



Contribution ID: 51

Type: **oral presentation**

Test of the ATLAS Pion Calibration Scheme in the ATLAS Combined Test-Beam

Thursday, 29 May 2008 17:00 (20 minutes)

Summary

In 2004 the ATLAS collaboration carried out a beam test in which a full slice of the ATLAS barrel detector was exposed to beams of electrons and pions in the energy range from 1 to 350 GeV. The calorimeter was composed of a liquid argon lead calorimeter in the electromagnetic part and a scintillator tile calorimeter in the hadronic part. One of the main purposes of this combined test-beam is to test the hadronic calibration strategy based on Monte Carlo simulation to correctly measure the energy of pions.

The strategy to extract the corrections for dead material losses, for the non-compensating nature of the ATLAS calorimeter and for leakage effects is discussed and assessed using test-beam data. The default ATLAS strategy, based on a weighting technique of calorimeter cells, is presented and compared to a novel technique exploiting correlations among calorimeter layers.

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Session Classification: Simulation

Track Classification: Simulation