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A modified BESS model as an effective description of the strong electroweak symmetry breaking

Facing the plethora of alternative hypotheses for the mechanism of electroweak symmetry breaking (ESB) it is highly desirable to typify its phenomenology using the effective Lagrangians. The BESS (Breaking Electroweak Symmetry Strongly) model effectively describes a Higgsless ESB mechanism accompanied by a hypothetical strong triplet of vector resonances. The model couples the vector resonances universally to all SM fermion generations. We have modified the model by allowing direct interactions of the vector triplet with the third quark generation only. This is motivated by the extraordinary mass of the top quark which is close to the ESB scale. In addition, we have introduced new Lagrangian terms admitted by the model's symmetries. Our modifications of the BESS model can significantly relax the low-energy limits on the original BESS model's parameters. Here, beside formulating our model, we present its basic phenomenology and compare it to the original BESS model. Our preliminary calculations suggest the possibility to use some of the LHC processes to detect the new vector resonances. However, to make a final assessment a more involved and realistic analysis is needed.

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