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Three level FCNC from Models with a flavored Peccei-Quinn Symmetry

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A Peccei-Quinn (PQ) symmetry is proposed, in order to generate a realistic mass matrix ansatz with five texture-zeros for both quark and lepton sector in the Standard Model (SM). Limiting our analysis to Hermitian mass matrices we show that this requires a minimum of 4 Higgs doublets. The price we pay is to have Yukawa values in the lepton sector much lower than 1, but consistent with the experimental values. Since the PQ charges are non-universal the model features Flavor-Changing Neutral Currents (FCNC) at the tree level. We calculate the FCNC couplings of the most general low-energy effective Lagrangian for the axion in a procedure valid for an arbitrary number of Higgs doublets. Finally, we report the allowed region in the parameter space obtained from the measurements of branching ratios of semileptonic meson decays.

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