## Analysis Frame for MC data

A. Bercuci

ALICE Offline week 2 – 6 October 2006

# **Motivation**

- Particles and their relation
- Detectors traversed
- Hits
- Digits

#### Detector driven model (AliRoot)

- Arranged Detector wise
- Different accessing methods
- Soft links

### Particle driven model

- Arranged particle wise.
- Trajectory information accesible from the particle.
- Uniform access.

## A possible solution



# **Properties**

. Flexibility – use only data that you need

#### Analysis support

- .helper class AliParticleSelector : public TSelector
- focus on the relations established inside an interaction chairPROOF (Kilian Schwarz)

### . Memory and I/O management

- •separate data from structure
- data compression
- Standars convertion from AliRoot to AliParticle
- Visualization and printing support
  - for simple canvas
  - •for AliEVE

## **Examples**

An electromagnetic cascade in the barrel initiated by a 2 Gev electron.

- Tree in Reve object Browser (Reve::TrackListTree)
- Tree in TCanvas (AliParticleInfoBox)



X-¤ Reve • 🗆 🗙 Object Browser Tree Selections Canvas HistoCanvas 📄 Geometry 🔽 🚞 Event 0 🗆 📩 -- 🔽 🧰 e-/91 🔳 📩 -- 🔽 🧰 e-/3304 🗖 📩 - 🔽 🧰 e-/3338 🗖 -- 🔽 🚞 e-/3339 🗖 🗄 -- 🔽 📄 gamma/3305 🗖 ---- 🔽 🧰 e-/3337 🔳 🚊 -- 🔽 🚞 gamma/3306 🗖 🚊 -- 🔽 🧰 e-/3325 🗖 🚊 -- 🔽 🚞 gamma/3332 🗖 📖 🔽 📄 e-/3336 🗖 🚊 -- 🔽 🚞 gamma/3333 🗖 🚊 -- 🔽 🧰 e-/3334 💻 📖 🔽 🚞 e-/3335 💻 🚊 -- 🔽 🧰 e+/3326 🔳 🖻 -- 🔽 🚞 gamma/3327 🗖 🚊 -- 🔽 🧰 e+/3329 🔳 🔽 🚞 <u>e-/3330</u> 🗖 - 🔽 🚞 e-/3331 🔳 - 🔽 🚞 e-/3328 🔳 🗄 -- 🔽 📄 gamma/3307 🗖 🗄 -- 🔽 🧰 e+/3318 🔳 🗄 -- 🔽 📄 gamma/3319 🗖 🚊 -- 🔽 🧰 e+/3320 🔳 🗄 -- 🔽 🚞 gamma/3321 🗖 📩 -- 🔽 📄 e+/3322 🔳 - 🔽 🚞 e-/3323 🔳 - 🔽 🚔 e-/3324 🔳 🗄 -- 🔽 🚞 gamma/3308 🗖 - 🔽 🚞 e+/3315 🔳 📩 -- 🔽 🧰 e-/3316 🔳 -- 🔽 🚞 e-/3317 📕 🖻 -- 🔽 🚞 gamma/3309 🗖 🚊 -- 🔽 🧰 e+/3311 🔳 - 🔽 🧰 e-73313 🗖 -- 🔽 🧰 e-/3314 🗖 - 🔽 📄 e-/3312 🔳 - 🔽 🧰 e-/3310 🗖

## Examples

Same as before but this time with OpenGL



## **Examples**

#### **Real life example:**

TRD PID simulation (see Silvia's talk)
100x5 primaries from vertex (e, π, μ, K, p) @ 2 GeV

#### **Color code:**

red : electrons yellow : photons green : pions (0,+,-) blue : muons (+,-) magenta : protons, neutrons

#### <u>Analysis</u>

AliTRDEdepSelector



ALICE Offline week

# Possible usage !

- Algorithm design.
  - PID (TRD) ..... AliTRDEdepSelector.
  - $\pi^0$  detection by 4 e (TPC) ..... AliPi0Selector.
  - J/ $\psi$  detection by 2 e (TRD) ..... AliJPsiSelector.
- Comparison ESD MC.
- Debug.
- Visualization.
- • •