

# Two-loop corrections to the Higgs trilinear coupling in models with extended scalar sectors

*Friday, 31 July 2020 12:24 (18 minutes)*

The Higgs trilinear coupling provides a unique opportunity to study the structure of the Higgs sector and probe indirect signs of BSM Physics –even if new states are somehow hidden. In models with extended Higgs sectors, large deviations in the Higgs trilinear coupling can appear at one loop because of non-decoupling effects in the radiative corrections from the additional scalar states. It is then natural to ask how two-loop corrections modify this result, and whether new large corrections can appear again. I will present new results on the dominant two-loop corrections to the Higgs trilinear coupling in several models with extended scalar sectors. I will illustrate the analytical expressions with numerical examples and show that, while they remain smaller than their one-loop counterparts and do not modify significantly the non-decoupling effects observed at one loop, the two-loop corrections are not entirely negligible –a typical size being 10-20% of the one-loop corrections.

## Secondary track (number)

1. Beyond the Standard Model

**Primary authors:** BRAATHEN, Johannes (Osaka University); Prof. KANEMURA, Shinya (Osaka University)

**Presenter:** BRAATHEN, Johannes (Osaka University)

**Session Classification:** Higgs Physics

**Track Classification:** 01. Higgs Physics