

Status of Common HEC Testbeam Offline Software

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Current Status **September 1998**

hec_adc Software

- hec_adc first proposed 12/07/96
- Has proven to be a robust and maintainable software to access the HEC testbeam data
- http://wwwhep.phys.uvic.ca/~uvatlas/hec_adc/hec_adc.html
- Note in progress on current state of HEC offline/online code
- hec_adc Version 3.5 - Prerelease is the latest version.
- Improvements since version 3.4
 - updated for August runperiod
 - new histogram package - clustering
 - new online package
 - patch to correct tdc values from early in April period (before run 7178)
- Why is 3.5 not a “full release”?
 - still need calibration constants for August (use April for now) - **New constants received September 23**
 - more tdc corrections needed?

Current Status **September 1998**

Data Recording and Monitoring

- CERN central data recording used to successfully store 55Gb of data from August run. HEC note in preparation on our use of CDR.
- online monitoring used successfully at August 1998 test-beam. Difficulties:
 - need to upgrade DAQ operating system to ATLAS standard (HPUX 10.2)
 - memory on DAQ machine is insufficient for DAQ + monitoring + other users

Status and Plans July 1998

Status in July

- http://wwwhep.phys.uvic.ca/~uvatlas/hec_adc/hec_adc.html
- Version 3.4 is the latest release.
- Improvements since version 3.3
 - new digital filtering package
 - new maximum adc array treatment
 - updated manual

Future Plans

- have received first MC bank for testing.
We will add a MC input stream to the code.
- analysis of the April 98 testbeam data has lead to improvements to standard ntuple content. More to come.
- patch will be added to take into account 6ns tdc shift at pole-zero adjustment in April (only affects early runs)
- modify code structure to treat slow control records (and any other record types)
- online mode will be basically unchanged from April version

Plans September 1998

Plans

- finalize standard NTUPLE output of hec_adc
- current Monte Carlo output is not appropriate for comparison with data:
 - MC produces hec_adc standard ntuple

Plans September 1998

- Column Wise Ntuples

- Run ntuple:

- run number

- run period number

- beam energy

- number of events taken

- particle type

- cryostat position in x

- table position in y

- peak finding method used (1=cubic, 2=digital filter)

- version of calibration used

- energy units of maximum (1=adc, 2=nA, 3=GeV)

- shower type (for MC)

- number of cells used

- run pedestal rms for each channel (array)

- coordinate table

- Event Ntuple:

- event number

- trigger flag array (1=phys, 2=electron, 3=pion, 4=muon, 5=random)

- event quality flag

- number of cells kept for this event

- list of channel numbers for this event (array)

- energy in each channel (units specified in run ntuple) (for MC, this is as close to real data as possible)

- MC block (pure signal, noise, leakage, ...)

Plans September 1998

- Slow control Ntuple: not in use
- Size for 10k events:
 - raw data $\approx 93\text{Mb}$
 - ntuple $< 20\text{Mb}$ (probably about 10Mb)
- version of hec_adc exists with this structure - see webpage in a few weeks

Future Plans **Autumn 1998**

Beyond hec_adc: High level analysis

- Private software exists
 - A. Minaenko
 - D. O’Neil, M. Dobbs, M. Lefebvre
- We must understand the differences in the current analyses
- We should agree on the analysis steps required for module diagnostics (simple and robust)
 - beam contamination treatment;
 - muon treatment;
 - noise treatment;
 - clustering;
 - optimization procedure;
 - parametrization, fits, and checks