



Contribution ID: 115

Type: parallel talk

The 750 GeV diphoton excess in unified left-right symmetric models from noncommutative geometry

Tuesday 10 May 2016 18:00 (15 minutes)

We discuss a possible interpretation of the 750 GeV diphoton resonance, recently reported at the LHC, within a class of left-right symmetric models with gauge coupling unification. The unification is imposed by the underlying non-commutative geometry (NCG), which in these models is extended to a left-right symmetric completion of the Standard Model (SM). Within such unified left-right symmetric models the Higgs content is restrictively determined from the underlying NCG, instead of being arbitrarily selected as in canonical, non-unified, left-right symmetric models. We show that the observed cross sections involving the 750 GeV diphoton resonance could be realized through a SM singlet scalar field accompanied by colored scalars, present in these unified models. In view of this result we discuss the underlying rigidity of these models in the NCG framework and the wider implications of the NCG approach for physics beyond the SM.

Summary

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Session Classification: Diphoton II