

General Composite Higgs Models

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We construct pseudo-Goldstone composite Higgs models that are not necessarily of moose-type and characterize the main properties these models should have in order to give rise to a Higgs mass at around 125 GeV. We assume the existence of relatively light and weakly coupled spin 1 and 1/2 resonances. In absence of a symmetry principle, we introduce the Minimal Higgs Potential (MHP) hypothesis: the Higgs potential is assumed to be one-loop dominated by the SM fields and the above resonances, with a contribution that is made calculable by imposing suitable generalizations of the first and second Weinberg sum rules. We show that a 125 GeV Higgs requires light, often sub-TeV, fermion resonances. We also point out of a possible problem in finding UV completions of the partial compositeness paradigm, when extended to all SM fields, as necessary to alleviate current flavour bounds.

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