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## Measurements of vector bosons and vector bosons plus jet production with the ATLAS detector

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Neutral and charged current Drell-Yan processes at the LHC provide unique tool to study various QCD and EW effects. Measurements differential in invariant mass of the lepton pair and lepton or pair rapidity are sensitive to the parton density functions. Measurements of the transverse momentum of the Z boson study QCD radiation effects. Lepton forward-backward asymmetry in the NC process provides a measure of the weak mixing angle. The production of jets in association with a W or Z boson in proton-proton collisions at 7 TeV study multi-leg QCD diagrams and probe electroweak production via vector-boson fusion mechanism. Measurements of vectors bosons in association with heavy flavor, such as  $W+c$  and  $W+b$  production, have unique sensitivity to the heavy quark density of the proton. Differential cross sections are presented and compared to QCD predictions at NLO and NNLO.

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