StiStEventFiller

Manuel Calderón de la Barca Sánchez

ITTF Review
September 23, 2002

STAR

BROOKHAVEN NATIONAL LABORATORY

Simple outline

- What is the filler and why do we need it?
- Current version
- Additional tasks for next incarnation of STAR chain

Filler : General Idea

- Two environments
  - Sti : STAR Integrated Tracker package
  - StEvent : STAR persistent data model
- Both use similar concepts like hits and tracks
- Yet, by design need to be decoupled
  - Separate projects
  - Optimized for different purposes
- Ultimately, all STAR data must be stored in StEvent
- Filler: Poor man's adaptor, will take the output tracks from Sti and store them in StEvent

Only StiTrack to StTrack?

- **Not so fast! StEvent has structure:**
  - **All tracks are stored in a "smart" container, the StTrackNode, holds global and primary tracks**
  - **Tracks are built of several sub classes, e.g.:**
    - *DetectorInfo*
      - **Hits used in pattern recognition**
    - *FitTraits*
      - **Points used in fit to obtain track parameters**
    - *TrackGeometry*
      - **Kinematics (pt, eta, charge, etc.)**
    - *TopologyMap*
      - **Encoded information on pad row pattern**
    - *PidTraits*
      - **dE/dx information in TPC case**

Additional Considerations

- **Object ownership (must prevent leaks!)**
  - **StTrackNodes own global tracks, but not primaries**
  - **Primaries are owned by primary vertex**
- **Filler will create objects but they must be deleted along with StEvent**
- **Current running mode:**
  - **Only add tracks into the appropriate containers.**
    - *Advantage: this will work both now and in future*
    - *Disadvantage: must be able to tell which tracks are from current tracker and which tracks from IT*

Expected sequence

- Tracker runs
- StEvent filling, global tracks
- Vertex finding using global tracks
- Tracker extends tracks to vertex
- StEvent filling, primary tracks
  - Currently, 3 cm dca is taken at filler level for compatibility with previous case
  - χ^2 is not ready for use as a cut!
- Only tested as an afterburner so far…
- Note that new IT based chain implies a whole overhaul of reconstruction.

To do

- Provide key (again) for use in Common MuDst
  - Not needed for StEvent
- Additional code to modify the global event information in StEvent, e.g. StEventSummary
  - Currently, these classes will still reflect information from previous reconstruction pass: not in-sync with content of containers after filling
- Factory approach to object construction, increase speed and better memory management