

Constraining SMEFT four-quark operators via Higgs+jet production at NLO

Tuesday, November 8, 2022 9:00 AM (15 minutes)

Higgs data can provide better constraints on some top quark operators than top data. Since in Higgs observables various SMEFT operators enter, differential Higgs data might prove useful in global fits including those operators. In addition, such analysis could shed light on the chiral structure of the (eventual) heavy new physics beyond the Standard Model.

We calculate the dominant contributions of third generation four-quark operators to Higgs+jet production. They enter via loop corrections

to the (partonic) processes $gg \rightarrow gH$, $q\bar{q} \rightarrow gH$, $q(\bar{q})g \rightarrow q(\bar{q})H$, whose dominant Standard Model amplitude arises at one-loop level. Consequently, the inclusion of NLO ($\mathcal{O}(1/\Lambda^2)$) contributions to these processes requires a two-loop computation.

Our analysis consists in computing the matrix elements and, subsequently, the (hadronic) cross section via Monte Carlo integration. Finally we perform a fit to put bounds on the considered SMEFT coefficients.

Type of talk

Theory

Primary authors: GROEBER, Ramona (Università di Padova and INFN, Sezione di Padova); DI NOI, Stefano (Università di Padova and INFN, Sezione di Padova)

Presenter: DI NOI, Stefano (Università di Padova and INFN, Sezione di Padova)

Session Classification: Tuesday Session B

Track Classification: Physics Topics: Effective Field Theory