First ECFA WORKSHOP.

Contribution ID: **37** Type: **Parallel session talk**

New constraints on extended Higgs sectors from the trilinear Higgs coupling

Thursday 6 October 2022 16:05 (17 minutes)

Investigating the trilinear Higgs coupling λ_{hhh} is crucial to determine the structure of the Higgs potential and to probe possible signs of physics beyond the Standard Model (SM). Focusing on the Two-Higgs-Doublet Model as a concrete example, I will discuss the calculation of the dominant two-loop contributions to λ_{hhh}, and I will show that this coupling can, in certain regions of parameter space, be significantly enhanced with respect to its SM prediction. Taking into account all relevant corrections up to the two-loop level, I will demonstrate that the current experimental bounds on λ_{hhh} already rule out significant parts of otherwise unconstrained parameter space of the model. Finally, I will present a benchmark scenario illustrating the interpretation of the current results and future measurement prospects on λ_{hhh}.

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Session Classification: WG1: joined HTE & GLOB session

Track Classification: WG1-HTE+GLOB - Physics Potential: Higgs, top and EW joint with Global Interpretations