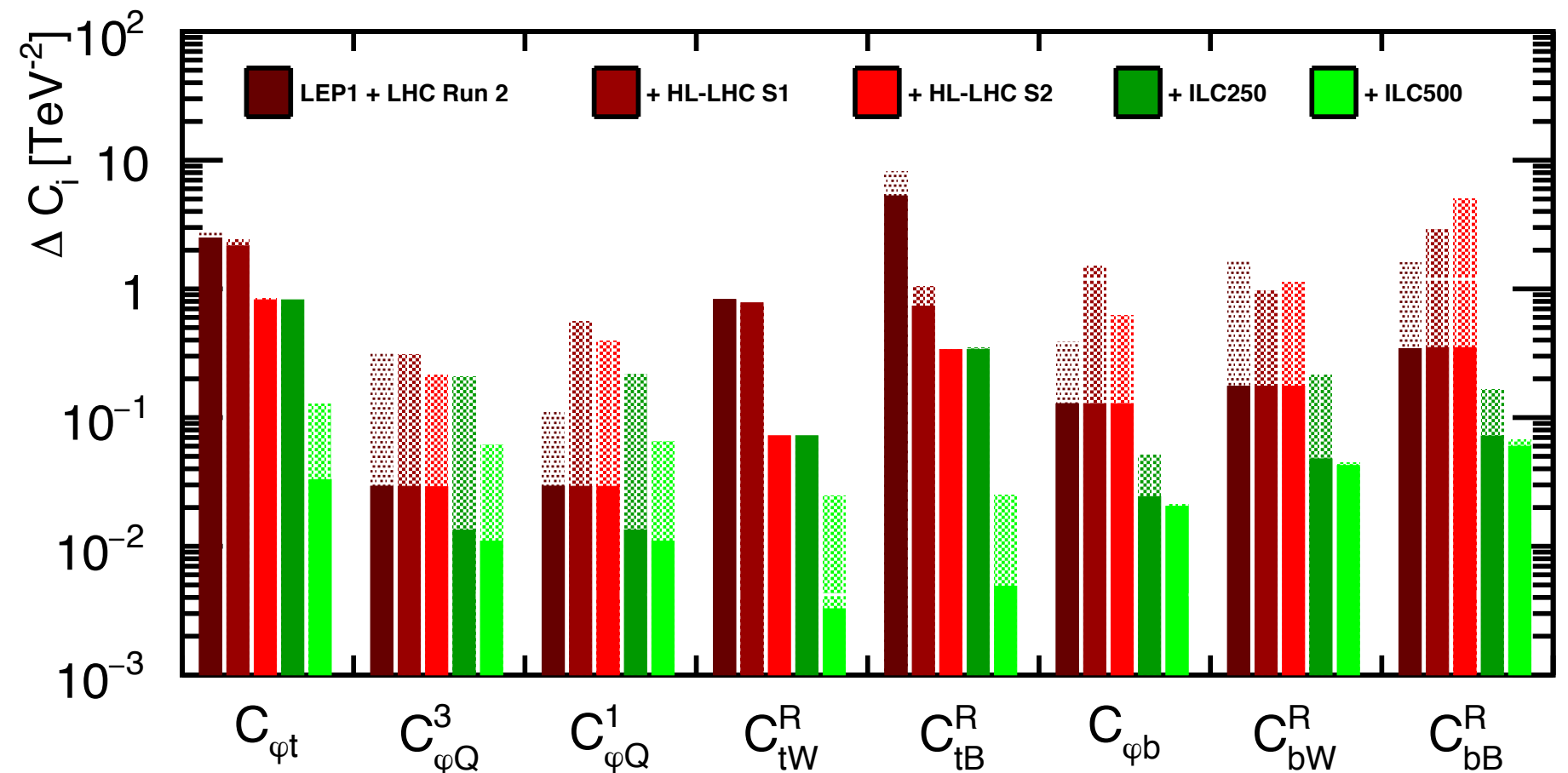


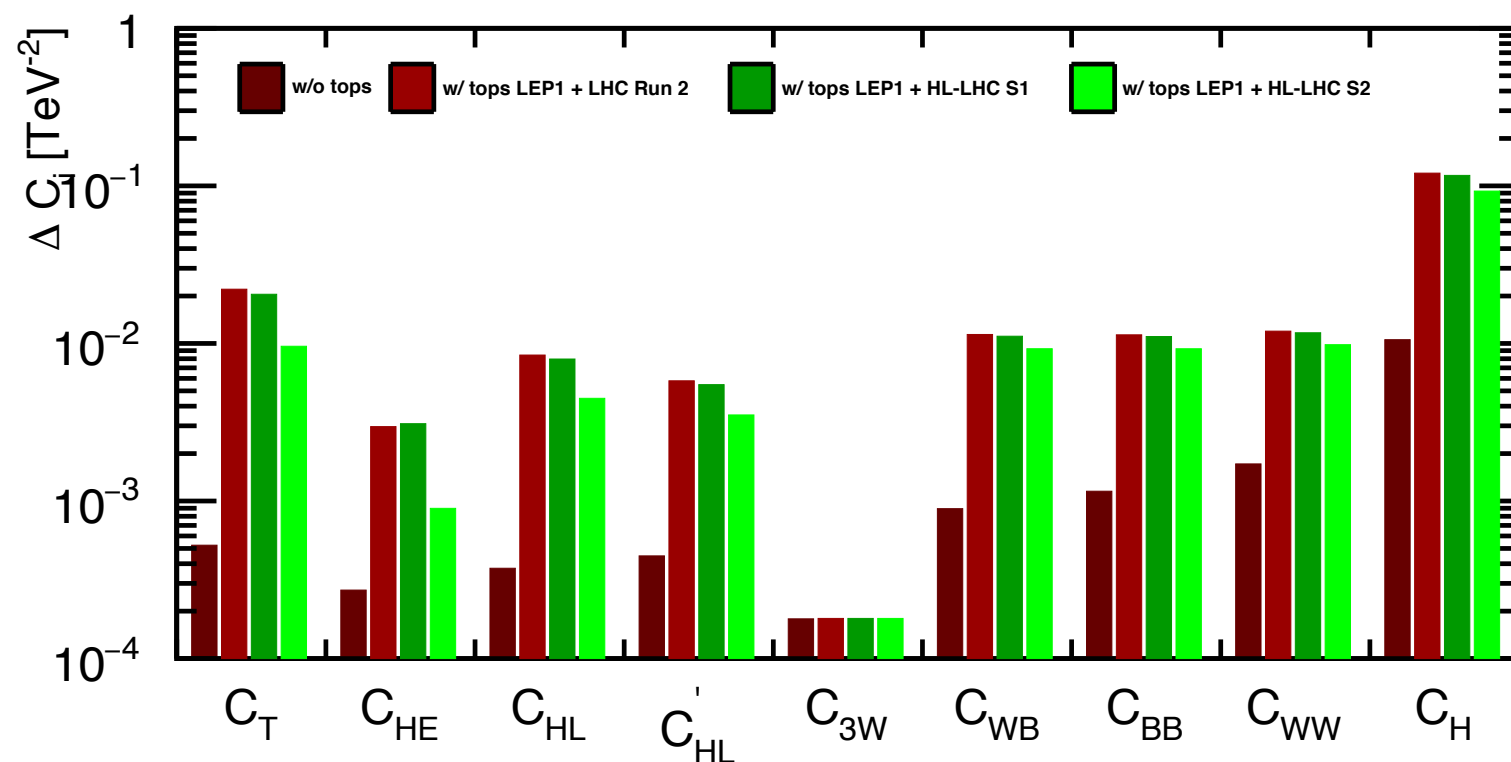
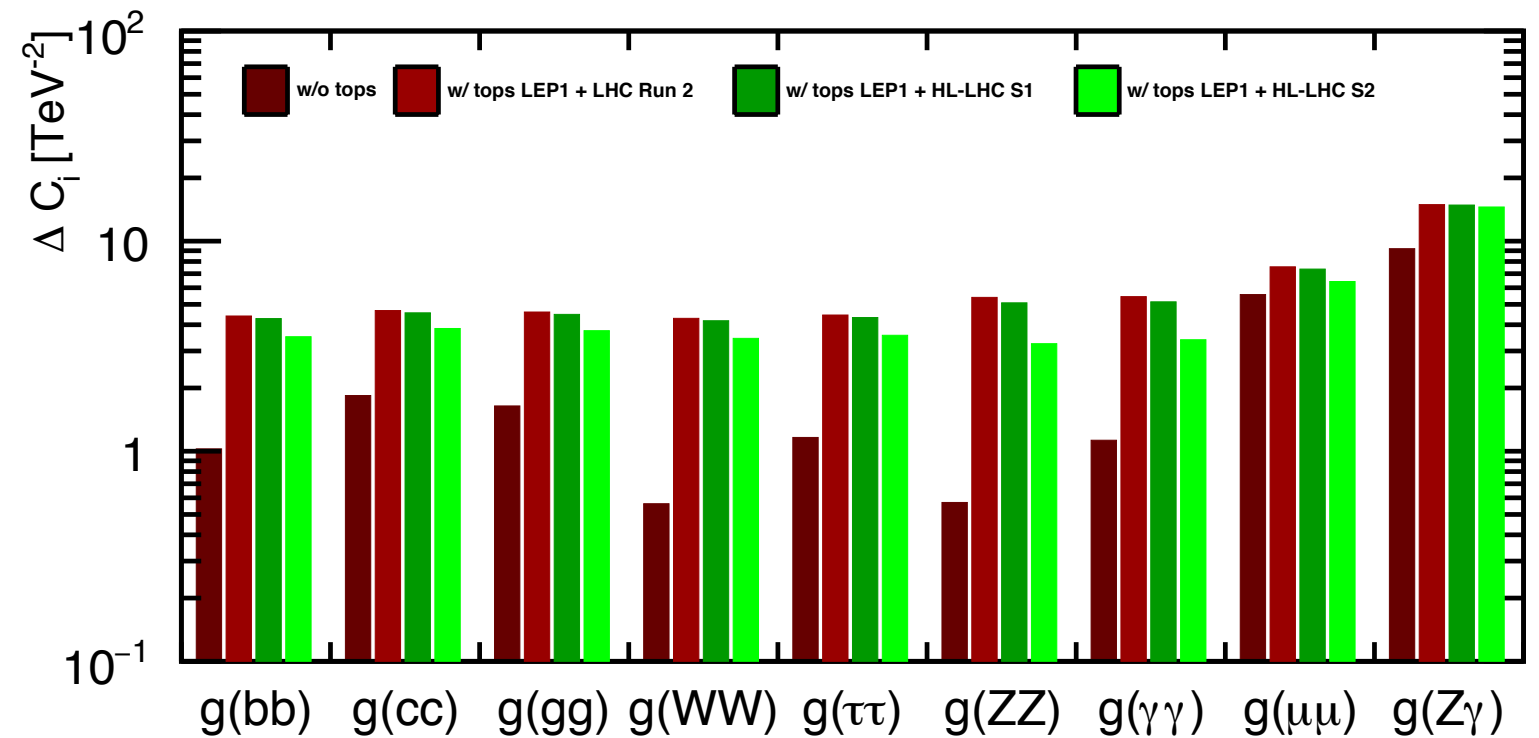
## Combined fit t and b quarks.

- Data from LEP 1 and LHC Run 2
- 2 scenarios for HL-LHC:
  - S1: statistical uncertainty scaled with luminosity.
  - S2: stat. and syst. scaled with luminosity, theory reduce by 2.
- Added ILC250 (bb) and ILC500 (bb, tt).
- Optimal observables [\[1807.02121\]](#) under calculation.
- Contact interactions not considered



## Fit Higgs - top.

- Typos updated from Junghwan's report
- Data used: Sunghoon and Junghwan's Table 3 Q0 = mH
- Used top operators constraints from b-t fit

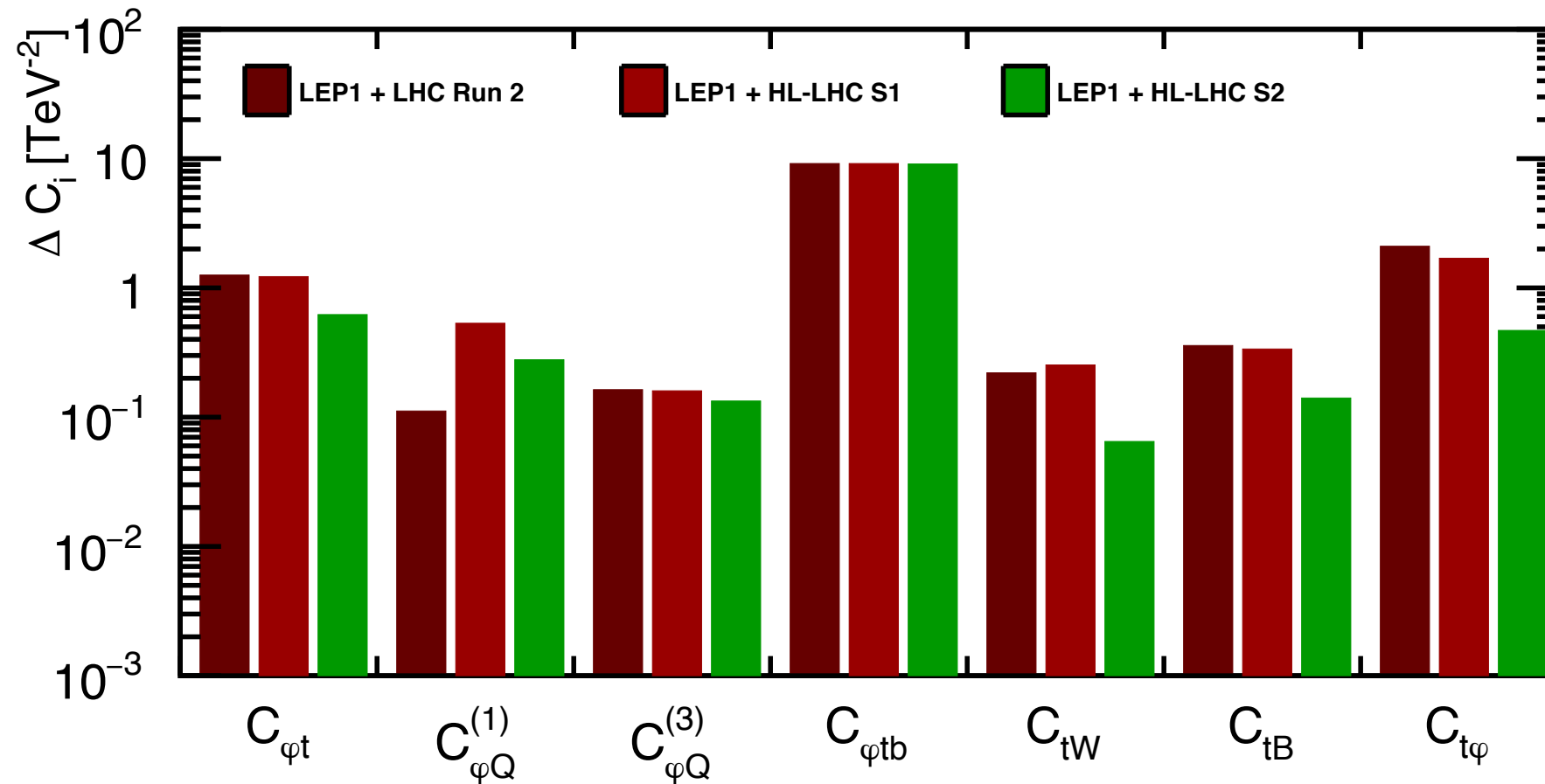


## Higgs sector:

- Couplings ~1.5 - 3 times worse for S2 scenario
- EFTs from orders of magnitude to ~2 times worse for S2 scenario

## Fit Higgs - top.

- Typos updated from Junghwan's report
- Data used: Sunghoon and Junghwan's Table 3 Q0 = mH
- Used top operators constraints from b-t fit



## Top sector:

- Similar results compared with t-b fit

## Top Yukawa

- Included in the t-b fit. Constraints from  $pp \rightarrow ttH$  cross-section.
  - Individual fit Run2 /HL-LHC S2: **2.1/0.47**
  - Global fit Run2 /HL-LHC S2: **2.1/0.48**
  - **Need to convert from EFT to yt.**
- From MP's KEK report in June:

Under the same conditions on the fit, using  $h \rightarrow gg$ :

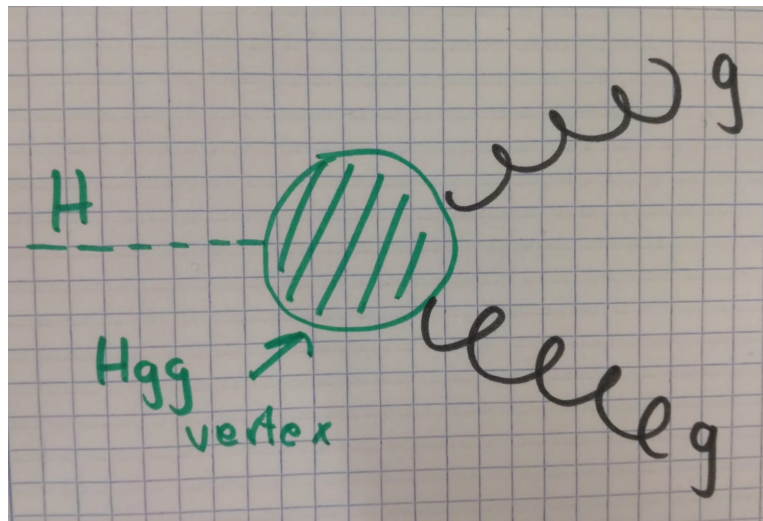
	A. Mitov	MP
Delta y(%) =	1.2	1.7

## c6

- First steps to include it in the fit.
- At the moment no difference between beam polarisations. Using results from McCullough's I get from the global fit **c6 < 11.3**

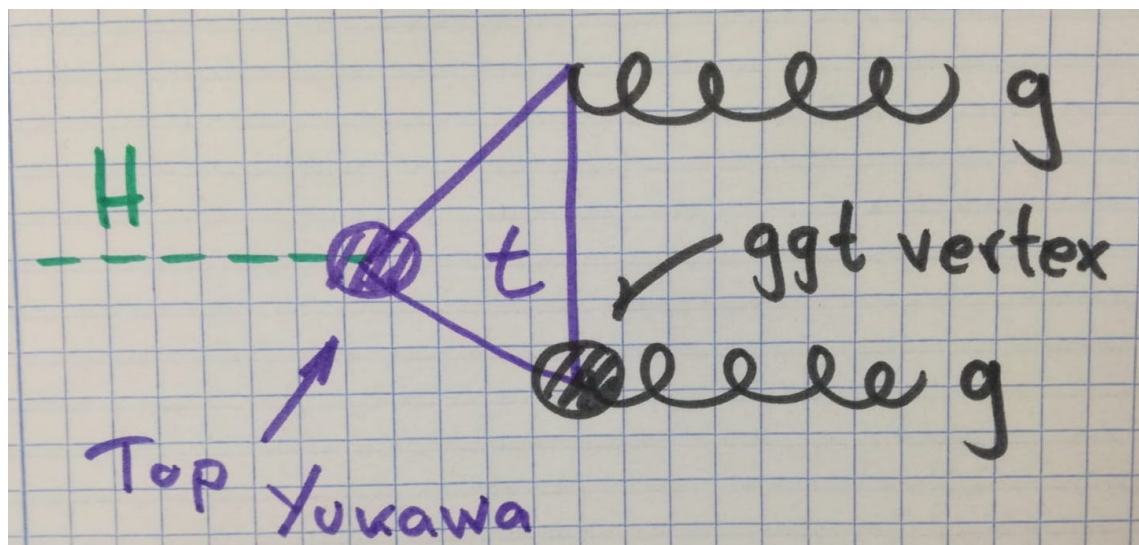
# Top Yukawa from $h \rightarrow gg$

## Higgs EFT



- In the current Higgs fit the results give bounds for  $ggH$  coupling.
- If we assume that all the dependency to the  $Hgg$  coupling comes from top-Yukawa we could reproduce A. Mitov's result.

## Top EFT at loop level



- This can be done assuming  $ggt$  vertex is well constrained at the LHC and won't disturb the fit.