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Effective field theory for type II seesaw model –symmetric phase v.s. broken phase–

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The two popular frameworks for the effective field theory (EFT) describing physics beyond the standard model are the Standard Model EFT (SMEFT) and the Higgs EFT (HEFT). In this work, we present another framework, called broken phase effective field theory (bEFT), in which we deal directly with mass eigenstate fields after spontaneous symmetry breaking without employing nonlinear realization. We take the type-II seesaw model as an example to demonstrate our approach. We evaluate the Higgs pair production process through the vector boson fusion in the LHC and the Higgsstrahlung process in the linear collider. We find that our bEFT reproduces the type-II seesaw model more accurately than the SMEFT in the large parameter regions.

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