

Abstract Submitted
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Higgs Assisted Stop Search HUANIAN ZHANG, SHUFANG SU, University of Arizona — The discovery of the Standard Model (SM)-like Higgs boson is a great success of particle physics over the past 50 years. The existence of a light Higgs boson provides strong indications for new physics beyond the SM. In this project, we study the supersymmetric partner of the top quark, namely stop, which is the most relevant supersymmetric particles given its strong coupling to the Higgs sector. We study the pair production of stops at the 14 TeV Large Hadron Collider (LHC): $pp \rightarrow \tilde{t}_1 \tilde{t}_1$ followed by the decays: $\tilde{t}_1 \rightarrow b \tilde{\chi}_1^+ \rightarrow b W^+ \tilde{\chi}_1^0$ and $\tilde{t}_1 \rightarrow t \tilde{\chi}_2^0 \rightarrow t h \tilde{\chi}_1^0$. The final states include exact one lepton (e or μ), ≥ 2 b-jets, ≥ 2 light flavor jets, and large missing energy. We find that with 100 fb^{-1} luminosity, a 5σ reach of the stop mass up to 500 GeV could be obtained.

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