Contribution ID: **117** Type: **oral presentation**

Implementation and Performance of the High-Level Trigger electron and photon selection for the ATLAS experiment at the LHC

Wednesday 29 September 2004 16:30 (20 minutes)

The ATLAS experiment at the Large Hadron Collider (LHC) will face the challenge of efficiently selecting interesting candidate events in pp collisions at 14 TeV center-of-mass energy, whilst rejecting the enormous number of background events, stemming from an interaction rate of about 10^9 Hz. The Level-1 trigger will reduce the incoming rate to around O(100 kHz). Subsequently, the High-Level Triggers (HLT), which are comprised of the second level trigger and the event filter, will need to reduce this rate further by a factor of O(10^3). The HLT selection is software based and will be implemented on commercial CPUs using a common framework, which is based on the standard ATLAS object-oriented software architecture. In this talk an overview of the current implementation of the selection for electrons and photons in the trigger is given. The performance of this implementation has been evaluated using Monte Carlo simulations in terms of the efficiency for the signal channels, the rate expected for the selection, the data preparation times, and the algorithm execution times. Besides the efficiency and rate estimates, some physics examples will be discussed, showing that the triggers are well adapted for the physics programme envisaged at LHC. The electron/gamma trigger software has been also integrated in the ATLAS 2004 combined test-beam, to validate the chosen selection architecture in a real on-line environment.

Primary author: DIAZ GOMEZ, M.

Presenter: DIAS-GOMEZ, Manuel (University of Geneva, Switzerland)

Session Classification: Event Processing

Track Classification: Track 2 - Event processing