

## SYNERGIES TOWARDS THE FUTURE STANDARD MODEL

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## The Higgs self coupling in the presence of $e^+e^- - t\bar{t}$ -interactions

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The Higgs self coupling is one of the last not precisely measured couplings in the SM with a current precision of  $\mathcal{O}(100\%)$ . Within the SMEFT, the BSM contribution to the trilinear self coupling of the Higgs is the operator  $\mathcal{O}_H$ , which enters at NLO in the  $e^+e^- \rightarrow ZH$  cross section, providing an interesting probe for the self-coupling at future lepton colliders. However, at NLO in SMEFT also  $eett$ -interactions enter, potentially spoiling the sensitivity to the Higgs trilinear by entering at the same order. We will show how the presence of these operators, which are well motivated by different BSM scenarios, would instead not spoil the measurement of the self-coupling, by exploiting the synergies with additional observables, like EWPO and  $ee \rightarrow b\bar{b}$  production. We will analyse the problem both from a global SMEFT fit perspective and from a simplified model approach featuring heavy extensions of the SM.

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