



ID de Contribution: 0

Type: Ordinary

3-Loop Neutrino Mass Models and Phenomenology

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We consider classes of standard model (SM) extensions with a scalar representation (charged singlets, triplet and/or 5-plet) and three generation fermionic representations (right handed neutrinos, triplets or 5-plets). In these models, the neutrino masses are generated at three loops, which provide an explanation for their smallness, and the lightest neutral fermion, is a dark matter candidate. We find that for three generation fermionic representations, the model can be consistent with the neutrino oscillation data, lepton flavor violating processes, give a relic density in agreement with the recent Planck data, and the electroweak phase transition can be strongly first order. We also show that the charged scalars may enhance the branching ratio $h \rightarrow \gamma\gamma$, where as $h \rightarrow \gamma Z$ get can get few percent modification. We also discuss the phenomenological implications of the extra particles at both LHC and future electron-positron colliders.

Summary

Based on arXiv:1304.2055, arXiv:1403.5694, arXiv:1404.2696, arXiv:1404.5917 & A.Ahriche et al., in progress.

Auteur principal: Dr AHRICHE, Amine (U. Jijel)

Co-auteur: Prof. NASRI, Salah (UAEU)

Orateur: Dr AHRICHE, Amine (U. Jijel)

Classification de Session: Neutrino Physics

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