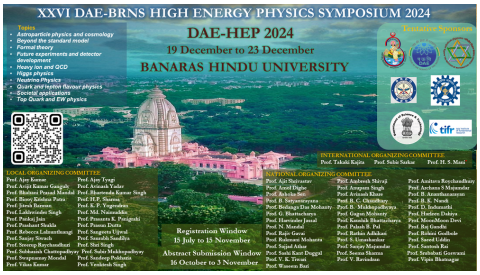

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Implication on neutrino masses and mixing at fixed point $\tau = i$ in modular symmetries

We explore the implications of unbroken symmetries at the self-dual point $\tau = i$ within the framework of modular invariant theories. Assuming that lepton doublets transform under a finite modular group and that light neutrino masses stem from the Weinberg operator expressed in modular form, we identify a distinct residual flavor symmetry for neutrinos that depends on the modular weight. In cases with antisymmetry, one neutrino remains massless, while the other two can be degenerate if the mass matrix is real. These findings do not depend on the level Γ_N. If charged leptons display a corresponding residual symmetry, they affect a column of the leptonic mixing matrix, leading to specific relationships between the mixing angles and the Dirac CP phase. The presence of these (anti)symmetries facilitates the use of conventional flavor symmetry techniques.

Field of contribution

Phenomenology

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