Scalars 2015

Contribution ID : 12

Bosonic seesaw mechanism in a classically scale invarianct model

Content :

In the standard model, electroweak symmetry breaking is caused by a negative mass term of the Higgs doublet, while it seems to be ad hoc. We suggest the so-called bosonic seesaw mechanism in a two Higgs doublet model with a classically conformal $U(1)_{B-L}$ extension. After the $U(1)_{B-L}$ breaking, mass terms for the two Higgs doublets are generated through scalar quartic couplings. Their masses are all positive but, nevertheless, the electroweak symmetry breaking is realized by the bosonic seesaw mechanism. The bosonic seesaw is naturally realized by the renormalization group evolutions, although a large hierarchy among the quartic couplings is required. In our model, the heavy Higgs boson masses should be less than 2 TeV, in order to satisfy the perturbativity and the electroweak vacuum stability as well as the naturalness of the electroweak scale.

Primary authors : Mr. YAMAGUCHI, Yuya (Hokkaido University, Shimane University)

Co-authors : Prof. HABA, Naoyuki Haba (Shimane university)

Presenter : Mr. YAMAGUCHI, Yuya (Hokkaido University, Shimane University)

Session classification : --not yet classified--

Track classification : --not yet classified--

Type : --not specified--