Contribution ID: **94**   Type: **oral**

Commissioning of the ATLAS High Level Trigger with Single Beam and Cosmic Rays

Tuesday 24 March 2009 15:00 (20 minutes)

ATLAS is one of the two general-purpose detectors at the Large Hadron Collider (LHC). The trigger system is responsible for making the online selection of interesting collision events. At the LHC design luminosity of 10^{34} cm-2s-1 it will need to achieve a rejection factor of the order of 10^{-7} against random proton-proton interactions, while selecting with high efficiency events that are needed for physics analyses. After a first processing level using custom electronics based on FPGAs and ASICs, the trigger selection is made by software running on two processor farms, containing a total of around two thousand multi-core machines. This system is known as the High Level Trigger (HLT). To reduce the network data traffic and the processing time to manageable levels, the HLT uses seeded, step-wise reconstruction, aiming at the earliest possible rejection of background events. The recent LHC startup and short single-beam run provided a "stress test" of the system and some initial calibration data. Following this period, ATLAS continued to collect cosmic-ray events for detector alignment and calibration purposes.

After giving an overview of the trigger design and its innovative features, this paper focuses on the experience gained from operating the ATLAS trigger with single LHC beams and cosmic-rays.

Authors: Dr DI MATTIA, Alessandro (MSU);   Dr RIU, Imma (UAB/IFAE)

Presenter: Dr DI MATTIA, Alessandro (MSU)

Session Classification: Online Computing

Track Classification: Online Computing