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Neutrino Masses and Leptogenesis in a $L_e-L_\mu-L_\tau$ Model

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We present a simple extension of the Standard Model with three right-handed neutrinos in a SUSY framework, with an additional $U(1)_F$ abelian flavor symmetry with a non standard leptonic charge for lepton doublets and arbitrary right-handed charges. We show how it is possible to provide the correct predictions for the mixing angles of the PMNS matrix and for the $r=(\Delta m_{\text{sun}})^2/(\Delta m_{\text{atm}})^2$ parameter, with a moderate fine tuning. The baryon asymmetry of the Universe is generated via thermal Leptogenesis through CP-violating decays of the heavy right-handed neutrinos. We present a detailed numerical solution of the relevant Boltzmann equation accounting for the impact of the distribution of the asymmetry in the lepton flavors.

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