

Hybrid type-II and type-III seesaw solution for the muon $g-2$ anomaly

The muon ($g-2$) anomaly is a longstanding puzzle in particle physics. Both the theoretical prediction and experimental measurement are expected to be improved in the near future. It may be a signal of new physics, and tremendous amount of new physics models are proposed to explain this anomaly. However, many papers focus on the singlet and doublet vector-like lepton extended models without paying much attention to the triplet lepton. Besides, the contributions are negative in the pure triplet scalar extended model. In this talk, we consider a triplet scalar and triplet lepton extended model. This model is well motivated, because it incorporates the type-II and type-III seesaw mechanisms. In this model, there are contributions from the neutral, singly, and doubly charged scalars. Chiral enhancements from the heavy lepton can appear, which are controlled by the SM lepton and triplet lepton mixing angles. After considering the perturbative unitarity and experimental constraints, we find that the muon ($g-2$) can be explained naturally.

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