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Constraining an extra dimensional $U(1)_{L\mu} - L\tau$ model through electron-neutrino elastic scattering

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Extra dimensional models are very popular and useful framework to address many important problems in particle physics. On the other hand extension of the Standard Model (SM) with an extra $U(1)_{L\mu-L\tau}$ gauge group is a great motivation to solve muon ($g-2$) anomaly (recently 5.1 sigma deviation). Here we considered an extra dimensional $U(1)_{L\mu} - L\tau$ model where only the Kaluza-Klein (KK) modes of the extra dimensional gauge boson can propagate in the bulk and the other SM particles are localised on the SM brane. In this work, we consider constraints on our model from the experiment e.g. CHARM-II, through a powerful process to explore new physics beyond the Standard Model which includes electron-neutrino elastic scattering. We find interesting shape of the allowed region when the inverse size of the extra dimension is around 100 MeV. Also, we will check the parameter space in our model to solve muon ($g-2$) anomaly.

Designation

Student

Reference publication/preprint

Institution

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