



# ATLAS NOTE

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## Reconstruction and Identification Efficiency of Inclusive Isolated Photons

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### Abstract

From the data collected by the ATLAS experiment from proton-proton collisions at the LHC a measurement of the inclusive prompt photon cross section is now possible. Photons are selected from identification criteria based on calorimeter shower shapes and required to fulfill calorimetric isolation. One of the fundamental ingredients of such a measurement is an accurate estimate of the photon reconstruction and identification efficiency and the associated uncertainties in different regions of pseudo-rapidity and transverse energy. This note investigates the discrepancies observed in the distribution of the calorimeter shower shapes in data and simulation, and their effects on the expected photon identification efficiency; explains how a corrected central value (and associated systematic uncertainties) of this efficiency is evaluated from simulation using a data-driven correction technique; presents a validation of the corrected efficiency value using electrons from  $W$  decays; and summarizes the global systematic uncertainties on the photon reconstruction and identification efficiency taking into account all other potential sources.