

Séminaire

Enhanced di-Higgs signal at LHC and beyond by scalar singlet and colored particle

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The di-Higgs production is an important channel for more direct determination of the Higgs self couplings. We focus on the situation that the production is amplified where the observed Higgs doublet couples with a singlet scalar. The singlet can interact with gluon strongly by the mediation of new colored particles. Here, constraints from the 125 GeV Higgs signal strengths do not restrict the scenario severely. We can probe such a situation by observation of the resonant production of a new singlet-like scalar through the di-Higgs channel. We also address a possible explanation for the 2.4σ excess in the search for Higgs pair production with the $b\bar{b}\gamma\gamma$ final state at the ATLAS experiment.

This talk is based on the ongoing collaboration with Koji Nakamura (KEK & CE RN), Kin-ya Oda (Osaka Univ.), Seong Chan Park and Yasuhiro Yamamoto (Yonsei Univ.).

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