

# The Role of Vector Boson Fusion in the Production of Heavy Vector Triplets at the LHC and HL-LHC

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We clarify the role of vector boson fusion (VBF) in the production of heavy vector triplets at the LHC and the HL-LHC. We point out that the presence of VBF production leads to an unavoidable rate of Drell-Yan (DY) production and highlight the subtle interplay between the falling parton luminosities and the increasing importance of VBF production as the heavy vector mass increases. We discuss current LHC searches and HL-LHC projections in di-boson and di-lepton final states and demonstrate that VBF production outperforms DY production for resonance masses above 1 TeV in certain regions of the parameter space. We define two benchmark parameter points which provide competitive production rates in vector boson fusion.