



Contribution ID: 86

Type: **parallel talk**

Heavy Colour-Octet Particles at the LHC

Monday 4 May 2015 18:15 (15 minutes)

The top quark may hold the key to new physics associated with the electroweak symmetry-breaking sector. Many models beyond the Standard Model, especially those with a colour-triplet top-quark partner, contain a heavy colour-octet state. The “naturalness” argument for a light Higgs boson suggests that the colour octet can be pair-produced with large cross sections at the Large Hadron Collider (LHC). It may decay preferentially via a top partner to a color-singlet state – a candidate for cold dark matter.

The resulting experimental signatures of such new physics may be distinctive, yet challenging to disentangle. We systematically categorize the new particles according to their spin and gauge quantum numbers. Optimizing the search strategy, we study the LHC’s expected discovery reach. Furthermore, we explore the determination of the new particles’ properties, such as spin, couplings, and whether the fermionic octet is a Majorana particle.

Authors: FREITAS, Ayres (University of Pittsburgh); CHEN, Chien-Yi (Brookhaven National Laboratory); LEE, Keith; HAN, Tao (University of Pittsburgh)

Presenter: LEE, Keith

Session Classification: BSM II