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Drell-Yan and vector boson plus jets measurements with the ATLAS detector

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The inclusive production of W and Z bosons as well the off-shell Z/gamma production are standard candles at hadron colliders. The measurement of their production cross-sections can be compared to theory calculations at NNLO QCD and have an impact on our knowledge of the parton densities of the proton. Run-1 studies carried out by the ATLAS Collaboration are reviewed and first LHC Run-2 results will be included if available.

Measurements of the transverse momentum of Z/gamma bosons and their decay lepton angular decorrelation with the ϕ^* observable have been performed in different di-lepton invariant mass and rapidity regions. These measurements are sensitive to soft resummation effects and hard jet emissions for small and large momentum transfers, respectively, probing QCD in a unique way.

Productions of light and heavy-flavour jets in association with a W or a Z boson in proton-proton collisions are important processes to study QCD in multi-scale environments and have sensitivity to parton density functions. The ratio of (Z+jets)/(W+jets) provides a precise test of QCD due to the large cancellations of theoretical and experimental uncertainties.

additional information

Submitted on behalf of the ATLAS Standard Model Physics Group by the ATLAS Speakers Committee representative Alex Read (a.l.read@fys.uio.no). Alex is not the speaker! A speaker will be selected by the Speakers Committee when the abstract is accepted.

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