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Hybrid seesaw leptogenesis and TeV singlets (II)

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We propose a hybrid seesaw model that explains the smallness of Majorana mass splitting in inverse seesaw with couplings of order unity and can furthermore achieve successful leptogenesis. Our hybrid seesaw model has distinguishing features compared to the standard high scale type-I seesaw and inverse seesaw. Firstly, it has much richer phenomenology. Indeed, it predicts new TeV scale physics (including scalars) potentially accessible at present and future colliders and may also have astrophysical and cosmological signatures due to the presence of a light Nambu-Goldstone boson coupled to neutrinos. Secondly, our scenario features an interesting interplay between high scale and TeV scale physics in leptogenesis and enlarges the range of allowed high scale singlet masses beyond the usual 10^9-10^{15} , without large hierarchies in the Yukawa couplings nor small mass splitting among the singlets.

Summary

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