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Probing Alternative Left-Right Symmetric Model in the leptonic sector.

In this work[1], we examine the constraints coming from the leptonic sector on the parameter space of the alternative left-right model. These left-right scenarios emerge from the breaking of a grand unified theory based on the E_6 symmetry group and introduces new exotic quarks and light bosons in its particle spectrum. For the current exploration, we focused on both flavour-conserving observables, the muon anomalous magnetic moment, and flavour-violating processes, $\mu \rightarrow e\gamma$ decay and $\mu - e$ conversion in Al, Ti and Au nuclei. We performed the multi-dimensional scans of the model parameter space and showed that the contributions to the anomalous magnetic moment remain below the experimental measured value at 2σ . However, the current and future experimental sensitivities to flavour-violating muon processes are expected to put lower bounds on the mass of the peculiar $SU(2)_R$ gauge boson of the model. This provides complementary constraints relative to existing limits, which are indirect and derived from collider bounds on the mass of the associated neutral gauge boson Z' .

References: 1. M. Frank, B. Fuks, S. K. Garg, C. Majumdar, P. Poulou and S. Senapati, "Leptonic probes of Alternative Left-Right Symmetric Models," [arXiv:2409.15218 [hep-ph]].

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Field of contribution

Phenomenology

Author: GARG, Sumit K. (Manipal Centre for Natural Sciences, Manipal Academy of Higher Education, Dr.T.M.A. Pai Planetarium Building, Manipal-576104, Karnataka, India)

Presenter: GARG, Sumit K. (Manipal Centre for Natural Sciences, Manipal Academy of Higher Education, Dr.T.M.A. Pai Planetarium Building, Manipal-576104, Karnataka, India)

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