Contribution ID: **104**   Type: **not specified**

General Composite Higgs Models

Wednesday 22 May 2013 17:00 (15 minutes)

We construct a general class of pseudo-Goldstone composite Higgs models, within the minimal SO(5)/SO(4) coset structure. We characterize the main properties these models should have in order to give rise to a Higgs mass 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.

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Session Classification: Parallel Session on Flavor Physics + Composite Models