

Measurement of the jet fragmentation function and transverse profile in proton-proton collisions at a center-of-mass energy of 7 TeV with the ATLAS detector

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Abstract

The jet fragmentation function and transverse profile for jets with $25 \text{ GeV} < p_{T\text{jet}} < 500 \text{ GeV}$ and $|\eta_{\text{jet}}| < 1.2$ produced in proton–proton collisions with a center-of-mass energy of 7 TeV are presented. The measurement is performed using data with an integrated luminosity of 36 fb^{-1} . Jets are reconstructed and their momentum measured using calorimetric information. The momenta of the charged particle constituents are measured using the tracking system. The distributions corrected for detector effects are compared with various Monte Carlo event generators and generator tunes. Several of these choices show good agreement with the measured fragmentation function. None of these choices reproduce both the transverse profile and fragmentation function over the full kinematic range of the measurement..