Status of Software for Physics TDR

Atlas Software Week

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Outline

- Simulation & Reconstruction for the Physics TDR
  - geometry
  - reconstruction
  - combined reconstruction
  - status of the code
- Summary

Status of geometry description

- Inner Detector & Calorimeters
  - ~ stable since February 1998
    - digitization routine for the COIL
    - bug fix to crack scintillator position
  - new digitization for the TILE calorimeter being implemented

- Muon
  - M 1.6 database in February
  - M 2.1 database in July
    - plus some restructuration
  - M 2.8 database in October (not frozen yet)
    - new matter
    - new digitization

Reconstruction (1)

- Calorimeters
  - clunpk data preparation
    - new unpacking (increased modularity)
    - new pile-up, updated calibration
    - electronic noise, digital filtering
  - Ecal Em- cluster reconstruction
    - em-shower identification, combined matrices
  - Hcal Jet reconstruction
    - new Jet Finder algorithms (5)
  - Emis Missing energy

Reconstruction (2)

- Inner Detector
  - data preparation
    - same clustering algorithm used for all packages
    - work going-on for C++ code (tomorrow)
  - iPatRec Inner detector Pattern Recognition & Reconstruction
  - PixlRec Reconstruction starting with pixels
  - xKalMan Kalman filtering

  mostly technical modifications for all 3 packages

- Muon Spectrometer
  - Muonbox Reconstruction in the Muon Spectrometer
    - adapted to new geometry
    - passive material taken into account

Combined Reconstruction (1)

- e/γ reconstruction
  - calorimetry + tracker
  - cluster + tracks ---> electrons, photons
  - final PID
  - best E and position
  - produce banks
    - PHOT
    - ELEC
- conversions
  - xconver
  - xhourec

Combined Reconstruction (2)

- Muon ”identification”

  Track (Muon spect.) + Track (Inner Det). ---> muons

- 2 approaches
  - Muonbox + iPatRec + “tables”
    - tables describe the inactive material
    - MuonboxInterface
    - MuonIdentidication
  - Muonbox + iPatRec + GEANE
    - GEANE
      - provides global fitting with all material
      - uses GEANT3 description
    - current name : COmBined Reconstruction Atlas (COBRA)

Combined Reconstruction (3)

- Still an on-going work
  - e/gamma identification
  - conversions
  - soft electron identification
  - muon identification
  - soft muons
  - tilecal cells
  - primary vertex
  - vertex b-tag
  - overall b-tagging (when soft e/mu available)

Combined Reconstruction (4)

- Combined Ntuple is provided in Atrecon (cbnt)
  - Ntuple is filled from output Zebra banks of atrecon (RECB chain)
  - possibility to fill in from DST (if any)

Status of the code (1)

- initial goal
  - srt/cvs only
- but
  - new code was first released on “cmz”
  - production for simulation from “srt/cvs” repository has never been fully tested
  - some institutes who intend to play a major role in simulation with new muon code are not familiar with “srt/cvs”
- so
  - implement new code on 98_2 “cmz” repository
  - port it to “srt/cvs” as soon as possible

Status of the code (2)

- currently on srt/cvs :
  - all code excepted latest version of “dice”
- but
  - not yet in an ‘official’ release
- expect to have it on release 0.0.15
  - still some work needed for ‘customization’

Status of the code (3)

- Simulation code has been ported to NT & Linux
  - major production has been done on PCSF
- Reconstruction code is being ported to NT & Linux
  - no ‘big’ problems for fortran code
  - work going-on on C++ code
    - we adopted the same conventions as CERNLIB
  - SRT not yet available on NT
    - “manual” porting
- Code also being ported on SGI (Boston group)

Summary

- Code for the Physics TDR is in a good shape
  - muon geometry is up-to-date
  - major reconstruction programs are available
  - improved combined reconstruction is still going-on
  - combined ntuple can be used for Physics analysis
  - move to srt/cvs is expected to finish soon