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$SO(10)$: a Case for Hadron Colliders

Tuesday 26 July 2022 16:36 (18 minutes)

In this talk I will discuss recent results [1] on the mass scales in the $SO(10)$ grand unified theory based on the following minimal Higgs representation content: adjoint 45_H, spinor 16_H and complex vector 10_H, with higher-dimensional operators on top of renormalizable interactions. Consistency of the theory requires a scalar doublet leptoquark, a scalar gluon octet and a scalar weak triplet to lie below 10 TeV energy [1] and potentially accessible even at the LHC. In particular, the latter naturally induces a deviation in W-mass from its Standard Model value [2], relevant for the recent CDF-measurement.

These signatures are intimately connected with the prediction of proton lifetime below 10^{35}yr, to be probed in the new generation of proton decay experiments.

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