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Discrete family symmetries within the SM predict PMNS, CKM, and Weyl E8 x Weyl E8

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A different finite subgroup of SU(2) for each lepton and each quark family leads to the first-principles determination of the mixing angles for neutrinos, quarks, and their PMNS and CKM mixing matrices. For example, the neutrino θ_{13} = 8.56° and normal hierarchy are predicted. Connections of these subgroups to the j-invariant of elliptic modular functions (and the Monster group) lead to mass ratio predictions of 1:108:1728, which become adjusted to the actual mass values in each family by taking the linear superposition of the two original basis states in each subgroup to form the flavor states. Direct mathematical telescoping upward to R^8 for these subgroups when combined with Lorentz transformations *uniquely* dictates the discrete Weyl E_8 x Weyl E_8 = 'discrete' SO(9,1) at the Planck scale.

Primary author: Dr POTTER, Franklin (Sciencegems.com)

Presenter: Dr POTTER, Franklin (Sciencegems.com)

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