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Exploring the SM EFT with Diboson production at the LHC and beyond

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One way to structure our knowledge of what may lie beyond the SM is by studying the higher dimensional operators appearing in the SM EFT. Diboson production is specially interesting because it is sensitive to operators which in many BSM models are closely related to the EWSB. Due to an energy growing behavior of some of these operators, the LHC can surpass LEP in setting bounds to some of these operators, even if the systematics are much larger. In particular it is possible for the LHC to set stronger constraints than LEP on the couplings between the light quarks and the Z boson as well as on the anomalous Triple Gauge Couplings for certain BSM models. We study the leptonic channels for $pp \rightarrow WW, WZ$ at the LHC and HL-LHC and comment on the interplay between the vertex corrections and the aTGC when setting exclusion bounds. We also study the projected sensitivity of $pp \rightarrow Wh$ at the LHC and FCC.

Collaboration name

Primary author: MONTULL, Marc (DESY)

Presenter: MONTULL, Marc (DESY)

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