

Erratum: Constraining couplings of top quarks to the Z boson in $t\bar{t} + Z$ production at the LHC

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We correct a sign in eq. (2.6) of our ref. [1] and we change the normalization of the higher dimensional operators to conform with ref. [2]. The new expressions read

$$\begin{aligned}
 C_{1,V} &= C_{1,V}^{\text{SM}} + \frac{1}{4 \sin \theta_w \cos \theta_w} \left(\frac{v^2}{\Lambda^2} \right) \text{Re} \left[C_{\phi q}^{(3,33)} - C_{\phi q}^{(1,33)} - C_{\phi u}^{33} \right], \\
 C_{1,A} &= C_{1,A}^{\text{SM}} - \frac{1}{4 \sin \theta_w \cos \theta_w} \left(\frac{v^2}{\Lambda^2} \right) \text{Re} \left[C_{\phi q}^{(3,33)} - C_{\phi q}^{(1,33)} + C_{\phi u}^{33} \right].
 \end{aligned}
 \tag{1.1}$$

These changes lead to modifications of the limits quoted in section 3.4 of ref. [1]. In particular, eq. (3.19) becomes

$$\begin{aligned}
 -1.35 &\leq \frac{v^2}{\Lambda^2} \text{Re} \left[C_{\phi q}^{(3,33)} \right] \leq 0.68, \\
 -2.34 &\leq \frac{v^2}{\Lambda^2} \text{Re} \left[C_{\phi u}^{33} \right] \leq 1.77,
 \end{aligned}
 \tag{1.2}$$

and eqs. (3.20) becomes

$$\begin{aligned}
 \left. \begin{array}{l} -0.56 \\ -0.44 \\ -0.32 \end{array} \right\} &\leq \frac{v^2}{\Lambda^2} \text{Re} \left[C_{\phi q}^{(3,33)} \right] \leq \begin{cases} 0.38 & \text{with } 30 \text{ fb}^{-1} \\ 0.30 & \text{with } 300 \text{ fb}^{-1} \\ 0.26 & \text{with } 3000 \text{ fb}^{-1} \end{cases}, \\
 \left. \begin{array}{l} -1.11 \\ -0.54 \\ -0.29 \end{array} \right\} &\leq \frac{v^2}{\Lambda^2} \text{Re} \left[C_{\phi u}^{33} \right] \leq \begin{cases} 1.02 & \text{with } 30 \text{ fb}^{-1} \\ 0.93 & \text{with } 300 \text{ fb}^{-1} \\ 0.88 & \text{with } 3000 \text{ fb}^{-1} \end{cases}.
 \end{aligned}
 \tag{1.3}$$

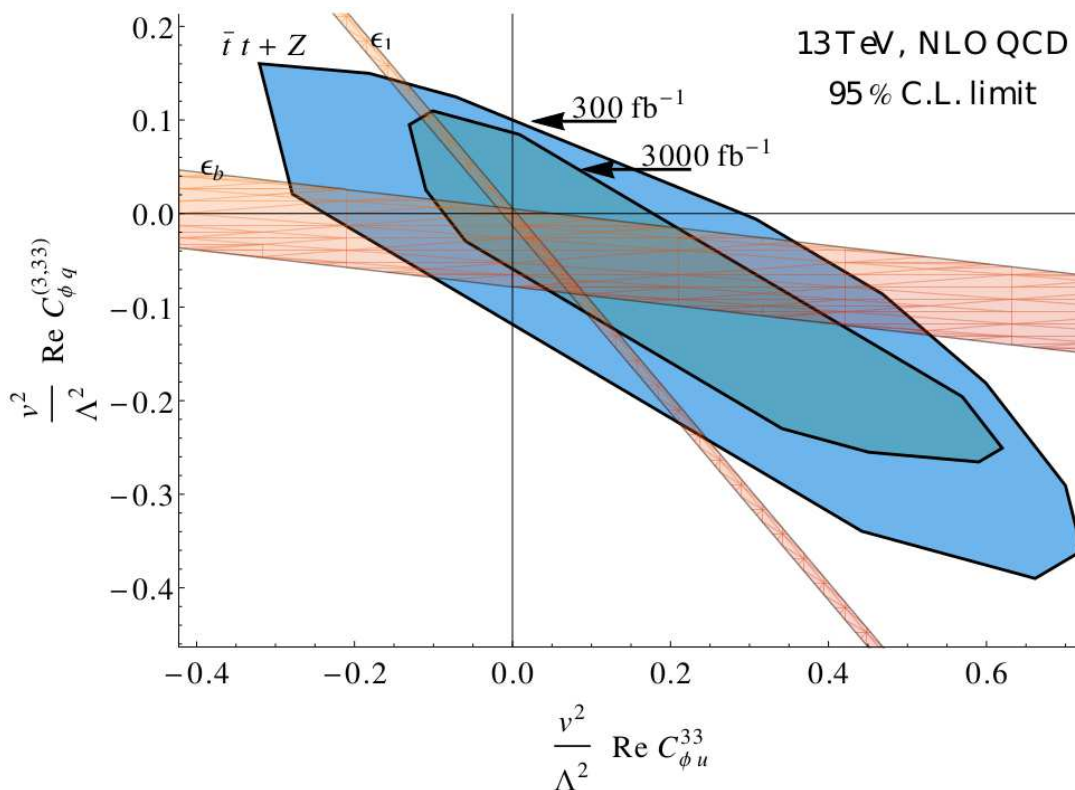


Figure 1. Projected constraints on the operators $C_{\phi q}^{(3,3,3)}$ and $C_{\phi u}^{33}$ obtained from the $\Delta\phi_{\ell_z^+ \ell_z^-}$ distribution in $t\bar{t}Z$ production at the 13 TeV LHC. The parameter space outside the blue colored area can be excluded at the 95% C.L. The thin bands are indirect constraints from electroweak precision data.

The limits at next-to-leading order QCD are

$$\left. \begin{array}{l} -0.56 \\ -0.40 \\ -0.27 \end{array} \right\} \leq \frac{v^2}{\Lambda^2} \text{Re} [C_{\phi q}^{(3,3,3)}] \leq \begin{cases} 0.23 & \text{with } 30 \text{ fb}^{-1} \\ 0.16 & \text{with } 300 \text{ fb}^{-1} \\ 0.11 & \text{with } 3000 \text{ fb}^{-1} \end{cases}, \tag{1.4}$$

$$\left. \begin{array}{l} -0.95 \\ -0.35 \\ -0.13 \end{array} \right\} \leq \frac{v^2}{\Lambda^2} \text{Re} [C_{\phi u}^{33}] \leq \begin{cases} 0.84 & \text{with } 30 \text{ fb}^{-1} \\ 0.73 & \text{with } 300 \text{ fb}^{-1} \\ 0.63 & \text{with } 3000 \text{ fb}^{-1} \end{cases}$$

and replace eq. (3.21). The corresponding plot which replaces figure 10 in ref. [1], is given here in figure 1.

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References

- [1] R. Röntsch and M. Schulze, *Constraining couplings of top quarks to the Z boson in $t\bar{t} + Z$ production at the LHC*, *JHEP* **07** (2014) 091 [[arXiv:1404.1005](https://arxiv.org/abs/1404.1005)] [[INSPIRE](#)].
- [2] J.A. Aguilar-Saavedra, *A Minimal set of top anomalous couplings*, *Nucl. Phys. B* **812** (2009) 181 [[arXiv:0811.3842](https://arxiv.org/abs/0811.3842)] [[INSPIRE](#)].