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Vector Boson + jets production at the Tevatron

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Studies of associated production of a vector bosons with heavy quarks (b/c) provide important tests of perturbative quantum chromodynamics calculations, important constraints on parton distribution functions, and good understanding of major backgrounds in Higgs studies and searches for new phenomena. We present several measurements of vector boson with heavy quark processes production at the Tevatron experiments, CDF and D0. We present measurements of W+bX and W+cX production and the ratio of Z+bb(bar) to Z+ jets production using Run 2 Tevatron data collected by the D0 detector. The measurements are performed for the integrated acceptance as well differentially as a function of leading jet transverse momenta. We also present first measurements of the cross section of photon plus bottom quark pair production in proton-antiproton collisions at sqrt(s)=1.96 TeV using Tevatron data collected by the D0 experiment as well as the ratio of cross sections for photon plus two b-quark jets to photon plus b-jets production as a function of photon transverse momentum. We present the first measurements of W/Z+c production at low c-quark pT (pT < 15 GeV) by measuring the cross-section ratios of σ(W+D*)/σ(W) and σ(Z+D*)/σ(Z) in the W/Z leptonic decay channels, for p_T(D*)>3 GeV with data collected by the CDF detector. We also present a search for Upsilon(1S) production in association with a vector boson using data collected by the CDF detector, providing the best cross-section limits for these processes and also providing a guide to limits on new physics processes producing an Upsilon+W/Z. In all cases, results are compared to current theory calculations as well as predictions from Monte Carlo generators.

Summary

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