

Extended Standard Model as a 2HDM with six fermion generations

Based on two recent papers [1]-[2] we discuss the enlarging of the Standard Model - up to six fermion generations and two different Higgs doublets, while keeping the same gauge group $SU(3)_c \otimes SU(2)_L \otimes U(1)_Y$ undergoing the SSB to $SU(3)_c \otimes U(1)_{em}$ - in order to have it predicting (i) the quantization of both electric and weak charges; (ii) the muon anomalous magnetic moment discrepancy; (iii) the appropriate massive neutrinos ensuring the seesaw mechanism; (iv) the unaltered CKM matrix in the quark sector; (v) the FCNC cancellation; and (vi) a viable Higgs spectrum providing us with two breaking scales - the old SM one $v \simeq 246$ GeV and a new one at about $V \simeq 1 - 100$ TeV.

[1] A.Palcu, J. Phys. G: Nucl. Part. Phys. 48, 055003 (2021).

[2] A.Palcu, J. Phys. G: Nucl. Part. Phys. 51, 065002 (2024).

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