



Contribution ID : 153

Type : Contributed talk

Probing the interplay between TeV scale heavy vector resonances and top partners at the LHC

Tuesday, 24 May 2016 16:20 (20)

Fermionic and vector resonances are a generic prediction of theories where electroweak symmetry breaking is triggered by new strongly interacting dynamics at the TeV scale.

We work in a concrete, predictive “discrete” **two site** prescription of the **Composite Higgs model** where the spontaneous breaking of the $SO(5)/SO(4)$ coset and gives the Standard Model gauge bosons and six heavy vector resonances. We implement a **partially composite scenario** for the top sector which gives us the $1/3$, $2/3$ and $5/3$ charged top partners. We focus on the **phenomenology of the heavy vector resonances** where the parameter space is able to account for the direct and indirect (electroweak and flavor precision) constraints and also satisfies naturalness criteria. These considerations allow us to study the implications of the charge $2/3$ top partners (T') on the vector resonances owing to a mild hierarchy between the top partners and the heavy vector resonances. We find that when kinematically allowed, heavy vector resonances decay to top partners instead of pure Standard Model final states. The decay modes, where T' is singly produced can be used to improve the search for top partners from vector resonances and thereby discover (exclude) these vector resonances itself at the 13 TeV run of the LHC.

Primary author(s) : JAIN, Bithika (KIAS)

Co-author(s) : BACKOVIC, Mihailo (Louvain U., CP3); LEE, Seung Joon (Korea University); FLACKE, Thomas (Korea University)

Presenter(s) : JAIN, Bithika (KIAS)

Session Classification : BSM 2

Track Classification : SUSY/Higgs/BSM