Scalars 2023

Contribution ID : 11

Precise predictions for the trilinear Higgs self-coupling in the Standard Model and beyond

Friday 15 Sep 2023 at 14:00 (00h15')

Content :

The investigation of the trilinear self-coupling of the discovered Higgs boson is one of the main goals of particle physics in the near future.
We provide predictions for this coupling, expressed in terms of the coupling modifier κ_{λ}, incorporating one-loop corrections within arbitrary renormalizable QFTs.
The presented framework allows to apply a wide class of pre- and user-defined renormalization conditions whereas the calculation of all required one-, two- and three-point functions is incorporated in an automated way.

In this talk I motivate precision predictions for trilinear Higgs couplings in the context of di-Higgs production.
The basic ingredients of a generic κ_λ calculation at the one-loop order are introduced.
I discuss applications to a variety of BSM models featuring scalar singlets, doublets and triplets while focusing on issues related to renormalization as well as the incorporation of momentum effects.

Primary authors : WEIGLEIN, Georg (DESY) ; BAHL, Henning (U. Chicago) ; GABELMANN, Martin (DESY) ; BRAATHEN, Johannes (DESY)

Co-authors :

Presenter : GABELMANN, Martin (DESY)

Session classification : Parallel Session 3

Track classification : --not yet classified--

Type : --not specified--