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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 gluon density function of the proton. 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 pair production and -most recently for the first time - the tri-photon production 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. In particular the results of the tri-photon production highlight interesting discrepancies to advanced theory calculations.

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