

Searching for Higgs from the heavy resonance under the general $U(1)_X$ scenario

Thursday, 23 May 2019 18:00 (20 minutes)

The production of Higgs (h) in association with a Z boson from the neutral beyond the Standard Model (SM) gauge boson such as Z' . We consider a scenario where the SM is extended by a general $U(1)_X$ group. The charges can be constrained by solving the anomaly free conditions. The $U(1)_X$ charge sector can be expressed in terms of charges of the Higgs and the BSM scalar such as x_h and x_Φ respectively. These charges will participate in the couplings between the Z' and the other particles of the model. We have examined that there are certain possibilities where the $Z h$ production from the Z' can be successfully tested at the colliders such as Large Hadron Collider (LHC) and Linear Collider (LC) followed by the reconstruction of Z' . In this scenario the presence of the x_H and x_Φ play a key role in the enhancement of the production cross section, followed by the decay of the h and Z bosons. We also show the current limits on the $U(1)_X$ gauge coupling (g_X) vs the Z' mass comparing with the current bounds obtained by the LHC.

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Session Classification: Electroweak, Top and Higgs Physics

Track Classification: Electroweak, Top and Higgs Physics