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A Minimal non-universal EW extension of the Standard Model: A chiral family of models

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We report the most general expression for the chiral charges of a non-universal U(1)' with identical charges for the first two families but different charges for the third one. The model is minimal in the sense that only standard model fermions plus right-handed neutrinos are required. By imposing anomaly cancellation and constraints coming from Yukawa couplings we obtain two different solutions. In one of these solutions, the anomalies cancel between fermions in different families. These solutions depend on four independent parameters which result very useful for model building. We build different benchmark models in order to show the flexibility of the parameterization. We also report LHC and low energy constraints for these benchmark models.

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