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Quark and Lepton Masses in Universal Seesaw Models with Modular A4 Symmetry

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I will present a study of quark and lepton masses in a universal seesaw with modular A4 symmetry. Light fermion masses arise from mixing with heavy vector-like partners. A SUSY setup with gCP and minimal Z2 is adopted in this model. The global fit uses 17 parameters in total—the complex τ plus 15 real parameters—to describe 18 observed quantities across the CKM and PMNS sectors. The fitted observables agree well with current measurements, demonstrating that the model can account for both CKM and PMNS patterns without extra flavons. This framework yields predictions for the leptonic Dirac phase δ_{CP} , the two Majorana phases, the effective neutrinoless double-beta mass m_{ee} , the lightest neutrino mass (in normal ordering), and the sum of neutrino masses. The predicted values fall within reach of current and near-future measurements, making the framework directly testable in $0\nu\beta\beta$ searches.

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