

New Physics searches in boosted diboson final states at CMS

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A summary of searches for nonresonant HH production as well as heavy resonances with masses exceeding 1 TeV decaying into pairs of bosons is presented, performed on data produced by LHC pp collisions at $\sqrt{s} = 13$ TeV and collected with the CMS detector during 2016, 2017, and 2018. The common feature of these analyses is the boosted topology, namely the decay products of the considered bosons (both electroweak W, Z bosons and the Higgs boson) are expected to be highly energetic and close in angle, leading to a non-trivial identification of the quarks and leptons in the final state. The exploitation of jet substructure techniques allows to increase the sensitivity of the searches where at least one boson decays hadronically. Various background estimation techniques are adopted, based on data-MC hybrid approaches or relying only in control regions in data. Results are interpreted in the context of the Warped Extra Dimension and Heavy Vector Triplet theoretical models, two possible scenarios beyond the standard model.

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