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Corrections to the nTGC limits at EFT $O(\Lambda^{-8})$ expansion due to the possible background BSM contributions in $Z(\nu\bar{\nu})\gamma$ production

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The search for anomalous couplings is an indirect model-independent way to find deviations from the Standard Model (SM). Effective field theory allows to parameterize these anomalous couplings in the Lagrangian, respecting the SM gauge symmetries, using operators of higher dimensions constructed from the SM fields. In the classical way of setting the limits on the operators (Wilson) coefficients, it is assumed, that beyond-the-Standard-Model contributions come from the signal process only. However, one or several backgrounds can be also affected by non-zero Wilson coefficients, leading to corrections of the resulting limits on the Wilson coefficients. In this work the corrections are estimated for neutral triple gauge boson coupling limits from $Z(\nu\bar{\nu})\gamma$ production at the conditions of the ATLAS experiment, since this process is extremely sensitive to such anomalous couplings. The corrections are found to be significant and improve the limits on the Wilson coefficients.

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