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Performance of Jets and Missing Transverse Energy in ATLAS

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After the analysis of the 2010 proton proton collision data provided by LHC, the ATLAS experiment has achieved an accuracy of the jet energy measurement between 2-4% for jet transverse momenta from 20 GeV to about 2 TeV in the pseudo-rapidity range up to |eta|=4.5. The jet energy scale uncertainty is derived from in-situ single hadron response measurements along with systematic variations in the Monte Carlo simulation. In addition, several in situ techniques exploiting transverse momentum balance are exploited. Preliminary results from the 2011 run based on an integrated luminosity of 5/fb reducing further the uncertainties on the jet energy scale will also be presented.

Results on the energy scale and resolution of the reconstructed missing transverse momentum (ETmis) from 2010 and 2011 collision data will be presented. The uncertainty evaluation mainly relies on events with a Z-boson. Special attention will be given to the influence of the large number of interactions produced in addition to the event of interest (pile-up). Techniques to mitigate pile-up effects for jets and ETmiss will be discussed.

Advanced approaches to jet reconstruction using jet grooming algorithms such as filtering, trimming, and pruning are compared. Such techniques aim to reconstruct the jet mass and jet substructure with special focus on highly boosted particles

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