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Investigating New Physics Models with Signature of Same-Sign Diboson $\not{E}_T$

Tuesday 17 May 2022 19:00 (1 hour)

We investigate the prospect of searching for new physics via the novel signature of same-sign diboson + $\not{E}_T$ at current and future LHC. We study three new physics models: (i) natural SUSY models, (ii) type-III seesaw model and (iii) type-II seesaw/Georgi-Machacek model. In the first two class of models, this signature arises due to the presence of a singly-charged particle which has lifetime long enough to escape detection, while in the third model this signature originates resonantly from a doubly-charged particle produced along with two forward jets that, most likely, would escape detection. We analyze in great detail the discovery prospects of the signal in these three classes of models in the current as well as the upcoming runs of the LHC (such as HL-LHC, HE-LHC and FCC-hh) by showing a distinction among these scenarios.

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