DESY THEORY WORKSHOP

**HIGGS, FLAVOR AND BEYOND**

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

*Wednesday 28 September 2022 14:45 (15 minutes)*

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 $\kappa_\lambda$, 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 $\kappa_\lambda$ in the context of di-Higgs production and the need for their automation.

The basic ingredients of a generic $\kappa_\lambda$ calculation at the one-loop order as well as the features of the resulting computer program are discussed.

I conclude with an outlook on possible applications

## Summary

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