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# Elementary particle masses and electroweak scale from a non-perturbative anomaly: towards a lattice demonstration.

A novel dynamical mechanism of elementary particle mass generation has recently been conjectured and numerically demonstrated by lattice simulations (Phys .Rev. Lett. 123 061802 (2019)) in a simple SU(3) gauge model where a SU(2) doublet of strongly interacting fermions is coupled to a complex scalar field doublet through a Yukawa and a Wilson-like term. As a first step towards building a natural (‘a la ’t-Hooft) extension of the Standard Model, we argue that in the presence of weak gauge interactions the mechanism above, acting as a kind of non-perturbative anomaly, yields for both elementary fermions and weak gauge bosons effective masses proportional to the $\Lambda$–parameter of the theory, with particle–specific gauge coupling dependent prefactors. The low energy effective description of models based on such a mechanism is discussed, with focus on the predictive power about the scale of New Physics ($\Lambda$–parameter in the few TeV range) and its relation to the electroweak scale (and the Higgs boson mass).

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