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Measurement of photon production cross sections with the ATLAS detector

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The production of prompt isolated photons at hadron colliders provides a stringent test of perturbative QCD and can be used to probe the proton structure. The ATLAS collaboration has performed precise measurements of the inclusive production of isolated prompt photons at a center-of-mass energy of 13 TeV, differential in both rapidity and the photon transverse momentum. In addition, the integrated and differential cross sections for isolated photon pairs at 8 TeV have been measured. The results are compared with state-of-the-art theory predictions at NLO in QCD and with predictions of several MC generators.

The production of prompt photons in association with jets provides an additional testing ground for perturbative QCD (pQCD) with a hard colourless probe less affected by hadronisation effects than jet production. The ATLAS collaboration has studied the dynamics of isolated-photon plus jet production in pp collisions at a centre-of-mass energy of 8 and 13 TeV, which will be presented and discussed.

Experimental Collaboration

ATLAS

Presenter: TURRA, Ruggero (Università degli Studi e INFN Milano (IT))**Session Classification:** QCD and hadronic physics**Track Classification:** QCD and Hadronic Physics