

EFT at Neutrino Experiments

Friday, May 27, 2022 9:16 AM (23 minutes)

We will discuss how to systematically study physics beyond the standard model (BSM) in the neutrino experiments within the Standard Model Effective Field Theory (SMEFT) framework. In this way, the analysis of the data can capture large classes of models, where the new degrees of freedom have masses well above the relevant energy of the experiment. Moreover, it allows us to compare several experiments in a unified framework and in a systematic way. Our proposed approach could be applied to several short- and long baseline neutrino experiments. We will show the results of this approach at the FASER ν experiment, which will be soon installed 480 m downstream of the ATLAS interaction point, as well as the medium baseline reactor experiments Daya Bay and RENO. For some coupling structures, we find that these neutrino detectors will be able to constrain interactions that are almost three orders of magnitude weaker than the Standard Model weak interactions, implying that they will be indirectly probing new physics at the 10 TeV scale.

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