

Elementary particle mass generation without Higgs

Thursday, 16 February 2023 14:50 (30 minutes)

We discuss how a recently discovered non-perturbative field-theoretical mechanism giving mass to elementary fermions can be extended to generate a mass for the electro-weak bosons, when weak interactions are introduced, and can thus be used as a viable alternative to the Higgs scenario. We will show that this new scheme, successfully tested in extensive lattice simulations, offers a solution of the Higgs mass naturalness problem (as there is no Higgs around), an understanding of the fermion mass hierarchy (as related to the ranking of gauge couplings), a physical interpretation of the electro-weak scale (as the scale of a new super-strong interaction) and unification of gauge couplings (without supersymmetry).

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