

Gauge-Mediated Yukawa Unification in Minimal Standard Model

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In this work, we propose a framework where Yukawa couplings are determined by gauge-terms such as couplings and weights that differentiate fermions from each other. Our ansatz reduces the nine charged fermion Yukawa couplings down to single constant of Yukawa. We also describe the emergence of hierarchies naturally, using Higgs quartic coupling, gauge-terms and differentiation weights, determined by T3 (up-down differentiation) and L (quark-lepton differentiation). At tree-level, using single constant, we predict fermion masses within 31% accuracy compared to experimental values at electroweak scale, with even greater accuracy with charged leptons, within 11%.