

Commissioning of the Muon Track Reconstruction in the ATLAS Experiment

Tuesday, March 24, 2009 5:30 PM (20 minutes)

The Muon Spectrometer for the ATLAS experiment at the LHC is designed to identify muons with transverse momentum greater than 3 GeV/c and measure muon momenta with high precision up to the highest momenta expected at the LHC. The 50-micron sagitta resolution translates into a transverse momentum resolution of 10% for muon transverse momenta of 1 TeV/c.

The design resolution requires an accurate control of the positions of the muon detectors and of the distortions of the nominal layout of individual chambers, induced by mechanical stress and thermal gradients during the experiment operation. Accurate calibration of the time to distance relation in the Monitored Drift Tubes is also required to reach design performance. We describe the software chain that implements corrections for the alignment and calibration of the chambers, as well as the algorithms implemented to perform pattern recognition and track fitting in the ATLAS Muon Spectrometer. In particular, we report on the performance of the complete software chain in the context of first single-beam LHC running as well as ATLAS combined cosmics data taking.

Presentation type (oral | poster)

oral

Summary

In this talk we plan to discuss the software that has been developed to process the ATLAS Muon Spectrometer raw data and produce muon tracks. In particular, the recent LHC single-beam operation and ATLAS combined cosmics data taking has given us the ability to study the actual performance of the software and carefully integrate corrections from alignment and calibration into the reconstruction software.

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