



Contribution ID: 540

Type: Poster

Tasting the SU(5) nature of Supersymmetry at the LHC

Saturday 6 August 2016 18:00 (2 hours)

We discuss a recently found relation confined to the sector of up-type (s)quarks within supersymmetric SU(5) theories. We show that this relation remains stable under renormalization group evolution between the unification and the TeV scales. It thus allows to test the SU(5) hypothesis based on the observation of squarks at the LHC. We investigate the possibilities opened by this new window on the GUT scale in order to find TeV-scale SU(5) tests realizable at the LHC. These SU(5) tests appear as relations among observables involving either flavour violation or chirality flip in the up-(s)quark sector.

We present a variety of tests, which appear as relations among observables involving flavour violation or chirality flips and rely on the techniques of top polarimetry, charm-tagging, or Higgs detection from cascade decays. We consider the cases of heavy Supersymmetry, natural Supersymmetry, and top-charm Supersymmetry. We find that O(10) to O(100) events are needed to obtain 50% of relative precision at 3-sigma significance for all of these tests [Phys. Lett. B 742 (2015) 69-73, JHEP 05 (2015) 091].

Finally, we will discuss a more general case. The corresponding analysis relies on Bayesian statistics including a Markov Chain Monte Carlo study [work in progress].

Primary author: Dr HERRMANN, Bjorn (Unite Reseaux du CNRS (FR))

Presenter: Dr HERRMANN, Bjorn (Unite Reseaux du CNRS (FR))

Session Classification: Poster Session

Track Classification: Beyond the Standard Model