

Title: Leptonic mixing, family symmetries, and neutrino phenomenology

Author(s): Varzielas, I. de Medeiros^{1,3,2}; Felipe, R. Gonzalez^{4,2}; Serôdio, H.²

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Abstract: Tribimaximal leptonic mixing is a mass-independent mixing scheme consistent with the present solar and atmospheric neutrino data. By conveniently decomposing the effective neutrino mass matrix associated to it, we derive generic predictions in terms of the parameters governing the neutrino masses. We extend this phenomenological analysis to other mass-independent mixing schemes which are related to the tribimaximal form by a unitary transformation. We classify models that produce tribimaximal leptonic mixing through the group structure of their family symmetries in order to point out that there is often a direct connection between the group structure and the phenomenological analysis. The type of seesaw mechanism responsible for neutrino masses plays a role here, as it restricts the choices of family representations and affects the viability of leptogenesis. We also present a recipe to generalize a given tribimaximal model to an associated model with a different mass-independent mixing scheme, which preserves the connection between the group structure and phenomenology as in the original model. This procedure is explicitly illustrated by constructing toy models with the transpose tribimaximal, bimaximal, golden ratio, and hexagonal leptonic mixing patterns.

KeyWords Plus: Double-Beta Decay; Parametrization; Leptogenesis

Reprint Address: Varzielas, ID (reprint author), Inst Super Tecn, Dept Fis, Ave Rovisco Pais, P-1049001 Lisbon, Portugal.

Addresses:

1. Inst Super Tecn, Dept Fis, P-1049001 Lisbon, Portugal
2. Inst Super Tecn, Ctr Fis Teor Particulas, P-1049001 Lisbon, Portugal
3. Tech Univ Dortmund, Fak Phys, D-44221 Dortmund, Germany
4. Inst Super Engn Lisboa, P-1959007 Lisbon, Portugal

E-mail Address: ivo.de@udo.edu; gonzalez@cftp.ist.utl.pt; hserodio@cftp.ist.utl.pt

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