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Electron and Muon $(g-2)_{e,\mu}$ Anomalous Magnetic Moment in $U(1)_{L_e-L_\mu}$ Symmetry Model

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The nature of neutrino (whether Majorana or Dirac), and the origin of neutrino masses are still mysteries to be resolved. Also, the recent results of $(g-2)_{e,\mu}$ measurements deviate from the Standard Model (SM) predictions and motivate towards the new physics beyond the SM. In this work, we propose a model with the minimal field content in the framework of anomaly free extension of Standard Model; i.e. $U(1)_{L_e-L_\mu}$ symmetry model. We find this model capable of explaining the low energy neutrino phenomenology and anomalous magnetic moment $(g-2)_{e,\mu}$ of electron and muon, simultaneously. The field content is extended by a $SU(2)_L$ singlet scalar field ϕ and three right handed neutrinos N_R ($R = 1, 2, 3$). The neutrino masses are generated using the Type-I seesaw mechanism. The extended model leads to the results, which are in consistency with the experimental values of $(g-2)_{e,\mu}$ and also satisfy all relevant experimental data.

Session

Neutrino Physics

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