# Monitoring for the EMEC/HEC Combined in August

## HEC/FCAL/Combined Testbeam Meeting

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# Overview

- **Previous testbeam periods:**
  - **hec_adc used to monitor HEC testbeam runs as we took the data (or immediately afterwards)**
  - **hec_adc ran locally on the online HP, and read data directly from its disks before runs were archived**
  - **hec_adc had nearly full offline analysis functionality**

- **For 2002 combined EMEC/HEC run:**
  - **Do not want to upgrade hec_adc to HEC-ROD or EMEC data**
  - **Want to push directly to athena-based system which will use the offline analysis tools**
  - **Will provide simple and basic online monitoring to ensure that we are taking quality data**

# athena HEC testbeam tools (from Kanaya)

◆ **LArHECTBCnv:** converts **EPIO** to **TDS**

  ■ This is the core routine for getting usable data

◆ **LArHECTBPed:** calculates pedestals

◆ **LArHECTBAna:** offline analysis

## New athena package:

◆ **LArHECTBMon:** produces simple HEC (and EMEC) monitoring histograms

  ■ Simple set needed for data and beam diagnostics

  ■ Will use similar paw interface for shift crew monitoring of data

# **Progress and Plans**

◆ **LArHECTBCnv**
  ■ **athena 3.1.0**
    ● **HEC ROD data ready (technical run data)**
    ● **EMEC ROD data:  dummy routine**
  ■ **athena 4.0.0**
    ● **Will be used for August test beam**

◆ **LArHECTBMon**
  ■ **athena 3.0.0**
    ● **Used for development**
    ● **Basic set of HEC histograms ready**
  ■ **athena 3.1.0 then 4.0.0**
    ● **Soon**
  ■ **Interactive paw kumac for shift crew**
    ● **Under development**

# Implementation

◆ **LArHECTBMon**

- **Currently running on lxplus.cern.ch with new hectbmon account**

- **Interactive shell script automatically generates jobOptions file for athena**

- **Technical run data files fetched as needed from disks on atlhp-h6 with ftp**

  - **Currently: cannot "chase" daq with monitoring**

  - **Can also read data from castor …**

- **Job runs, produces histos**

- **Everything archived**

- **Better to run directly on daq linux PC**

# Histograms etc. … (under development)

- ◆ **Event-by-event**
  - ■ **Channel-by-channel**
    - ● **Pedestal from first time slice**
    - ● **Raw ADC for each time slice**
    - ● **Pedestal subtracted ADC (for each time slice?)**
  - ■ **Sums**
    - ● **Total energy**
    - ● **Energy sums by longitudinal depth**
    - ● **Energy sums for "standard points"**

- ◆ **Run-by-run**
  - ■ **Channel-by-channel (moments stored in event loop)**
    - ● **Pedestal mean and noise**
    - ● **Mean pedestal subtracted energy**
  - ■ **Various global quantities**
    - ● **Particle type, cryo position, table position, …**

# Plans

- ◆ **Expand monitoring histograms**
- ◆ **Include EMEC ?!**
- ◆ **Clean up paw kumac file for shift crew**
- ◆ **Install on DAQ linux PC (when possible)**
- ◆ **Be ready for August testbeam period …**

# Advertisement

- ◆ **Web-based Tutorials for athena-based HEC TB analysis (Kanaya, Wielers, …)**
  - ■ **http://(insert link here …)**