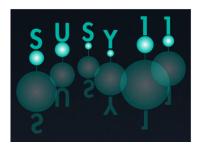
Supersymmetry 2011 (SUSY11)



Contribution ID: 354 Type: not specified

Weak-triplet, color-octet scalars and the CDF dijet excess

Monday, 29 August 2011 11:55 (20 minutes)

We extend the standard model to include a weak-triplet and color-octet scalar. This 'octo-triplet' field consists of three particles, two charged and one neutral, whose masses and renormalizable interactions depend only on two new parameters. The charged octo-triplet decay into a W boson and a gluon is suppressed by a loop factor and an accidental cancellation. Thus, the main decays of the charged octo-triplet may occur through higher-dimensional operators, mediated by a heavy vectorlike fermion, into quark pairs. For an octo-triplet mass below the t\bar{b} threshold, the decay into Wb\bar{b} or Wb\bar{s} through an off-shell top quark has a width comparable to that into c\bar{s} or c\bar{b}. Pair production with one octo-triplet decaying into two jets and the other decaying into a W and two soft b jets may explain the dijet-plus-W excess reported by the CDF Collaboration. Using a few kinematic distributions, we compare two mechanisms of octo-triplet pair production: through an s-channel coloron and through the coupling to gluons. The higher-dimensional operators that allow dijet decays also lead to CP violation in B_s - \bar B_s mixing.

Presenter: Mr KRNJAIC, Gordan (Johns Hopkins, Fermilab)

Session Classification: Parallel Session 3