Report on Reconstruction Meeting

Wednesday May 6th 1998

G. Poulard CERN/ECP-ATC

Agenda

- Introduction
  - Minutes of previous meeting (March 26)
  - Organisation
- ATRECON
- Calorimetry
- Inner Detector Pattern recognition & reconstruction
- Muon
- Combined reconstruction
- Event access
  - event, geometry
- Hits, Clusters, Tracks …
- Reconstruction packages in ARVE
- a.o.b

ATLAS Reconstruction Meeting

- Organisation
  - No “OO/conventional FORTRAN” separation
    - priorities (not the same) !
      - Detector TDR , Physics Combined Performance TDR
      - Event Filter
      - OO projects
  - Many (too) things to discuss
  - ‘Working Groups’
    - should we follow “domain decomposition” ?
    - already
      - ID-OO working group
      - magnetic field
      - ...

98_2 release

ATRECON

- ATRECON
  - new steering routine Arecon
    - selection of packages (if flags)
    - timing of reconstruction packages
  - new control Ntuple (CaloCtrl)
- Unfortunately
  - that version ‘is looping’
  - the reason is not understood yet

Calorimetry

- Calorec++ (Monika W.)
  - 1st step : translation to C++
  - emphasis on producing ‘useable’ code
  - 50% of the code translated (AgeToCxx, SRT)
    - some difficulties (give feedback)
  - performances to be understood
    - compiler options used ?
  - get contact with Event Filter Group
    - another prototype exists
  - ensure clean separation between I/O & algorithmic part

Calorimetry

- EM_Cal (Jerome S.)
  - technical changes versus previous release (see 98_2 Software status)
  - Pileup
    - improvements (important for calo work for Physics TDR)
      - minimum bias will full shaping
    - proposal
      - combine the 2 approaches
        - same 23 events (correlation between tracker & calo)
      - add the possibiluty to do digital filtering on time samples (-2,-1,0,+1,+2)
      - optionally save E per sample and per cell
  - Calounpk
    - increased modularity (requested by Trigger community)
    - split into
      - pileup + time samples
      - electronic noise (with time correlation)
      - calibration

Calorimetry

- HAD_Cal (Andrei K.)
  - digitisation (eta, phi) not adapted
  - needs list of cells

- EM_Cal & HAD_Cal modifications

  - Ready by next Atlas week (June 8th)

ID pattern recognition & reconstruction

- xKalMan++ (Igor G.)
  - alpha-version exists and being tested
  - interface to ATRECON & ATLSIM (Sverker A.)
  - single particles : same results as fortran version but slower (“x2”)
  - first improvements reduce differences (now “x1.4” slower)
    - consult experts
    - consider Blitz++ ?
  - non-uniform magnetic field capability will be considered

- xKalman_2++ (Sijin Q.)
  - working for Lvl2 trigger
  - technical problems (memory leak)

ID pattern recognition & reconstruction

- iPatRec (Alan P.)
  - 97_3 version used for ID TDR
    - 40K lines of code (50% C++, 50% fortran)
  - October version
    - decoding speed “x50” faster
    - overall speed “x2” faster
  - Current effort : get a working version (goal : next Atlas week)
    - based on October version
    - requiring external libraries (AgeToCxx, ARVE)
    - will be released in SRT
  - Developments
    - some improvements
    - non-uniform magnetic-field will be considered
    - summer

ID pattern recognition & reconstruction

- ASTRA (Peter L.)
  - ported to VMS
  - design document being reviewed
    - too long
    - some changes since the document was given
  - suffering on the non-availability of iPatRec
    - some hope for next week

ID pattern recognition & reconstruction

- Documentation
  - xKalMan
    - algorithmic part & bank description exist
    - StP will be considered
  - iPatRec
    - TDR version documented
      - update needed
    - OIG's and design document are being prepared
    - a write-up will also be prepared

Muon

- MuonBox (Jean-Francois L.)
  - around
  - inside
  - evolution
  - conclusions
- Datcha (Patricks H.)
  - frozen
- OO Reconstruction (Patricks H.)
  - completely separate of MuonBox
  - design document reviewed
  - more “contact” inside muon community

Combined reconstruction

- Combined Ntuple (David R.)
  - summary of detector info
  - combined information (e, gamma, tau identification, overall mu fit)
  - steering by datacards
- Already
  - run, event
  - kine
  - Inner Detector (iPatRec, PixlRec, xKalman)
  - Emiss
  - Jets
- next (end of May)
  - em-clusters
  - e/gamma, tau, mu identification

Hits, clusters, tracks

- Tracks (Alan P.)

Integration into ARVE

- Wait for ARVE
- Acces to data is essential

AOB

- Event format (Valerio V.)
  - start discussion
    - detector organization
    - general structure of events
    - data-flow
- Date of next meeting ?