



Contribution ID: 377

Type: parallel talk

Heavy sterile neutrinos and the triple Higgs coupling

Monday 8 May 2017 17:45 (15 minutes)

The discovery of neutrino oscillations calls for an extension of the Standard Model that would generate neutrino masses and mixing. One of the simplest possibilities is the addition of fermionic gauge singlets or sterile neutrinos. TeV-scale realisations of this idea lead to a very rich phenomenology due to the mixing of the new fermions with the left-handed neutrinos of the SM and the large Higgs-neutrino coupling. In a first study, we showed in a simplified 3+1 model with Dirac neutrinos that loops with a heavy neutrino can induce large corrections, up to 30% of the SM one-loop value. These effects are potentially larger in low-scale seesaw models, as we showed by considering the inverse seesaw. I will discuss how fermionic singlets induce large corrections to the triple Higgs coupling and how they can be used to probe neutrino mass models in a regime otherwise difficult to access.

Summary

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Session Classification: Neutrinos & Lepton Flavor I