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Anomalous Higgs and Triple Gauge Couplings in the Effective Field Theory Approach (15' + 5')

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Given many possible forms that physics Beyond the Standard Model (BSM) could take, it is important to pursue a bottom-up approach in which as few assumptions as possible about the BSM sector are made. In this talk, we present a combined analysis of LHC Run-I Higgs data (signal strengths) together with LEP-II WW production measurements. To characterize possible deviations from the Standard Model (SM) predictions, we employ the framework of an Effective Field Theory (EFT) where the SM is extended by higher-dimensional operators suppressed by the mass scale of new physics Λ. Working under this hypothesis, important relations among Higgs and electroweak precision observables occur.

We perform the first consistent analysis at the order Λ^{-2} in the EFT expansion keeping all the relevant operators.
While the two data sets suffer from flat directions, together they impose stringent model-independent constraints on the anomalous couplings, thus showing the importance of global analysis in the EFT framework.
As a side product, we provide the results of the combined fit in different EFT bases.

This presentation is mainly based on the recent publication: Phys. Rev. Lett. 116, no. 1, 011801 (2016).

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