Contribution ID: **209**   Type: **not specified**

Composite Higgs Dynamics on the Lattice

Monday 29 August 2016 18:30 (30 minutes)

We investigate the spectrum of the SU(2) gauge theory with
Nf = 2 flavors of fermions in the fundamental representation, in the
continuum, using Lattice simulations.

This model provides a minimal template which has been used for
different strongly coupled extensions of the Standard Model ranging from
composite (Goldstone) Higgs models to intriguing types of dark
matter candidates, such as the SIMPs.
Here we will focus on the composite Goldstone Higgs paradigm, for
which this model provides a minimal UV complete realization in terms
of a new strong sector with fermionic matter.

After introducing the relevant Lattice methods used in our
simulations, we will discuss our numerical results.
We show that this model features a SU(4)/Sp(4) ˜ SO(6)/SO(5) flavor
symmetry breaking pattern, as expected, and estimate the value of its
chiral condensate.
Finally, we present our results for the mass spectrum of the lightest
spin one and zero resonances, analogue to the QCD ρ, a_1, σ,
η', a_0 resonances, which are relevant for searches of new, exotic
resonances at the LHC.

Summary

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Session Classification: Section G

Track Classification: Section G: Strongly Coupled Theories