

# Exploring type-I seesaw under $S_3$ modular symmetry

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This work's novelty lies in using the simplest group i.e.  $\Gamma_2 \cong S_3$  modular symmetry implemented on the canonical seesaw to explain neutrino phenomenology. Here, we construct and classify models based on the doublet and singlet representations of supermultiplets under  $S_3$  discrete symmetry along with their respective modular weights, allowing a mass matrix for the neutrino sector with minimal use of free parameters. These modular symmetries become advantageous in avoiding the requirements of multiple flavon fields and the intricacies of vacuum alignments. In this way, we endeavor to clarify the effect and significance of modular  $S_3$  symmetry, which is considered in explaining the neutrino phenomenology viable with the current observations. Additionally, we also shed some light on the neutrinoless double beta decay.

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