

Testing a non-perturbative mechanism for elementary fermion mass generation

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Based on a recent proposal according to which elementary particle masses could be generated by a non-perturbative dynamical phenomenon, alternative to the Higgs mechanism we carry out lattice simulations of a model where a $SU(2)$ fermion doublet, subjected to non-Abelian gauge interactions, is also coupled to a complex scalar field doublet via a Yukawa and an “irrelevant” Wilson-like term. We present preliminary numerical results using naive fermions in quenched approximation both in the Wigner and in the Nambu-Goldstone phase of the model, focusing on the observables relevant to check the occurrence of the conjectured dynamical fermion mass generation effect in the continuum limit of the critical theory in its spontaneously broken phase.

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