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NLO EW corrections to $W^+Z\gamma$ production in SM and tree-level effects of dimension-eight operators in SMEFT at the LHC

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Triple gauge boson production is an important class of processes at the LHC. It allows measurements to test the quartic gauge couplings in the Standard Model and constrain the non-standard gauge couplings in the Standard Model effective field theory (SMEFT). We perform the computations of the NLO EW and QCD corrections to $W^+Z\gamma$ production with leptonic decays in SM at the LHC. The considered process is $p \ p \rightarrow e^+ \nu_e \ \mu^+ \ \mu^- \ \gamma$. We study the impacts of the corrections on the total and differential cross sections. We also study the tree-level effects of individual dimension eight operator in SMEFT. The corresponding unitarity bound is derived from partial wave expansions. By showing the interplay between the NLO corrections are indispensable to test the gauge couplings in SM and draw the limits on the dimension-eight operators in SMEFT precisely.

Are you are a member of the APS Division of Particles and Fields?

No

Author: CHENG, Huanfeng (SUNY Buffalo)
Co-author: WACKEROTH, Doreen (SUNY Buffalo)
Presenter: CHENG, Huanfeng (SUNY Buffalo)
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