

SEARCH FOR NEW CHARGED GAUGE BOSON W' VIA PHENOMENOLOGY OF THE LEFT-RIGHT SYMMETRIC MODEL AT HADRON COLLIDERS

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ABSTRACT

In this article, a search for signatures of the hypothetical new heavy charged gauge boson W' in proton-proton collisions at the Large Hadron Collider (LHC) with center-of-mass energy range from 6 to 14 TeV and in proton-antiproton collisions at the Fermilab Tevatron Collider with center-of-mass energy of 1.96 TeV. The production of W' and its decay were simulated via the decay channel to top and anti-bottom by using Monte Carlo events generator programs. The events were simulated according to the extension of Standard Model (SM) and the Left-Right symmetry Model (LRSM) based on the gauge symmetry group $SU(3)_C \times SU(2)_L \times SU(2)_R \times U(1)_{B-L}$. The LRSM model exhibits signatures of new physics Beyond the Standard Model (BSM) at the hadron colliders. The most interesting arising from the LRSM is the production and decay of new boson W' . We present analysis of detecting the signal of W' bosons using the process $pp(\bar{p}) \rightarrow W' \rightarrow t\bar{b} \rightarrow \ell \nu b\bar{b}$ in final state with (electrons or muons) and missing transverse energy. The production of W' boson was found at the LHC at center of mass energy 10 TeV with mass 1TeV and the production cross section of 13.31pb.

Keywords: LHC, Tevatron, Left-Right Model, W' boson, Monte Carlo Simulation.