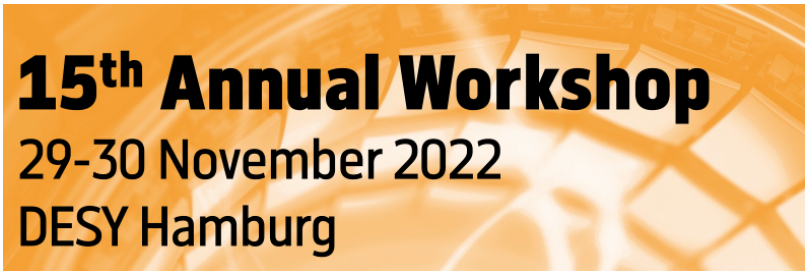

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Two-Loop $\mathcal{O}(\alpha_t^2)$ Trilinear Higgs Self-Couplings in the CP-Violating NMSSM

Tuesday 29 November 2022 10:45 (20 minutes)

In supersymmetric theories the Higgs boson masses are derived quantities where higher-order corrections have to be included in order to match the measured Higgs mass value at the precision of current experiments. Closely related through the Higgs potential are the Higgs self-interactions. In addition, the measurement of the trilinear Higgs self-coupling provides the first step towards the reconstruction of the Higgs potential and the experimental verification of the Higgs mechanism *sui generis*. In this talk, we report on most-recent precision predictions of the trilinear Higgs self-couplings in the CP-violating Next-to-Minimal Supersymmetric extension of the SM (NMSSM).

After a short technical introduction into higher-order corrections to supersymmetric Higgs-potentials the phenomenological impact of the recently obtained two-loop corrections onto the SM-like trilinear Higgs self-coupling as well as their correlation to the Higgs mass corrections are discussed. Finally, we discuss the inclusion of the loop-corrected effective trilinear Higgs self-coupling in gluon fusion into Higgs pairs and the estimate of the theoretical uncertainty due to missing higher-order corrections.

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