

## Can the symmetry breaking in the SM be caused by the top-Higgs Yukawa interaction?

In reference [1] a simple SU(3) gauge model including a Yukawa interaction with a scalar field, was considered. Its two loop effective potential for the scalar field, predicted a 126 GeV Higgs mass after the minimum of the potential was fixed at a mean scalar field giving a 173 GeV Top quark mass. A high value of the strong coupling value was required to obtain these results ( $\alpha$  close to 1). Therefore, in the present investigation, we are considering a running strong coupling, in order to decide whether or not, the usual values of the strong interactions can justify the former determination of the physical values of the Higgs and top quark masses in [1]. The results of this ongoing search will be exposed. A positive outcome of the study will suggest the possibility of basing the SM breaking of symmetry on the so called "second minimum" of this model, also might support an important role of QCD in determining the particle's mass spectrum and consequently a radical reformulation of the SM.

[1] A. Cabo Montes de Oca, Eur. Phys. J. C 71, 1620 (2011)

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