

# Analysis Frame for MC data

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# Motivation

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

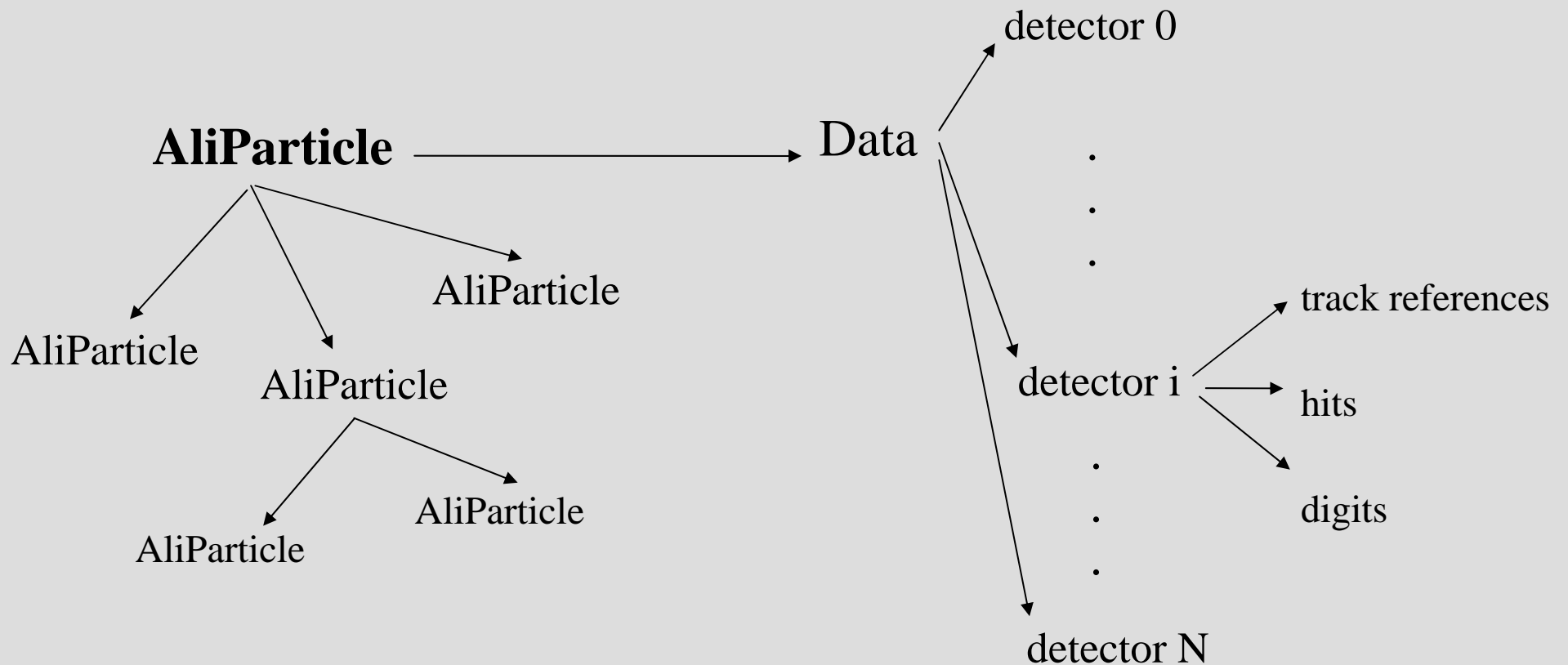
## Detector driven model (AliRoot)

- Arranged Detector wise
- Different accessing methods
- Soft links

## Particle driven model

- Arranged particle wise.
- Trajectory information accessible 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 chain
  - PROOF (Kilian Schwarz)
- **Memory and I/O management**
  - separate data from structure
  - data compression
- **Standards conversion from AliRoot to AliParticle**
- **Visualization and printing support**
  - for simple canvas
  - for AliEVE

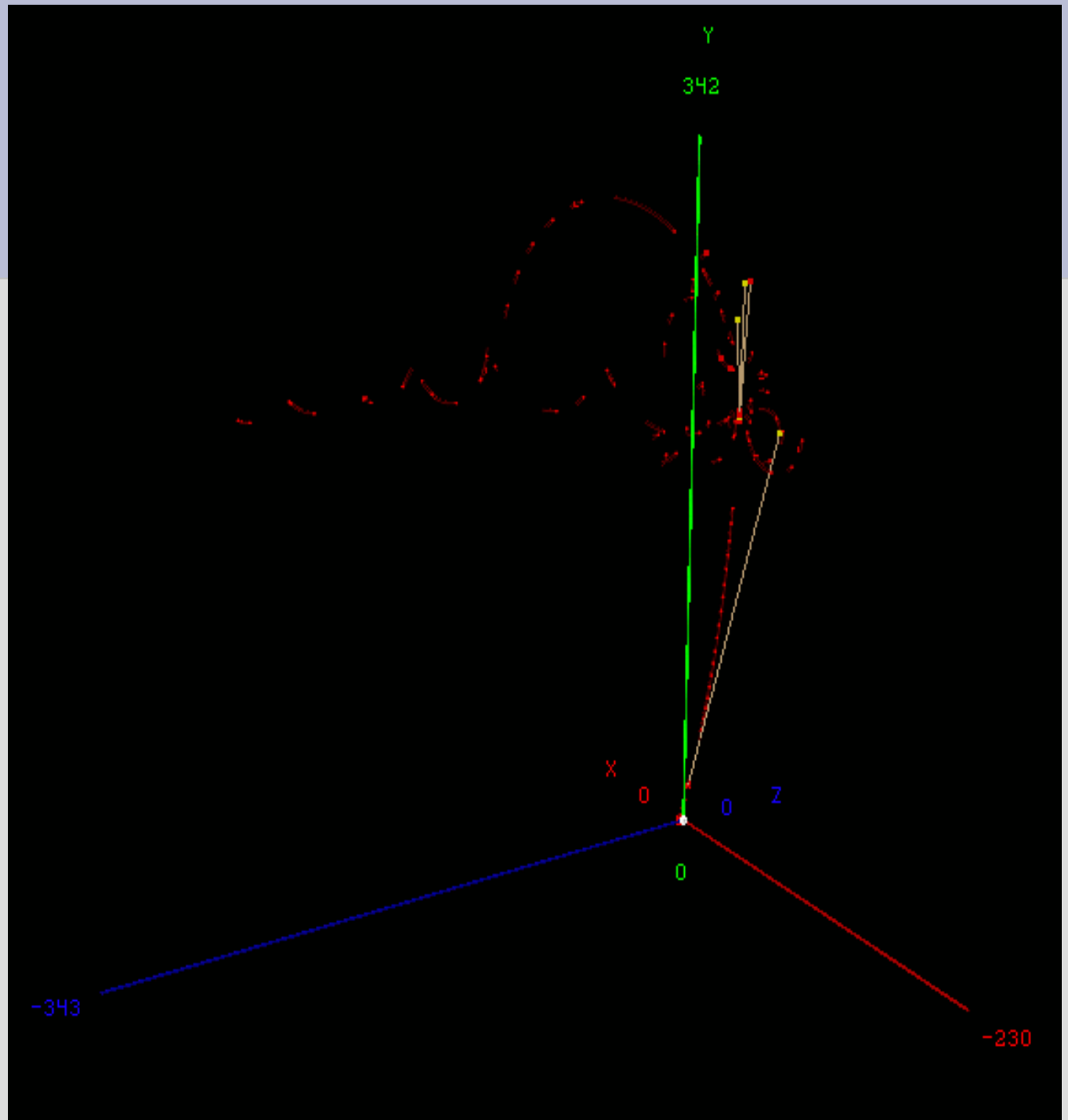
# Examples

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

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

# Examples

Same as before but  
this time with  
OpenGL



# Examples

## Real life example:

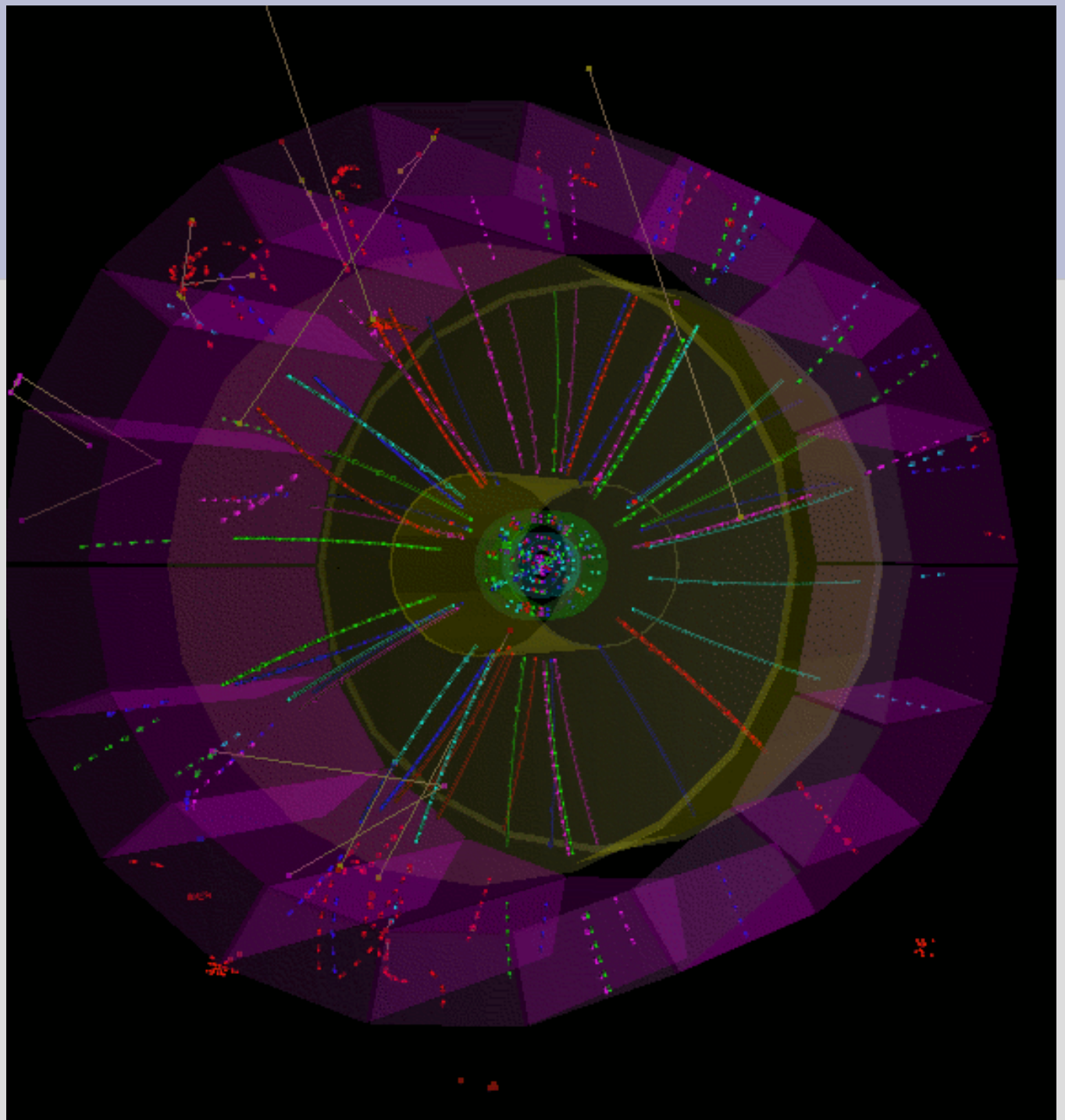
- TRD PID simulation  
(see Silvia's talk)
- 100x5 primaries from vertex  
(e,  $\pi$ ,  $\mu$ , K, p) @ 2 GeV

## Color code:

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

## Analysis

AliTRDEdepSelector



# 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.
- ...