

A parton-level study on dimension-6 EFT operators in electroweak boson scattering processes at the LHC

Thursday 29 February 2024 18:36 (10 minutes)

A sensitivity study to new physics parametrized in the context of dimension-6 CP-even operators of the Standard Model Effective Field Theory (SMEFT) is obtained by combining several analyses performed at the parton-level. These include the production of opposite charged W bosons ($W^\pm W^\mp$) and various flavours of VBS signatures ($W^\pm W^\pm, W^\pm W^\mp, ZZ, WZ$) in leptonic or semi-leptonic final states. The effect of SMEFT operators in altering the SM predictions for VBS processes is included in both resonant and non-resonant diagrams $O(\alpha_{EW}^6)$, as well as in the corresponding QCD-induced backgrounds $O(\alpha_{EW}^4 \alpha_S^2)$.

An expected 95% CL confidence interval on the corresponding Wilson coefficient is then obtained by fitting an Asimov dataset generated under the SM hypothesis. Finally, the relative importance of each analysis is investigated by performing a simultaneous fit across all channels.

Based on A sensitivity study of VBS and diboson WW to dimension-6 EFT operators at the LHC.

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Session Classification: Short Talks Session