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Non-linear top-Higgs CP violation

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The Higgs physics program at the Large Hadron Collider is actively seeking new sources of CP violation. An unexplored possibility is a significant non-linear realization of CP-violation, which is naturally described in non-linear Higgs Effective Field Theory (HEFT). We perform an analysis of the HL-LHC potential to constrain such interactions considering a large range of single and double Higgs production processes, including differential information where this is statistically and theoretically possible. A particular emphasis of our work is distinguishing expected correlations in the Standard Model Effective Field Theory from those attainable in HEFT.

Authors: Dr BHARDWAJ, Akanksha (University of Glasgow); NAVARRO, Alberto (Oklahoma State University); ENGLERT, Christoph; GONÇALVES, Dorival (Oklahoma State University)

Presenter: NAVARRO, Alberto (Oklahoma State University)

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