

Scalars 2015

Contribution ID : 22

Connection between a mass of the 2nd Higgs boson and a deviation in the 125 GeV Higgs boson couplings

Content :

Although there is no report for the discovery of additional Higgs bosons at the LHC Run-I, there still remain possibilities that the Higgs sector is extended from the minimal form as in the SM.

One of the most important parameters in non-minimal Higgs sectors is a mass of the second Higgs boson.

In general, such a parameter is taken to be free, but this can be constrained by taking into account the theoretical consistency.

In this talk, we would like to show that we can obtain an upper limit on the mass of the second Higgs boson by using the constraint from perturbative unitarity and vacuum stability.

As a well motivated example, we consider two Higgs doublet models.

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Session classification : --not yet classified--

Track classification : --not yet classified--

Type : --not specified--