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QCD anatomy of photon-isolation

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In order to differentiate photons produced from different origins at hadrons collider, it is necessary to impose some isolation requirements. For cones with small radius R, photon isolation effect can be captured by a fragmentation function describing the fragmentation of a parton into a photon accompanied by soft radiation. We computed these fragmentation functions for fixed energy cone and Frixione cone to gain a better understanding of the effect of the isolation parameters on the cross section of $pp \to \gamma + X$. The fragmentation function prediction is compared to the NLO predictions. Finally, we resum the leading logarithms of R and of ϵ_γ the ratio of energy inside the cone to the photon energy and compared it to the measurement performed at ATLAS.

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