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Fake GUT

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It is remarkable that the matter fields in the Standard Model (SM) are apparently unified into the SU(5) representations. A straightforward explanation of this fact is to embed all the SM gauge groups into a simple group containing SU(5), i.e., the grand unified theory (GUT). Recently, however, a new framework "fake GUT"has been proposed. In this new framework, the apparent matter unification can be explained by a chiral gauge group G, G ⊃ SU(5). We emphasize that the SM matter fields are not necessarily embed- ded into the chiral representations to explain the apparent unification. In this presentation, we talk about the fake GUT model based on SU(5) × U(2)H. Here, SU(3)c in the SM is from SU(5) while SU(2)L × U(1)Y are from the diagonal subgroups of SU(5) × U(2)H. We also show that this framework predicts rather different decay patterns of the proton, compared to the conventional GUT.

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