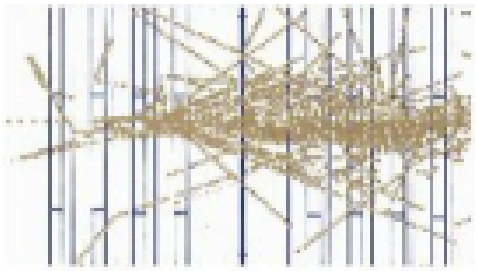

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Overview on ATLAS Hadronic Calibration

Thursday, May 29, 2008 4:35 PM (15 minutes)

Summary

The jet energy scale is one of the main systematic uncertainties in many physics studies foreseen with the ATLAS detector. Top mass reconstruction or measurements of inclusive jet cross-section might be just one example relevant for the first data taking phase already. The initial parton energy differs from the energy of the hadronic shower because of detector effects, like non-compensation and energy losses in dead material, jet algorithms and effects from the collision physics environment.

We present the concept of the local hadronic calibration for the ATLAS calorimeter system as a tool to get calibrated jets at particle level for any jet algorithm. The procedure is based on detailed Geant 4 simulations providing information on energy deposits in all parts of the ATLAS detector. In the first step topological clusters are reconstructed and calibrated at the electromagnetic scale. Clusters which are identified as being electromagnetic are kept at the electromagnetic scale. In the next step the energy density in individual read-out cells is used to tag the electromagnetic fraction in clusters classified as hadronic and to correct for the invisible energy deposits of hadrons. The energy loss in inactive material is derived for a given cluster from related cluster quantities. Finally out-of-cluster corrections and out-of-jet corrections are applied to get the final jet energy scale.

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