

XX International Workshop on Deep-Inelastic Scattering and Related Subjects



Contribution ID: 82

Type: **not specified**

Studies of vector boson+jet production with ATLAS

Tuesday 27 March 2012 14:40 (20 minutes)

The production of jets in association with a W or Z boson in proton-proton collisions at 7 TeV is an important process to understand in QCD. The cross section, differential in several kinematics variables, has been measured up to high jet multiplicities and compared to new higher-order QCD calculations. The ratio of $(Z + \text{a single jet})/(W + \text{a single jet})$ can provide a very precise test of QCD and has also been measured. In addition, the cross sections for vector bosons produced with bottom jets, $Z+b\text{-jet}$ and $W+b\text{-jet}$, have been measured and compared to NLO QCD calculations. Overall, the cross sections demonstrate the need for the inclusion of higher-multiplicity matrix elements in the calculations, even in cases where a parton shower simulation is present.

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Session Classification: Hadronic final states

Track Classification: Hadronic final states