Measurements of jet and photon production properties in pp collisions with the ATLAS detector

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Summary

Several aspects of the jet and photon production in pp collisions have been measured by the ATLAS collaboration. The measurements of the production cross sections of inclusive, di- and tri-jets, together with inclusive and di-photons probe the dynamics of QCD and can constrain the parton proton structure. Ratios of inclusive cross sections measured at different centre-of-mass energies allow for reduced experimental and/or theoretical uncertainties.

The cross section for photons produced in association with jets is also measured as a function of various kinematic variables describing the photon+jet system. The cross sections are measured and compared to expectations based on next-to-leading order QCD calculations, as well as to next-to-leading order Monte Carlo simulations. The measurement of the dijet azimuthal decorrelations is sensitive to the strong coupling constant. Measurement of splitting scales in the kt clustering algorithm using jets from W+jet events provide a way to investigate jet clustering at different resolution scales. These measurements constitute precision tests of QCD in a new energy regime

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