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Generic constraints on new fermions from the Higgs data

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I will present the fit of the Higgs boson rates, based on all the latest collider data, in the effective framework for any Extra-Fermion(s) [EF]. The variations of the fit with the effective parameters will be described; the obtained fits can be better than in the Standard Model (SM). I will show how the determination of the EF loop-contributions to the Higgs couplings with photons and gluons is relying on the knowledge of the top and bottom Yukawa couplings; for determining the latter coupling, the relevance of the investigation of the Higgs production in association with bottom quarks will be emphasized. In the instructive approximation of a single EF, I will show that the constraints from the fit already turn out to be quite predictive. In the case of an unmixed extra-quark, non-trivial fit constraints will be pointed out on the Yukawa couplings for masses up to ~ 200 TeV. In particular, I will define the extra-dysfermiophilia, which is predicted at 68.27% C.L. for any single extra-quark; an example will be given. I will finally demonstrate that among any components of SM multiplet extensions, the extra-quark with a $-7/3$ electric charge is the one preferred by the present Higgs fit.

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