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Leading two-loop corrections to the Higgs trilinear coupling in models with extended scalar sectors

The Higgs trilinear coupling provides a unique opportunity to study the structure of the Higgs sector and search for BSM Physics. In models with extended Higgs sectors, large deviations in this coupling can appear at one loop because of non-decoupling effects in the radiative corrections from extra scalars.

It is then natural to ask how this result can be modified at two loops. I will present new results for the dominant two-loop corrections to the Higgs trilinear coupling in models with extended scalar sectors. I will show that, while the two-loop corrections do not modify significantly the one-loop non-decoupling effects, their computation will be necessary in the perspective of future precise measurements of the Higgs trilinear coupling, for instance at high-energy stages of the ILC.

This talk is based on J. Braathen and S. Kanemura, PLB 796 (2019) 38-46 [arXiv:1903.05417] and EPJC 3 (2020) 80:227 [arXiv:1911.11507].

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