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## Muon Anomalous Magnetic Moment and Neutrino Mass in $U(1)_{L_\mu-L_\tau}$ Extended Scotogenic Model

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The value of muon magnetic moment, recently, reported by Fermilab has  $4.2\sigma$  discrepancy with the theoretical prediction which is a robust signal for physics beyond the SM. In this work, we consider  $U(1)_{L_\mu-L_\tau}$  extension of the scotogenic model to explain non-zero neutrino mass and muon ( $g-2$ ), simultaneously. It is known that muon neutrino trident (MNT) process put an upper bound on mass of gauge boson  $M_{Z_{\mu\tau}} < 300$  MeV to accommodate muon ( $g-2$ ) anomaly. We have constrained the  $vev$  of scalar singlet responsible for the mass of gauge boson using low energy neutrino data. We find that there exist a range of  $M_{Z_{\mu\tau}}$  above 300 MeV giving consistent neutrino phenomenology. In this case, it is shown that muon ( $g-2$ ) can be explained by adding a vector like lepton triplet with appropriate  $L_\mu - L_\tau$  charge such that it only couples to muon through inert doublet  $\eta$ . We have, also, investigated the implication of the model for  $CP$  violation and effective Majorana neutrino mass  $m_{ee}$  appearing in neutrinoless double beta ( $0\nu\beta\beta$ ) decay process.

### Session

Neutrino Physics

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