## **EPS-HEP2023** conference



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Type: Parallel session talk

## New constraints on extended Higgs sectors from the trilinear Higgs coupling

Tuesday 22 August 2023 17:20 (20 minutes)

The trilinear Higgs coupling  $\lambda_{hhh}$  is a crucial tool to probe the structure of the Higgs potential and to search for possible effects 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 leading two-loop corrections to  $\lambda_{hhh}$ , and show that this coupling can be significantly enhanced with respect to its SM prediction in certain regions of parameter space. Taking into account all relevant corrections up to the two-loop level, I will show that the current experimental bounds on  $\lambda_{hhh}$  already rule out significant parts of the parameter space that would otherwise be unconstrained. Finally, I will present a benchmark scenario illustrating the interpretation of the current results and future measurement prospects on  $\lambda_{hhh}$ . Recent results from direct searches of BSM scalars (such as ATLAS-CONF-23-034), and their implications for  $\lambda_{hhh}$ , will also be discussed in this context.

## **Collaboration / Activity**

Bahl, Braathen, Weiglein

**Primary authors:** BAHL, Henning (University of Chicago); BRAATHEN, Johannes (T (Phenomenology)); WEI-GLEIN, Georg (T (Phenomenology))

Presenter: BRAATHEN, Johannes (T (Phenomenology))

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