



Contribution ID: 92

Type: Oral presentation using Zoom

## Top electro-weak couplings, from the LHC to the ILC

*Friday, 29 October 2021 13:23 (23 minutes)*

As the heaviest particle of the model, with a mass close to the electroweak scale, the top quark is an interesting candidate to look for hints of new physics. The electroweak couplings of the top quarks are specially relevant in many extensions of the Standard Model. Indeed, as the top quark was not produced in the previous generation of electron-positron colliders most of its electro-weak couplings can only be constrained with the data from the Large Hadron Collider. In order to analyse if there is still room for new physics in the electro-weak couplings of the top quark, we perform a global fit to these couplings. Following the Standard Model Effective Field Theory formalism we have constrained the Wilson coefficients of the dimension-six operators that affect the top quark electro-weak couplings. In this work we consider, for the first time, the QCD corrections at NLO for most of the processes included. Furthermore, we have included recently measured processes, such as  $tZq$  and  $t\gamma q$ , and the first differential measurements in  $t\bar{t}Z$  and  $t\bar{t}\gamma$  production. A special effort is made to understand the uncertainties due to the truncation of the EFT expansion and due to the poorly known correlations among measurements. The results of the fit to LHC run 2 data are compared to prospects for electron-positron colliders operating above the top quark pair production threshold, considering in particular the ILC runs at 500 GeV and 1 TeV. As the main result, we present bounds on the relevant operator coefficients based on current data and on future prospects.

### 1st preferred time slot for your oral presentation

19:00-21:00 JST (12:00-14:00 CEST, 6:00-8:00 EDT, 3:00-5:00 PDT)

### 2nd preferred time slot for your oral presentation

15:30-17:30 JST (8:30-10:30 CEST, 2:30-4:30 EDT, 23:30-1:30 PDT)

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**Session Classification:** J: Global interpretations

**Track Classification:** Parallel sessions: Topical Groups: Session G: Top / Heavy flavour / QCD