



Contribution ID: 20

Type: **not specified**

A minimally tuned composite Higgs from an extra dimension

Thursday 25 April 2013 11:00 (30 minutes)

Summary

In this talk I will present the 5D implementation of a specific class of composite Higgs models with a (pseudo-)Goldstone boson Higgs from the $SO(5)/SO(4)$ coset. My starting point is the observation, recently pointed out in the context of 4D deconstructed models, that in order for the ratio v/f to be a good measure of the fine tuning and to not underestimate it, the Higgs potential must be the sum of at least two independent periodic functions of the Higgs field h , generated at the same order in the elementary-composite mixing expansion. This fact constrains the fermionic content of the model. The simplest way to satisfy this requirement is to couple the left-handed top quark to a symmetric representation of $SO(5)$, a 14, and the right-handed top quark to an $SO(5)$ singlet. I will show how this model predicts the existence of light fermionic resonances and I will discuss the spectrum, the constraints coming from electroweak precision tests and the implications on the Higgs mass. I will also show how the tuning in the explicit 5D realization is found to be less severe than expected from simple NDA arguments. Finally I will briefly mention the phenomenological implications of the model, which predicts a light exotic state of charge $8/3$ giving rise to striking cascade decays into three W s and a b quark.

Presenter: Dr TORRE, Riccardo (Dipartimento di Fisica - Università di Pisa and INFN Sezione di Pisa)