

W boson mass in gauge-Higgs unification

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The CDF collaboration reported an anomaly of the W boson mass in 2022. We discuss the possibility to explain the anomaly in a gauge-Higgs unification model. We evaluate the W boson mass in the GUT inspired $SO(5) \times U(1) \times SU(3)$ gauge-Higgs unification in the Randall-Sundrum warped space. The muon decay proceeds by the exchange of not only the zero mode of the W boson but also Kaluza-Klein excited modes at the tree level. The anti-de Sitter curvature of the RS space also affects the relationship among the gauge couplings and the ratio of W boson mass to the Z boson mass. The W couplings of leptons and quarks also change. We find that the anomaly can be explained by these effects in the gauge-Higgs unification model.

Alternate track

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Yes

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