

Top A_{FB} and charge asymmetry in chiral $U(1)'$ model with flavored Higgs doublets

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We construct flavor-dependent chiral $U(1)'$ models with a Z' boson which couples to the right-handed up-type quarks in the standard model. To make the models have realistic renormalizable Yukawa couplings, we introduce new Higgs doublets with nonzero $U(1)'$ charges. Anomaly-free condition can be satisfied by adding extra chiral fermions. We show that these models could analyze the discrepancy between the SM prediction and empirical data in the top forward-backward asymmetry at the Tevatron. We also discuss the top charge asymmetry at the LHC in this model. We emphasize that unlike the simple Z' model, our model could be compatible with the stringent constraints from the same sign top pair production because of destructive interferences between contributions from the Z' and Higgs boson exchanges.

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