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

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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.

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