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## Accidental symmetries in the scalar potential of the Standard Model extended with two Higgs triplets

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The extension of the Standard Model (SM) with two Higgs triplets offers an appealing way to account for both tiny Majorana neutrino masses via the type-II seesaw mechanism and the cosmological matter-antimatter asymmetry via the triplet leptogenesis. In this paper, we classify all possible accidental symmetries in the scalar potential of the two-Higgs-triplet model (2HTM). Based on the bilinear-field formalism, we show that the maximal symmetry group of the 2HTM potential is  $SO(4)$  and eight types of accidental symmetries in total can be identified. Furthermore, we examine the impact of the couplings between the SM Higgs doublet and the Higgs triplets on the accidental symmetries. The bounded-from-below conditions on the scalar potential with specific accidental symmetries are also derived. Taking the  $SO(4)$ -invariant scalar potential as an example, we investigate the vacuum structures and the scalar mass spectra of the 2HTM.

### In-person participation

No

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