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Neutrinos Are Darkly Different

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Like the weak interaction itself, the Higgs coupling to the left chiral components of the Dirac bispinors for quarks "knows" which up goes with which down in the universal coupling. However, the simple conjecture that the right chiral components of each are not so distinguished provides for a consistent determination of the quark mass spectra and of
the CKM matrix relating their mass eigenstates (flavors) in terms of general, but perturbative, BSM corrections. The extensions to charged leptons follows the same pattern, but the absence of right-chiral components of Dirac bispinors for neutrinos in the SM and the corresponding mass-independent definition of the flavors of the left-chiral Weyl neutrinos leads naturally to the PMNS matrix being almost tri-bi-maximal due to the definition of the charged lepton flavors by their mass. However, a very different structure for the origin of neutrino mass is then required, which we conjecture is related to the Dark Matter nature of the right-chiral components whether they complete neutrinos to Dirac bispinors or form Majorana neutrinos via the see-saw mechanism.

Mini Symposia (Invited Talks Only)

Author: GOLDMAN, Jack Terrance (Los Alamos National Laboratory)

Co-author: Dr STEPHENSON, JR., Gerard (University of New Mexico)

Presenter: GOLDMAN, Jack Terrance (Los Alamos National Laboratory)

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