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EFT observable stability under NLO corrections through interference revival

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The interference between the Standard Model (SM) and higher-dimensional effective operators can change sign over the phase space, leading to cancellations between different positive and negative terms that can make these effects hard to measure. The aim of this talk is to present a method to establish the efficiencies of given observables in separating the opposite-sign contributions to the interference, allowing to revive it in experiments. This strategy is based on the matrix element, but it is more general and can be used for any new physics scenario that shows a cancellation for the interference, in the Standard Model Effective Field Theory (SMEFT) and outside. I will show the application of this method to two dimension-six operators in the SMEFT, for which the interference suppression is well known: the anomalous gluon operator and its electroweak (EW) analogous, at Leading Order (LO) in the first case and at Next-to-Leading Order (NLO) in the second. Different processes that are sensitive to these objects will be analysed, including multi-jet, di-boson and EW Vector Boson Fusion (VBF) ones. I will highlight how the interference-reviving variables we found can yield better bounds on the operator coefficient, even at interference level.

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