

# Accidental Suppression of Wilson Coefficients in Higgs Coupling

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Higgs couplings are essential probes for physics beyond the Standard Model (BSM) since they can be modified by new physics, such as through the Higgs portal interaction  $|H|^2\mathcal{O}$ . These modifications influence Higgs interactions via dimension-6 operators of the form  $(\partial|H|^2)^2$  and  $|H|^6$ , which are generally expected to be of comparable size. This talk discusses a phenomenon of accidental suppression, where the  $|H|^6$  coupling is significantly smaller than  $(\partial|H|^2)^2$ . This suppression, arising from the truncation of the tree-level effective potential, lacks a clear symmetry explanation but persists in portal models. This talk aims to inspire further studies on additional instances of accidental suppression without symmetry explanations or a general framework to characterize such suppression. We also discuss constraints, at the HL-LHC and future colliders, on the Wilson coefficients of the two dimension-6 operators for various benchmark scenarios of the concrete model.

**Primary authors:** SHU, Chi (University of Chicago); GU, Jiayin (Fudan University); WANG, Liantao; BAO, Yunjia (University of Chicago); LIU, Zhen (University of Minnesota (US))

**Presenter:** BAO, Yunjia (University of Chicago)

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