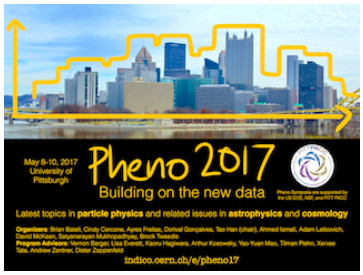

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Construction of lepton mass matrices and TeV-scale phenomenology in the minimal left-right symmetric model

Monday 8 May 2017 18:30 (15 minutes)

We develop a systematic procedure of constructing lepton mass matrices that satisfy all the experimental constraints in the light lepton sector of the minimal left-right symmetric model with type-I seesaw dominance. This method is unique since it is applicable to the most general cases of type-I seesaw with complex electroweak vacuum expectation values in the model. Using this method, we investigate the TeV-scale phenomenology without fine-tuning of model parameters when the light neutrino masses have normal hierarchy, with focuses on the charged lepton flavour violation, neutrinoless double beta decay, and electric dipole moments of charged leptons. We examine the predictions for typical ranges of associated observables such as branching ratios of rare lepton decays, and study how those experimental constraints affect the model parameter space. The most notable result is that the model parameter regions that allow very small light neutrino masses are disfavored by the present experimental constraints. Furthermore, we also find that the mass of the lightest heavy neutrino should be relatively small to satisfy those constraints.

Summary

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