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Exploring SMEFT operators through single top-quark production associated with the Higgs boson at the LHC

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The Standard Model effective field theory (SMEFT) provides a general framework to include the effects of the beyond standard model physics residing at a certain higher energy scale Λ . We focus on the modification of top-quark Yukawa coupling, which is one of the important avenues to study EWSB. With this motivation, we consider the production of the tHq process at the LHC. In this context, relevant sensitive dimension-6 SMEFT operators are identified. Those operators, relevant to the tHq production process, are constrained using the latest LHC data that are directly sensitive to these operators. We develop a strategy of constraining these operators providing a complementary way to the global-fit approach. The preferable ranges of those operators are presented along with their best fit values. Finally, we will discuss the feasibility of finding the signatures of those operators at the LHC corresponding to high luminosity options 300 fb^{-1} and 3000 fb^{-1} . This work is almost complete and we are working on preparing the draft.

In-person participation

Yes

Primary authors: ROY, Arnab (Tata Institute of Fundamental Research); Prof. GUHAIT, Monoranjan (Tata Institute of Fundamental Research)

Presenter: ROY, Arnab (Tata Institute of Fundamental Research)

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