

# New physics contributions to muon anomalous magnetic moment and kinetic mixing in left-right model

Friday 31 July 2020 13:36 (3 minutes)

We estimate the new physics contributions to the calculation of muon anomalous magnetic moment,  $a_\mu = \frac{g_\mu - 2}{2}$  in

a  $U(1)_{L_\mu - L_\tau}$  extension of left-right symmetric model based on the gauge group  $SU(2)_L \times SU(2)_R \times U(1)_{B-L} \times SU(3)_C \times U(1)_{L_\mu - L_\tau}$ .

The gauged  $U(1)_{L_\mu - L_\tau}$  symmetry helps in realising low-scale inverse seesaw mechanism for origin of neutrino mass and allows MeV scale mass

for the associated  $Z_{\mu\tau}$  gauge boson

which is required for explaining muon anomalous magnetic moment. The new  $Z_{\mu\tau}$  gauge boson when lies at MeV scale can also explain

the unexpected dip in the energy spectrum of high energy cosmic neutrinos reported by the IceCube Collaboration. It is also capable of mediating

interactions between dark matter particles and muons inside a NS. Since there are two  $U(1)$  groups in the model, we show kinetic mixing between them.

We also show correlation plots for the variation of gauge coupling with the mass of  $Z_{\mu\tau}$  gauge boson.

## Secondary track (number)

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**Session Classification:** Beyond the Standard Model - Posters

**Track Classification:** 03. Beyond the Standard Model