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Tests of Perturbative QCD with Photon Final States at the ATLAS Experiment

The production of prompt isolated photons at hadron colliders provides a stringent test of perturbative QCD and can be used to probe the gluon density function of the proton.

The ATLAS collaboration has performed numerous cross section measurements of prompt photon production, among which are a precise measurement of the production of isolated prompt photons in association with heavy flavor jets and a first measurement of the production cross-section of tri-photon final states at a center of mass energy of 8 TeV, as well as a photon plus jet cross section measurement at 13 TeV. If available, a measurement of diphotons in association with jets and a ratio of photon cross sections between 8 and 13 TeV will also be presented. The results are compared with state-of-the-art theory predictions, indicating several interesting discrepancies.

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