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Lepton masses from a flavorful Peccei-Quinn-Froggat Nielsen U(1) symmetry

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We consider a model where a global U(1) symmetry is simultaneously responsible for solving the Strong CP problem à la Peccei-Quinn and for explaining the lepton mass hierarchies à la Froggatt-Nielsen. The axion resulting from the symmetry breaking can have sizeable flavor violating couplings, which propagate to the SM 126 GeV Higgs through scalar mixing. We investigate the bounds from Higgs flavor violating decays in the LHC, as well as projections for HL-LHC and ILC/CLIC.

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