Contribution ID: **112** Type: **not specified**

Scotogenic origin of θ_{13} and dark matter

We analyze a flavor symmetric model to understand neutrino masses and mixing based on the A_4 discrete symmetry. Here both minimal type-I seesaw and scotogenic mechanisms contribute towards explaining tiny light neutrino mass. The minimal type-I seesaw generates tribimaximal neutrino mixing at the leading order. The scotogenic contribution acts as a deviation from this first-order approximation of the lepton mixing matrix to yield the observed non-zero θ_{13}, and to accommodate a potential dark matter candidate. Apart from predicting interesting correlations between different neutrino parameters as well as between neutrino and the model parameters, the model also predicts the specific values for absolute neutrino masses, leptonic Dirac, and Majorana CP phase, and effective mass parameter appearing in the neutrinoless double beta decay.

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Session Classification: Parallel Session B

Track Classification: Particle Physics