of Beyond Standard Model (BSM) resonances that have enhanced couplings to boson pairs. These searches are particularly challenging, since for large resonance masses the two bosons are highly energetic ("boosted") and the final decay products difficult to separate. This requires the use and development of dedicated techniques such as jet substructure identification, novel b-tagging algorithms, and special tau reconstruction and lepton isolation approaches. Upper limits are set on the production cross section of BSM particles decaying to a pair of vector bosons. In addition, a common interpretation of the results in the HVT model is presented, which allows direct comparison of the sensitivity of the different channels.

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