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Scotogenic Dark Matter symmetry from A_4 Flavor symmetry

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“Scotogenic” Model is a very popular model to explain the dark matter (DM) stability along with the neutrino mass generation in a very simple and elegant way. However, in this model ‘ad-hoc’ Z_2 symmetry is needed to explain the DM stability and it does not shed any light on the flavor structure of neutrino, that’s why for the explanation of flavor structure of neutrino one has to add another symmetry apart from Z_2 symmetry in the Scotogenic model. In this talk, we show how dark symmetry and flavor structure of neutrino can be explained just by adding only one symmetry on top of the Standard Model symmetry. In this work we have added A_4 flavor symmetry which is able to describe the flavor structure of neutrino and the breaking of A_4 into its sub-group Z_2 will explain the DM stability. In this work neutrino mass is generated through Scoto loop + Seesaw mechanism. We show that the model successfully explains the DM phenomenology along with the latest neutrino oscillation data. Also, our model provide testable prediction for the neutrino-less double beta ($0\nu\beta\beta$) decay experiments.

Session

Beyond the Standard Model

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