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Studies of photon production in association with jets at the ATLAS detector

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The production of prompt photons in association with jets in proton–proton collisions provides a testing ground for perturbative QCD (pQCD) with a hard colourless probe less affected by hadronisation effects than jet production. The measurements of the angular correlations between the photon and the jets can be used to probe the dynamics of the hard-scattering process. We present here a cross-section measurement using final states with at least one, two or three hadronic jets in addition to an isolated photon, differential in a wide range of kinematic variables describing the photon+jet production dynamic. Colour-coherence effects were investigated in events with a photon accompanied by two jets. Moreover, we present the latest results on the measurement of isolated photons with jets at 13 TeV as well as on the production of photon-pairs in association with jets. We will also present for the first time measurements on the differential cross sections of isolated-photon plus heavy-flavour jet production at 8 TeV. The results are compared to recent theoretical predictions.

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