

Commissioning of advanced b-tagging algorithms in pp collisions at $\sqrt{s}=7$ TeV with the Atlas experiment

The ability to identify jets containing b-hadrons is important for the high-pT physics program of a general-purpose experiment at the LHC such as ATLAS. Two robust b-tagging algorithms taking advantage of the impact parameter of tracks or reconstructing secondary vertices have been swiftly commissioned and used for several analyses of the 2010 data: bottom and top quark production cross-section measurements, searches for supersymmetry and new physics, etc.

Building on this success, several more advanced b-tagging algorithms are commissioned with the 2011 data. All these algorithms are based on a likelihood ratio formalism to compare the signal (b-jet) or background (light or in some cases charm jet) hypotheses, using Monte Carlo predicates. The accuracy with which the simulation reproduces the experimental data is therefore critical and is explained in details, as well as the expected improvement in performance brought in by these new algorithms and some first results about the measurement in data of their performance.

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