



**Requirements
on EVE and
priorities from
PB**

Y. Foka (GSI)

**Offline Week
4 oct, CERN**

Aim

update of priority list after

- discussion in the PB
- feedback from workshop of PWG2 in Catania and groups

some homework done in Catania

- got some comments
- got volunteer(s)

Conclusions

we reviewed requirements and progress in implementation with Matevz before and after the PB and Catania workshop

- no change in priority list so far; more input expected
- work progressed in “all fronts” and according to priorities

real issue to clear up: who does what

(disclaimer: I do not mean to overstep authority)

- framework by Tadel family and ROOT team
- implementation by detectors and physics working groups

Suggestions from Catania

some of them done or foreseen already

- remove noisy pads
- identify and study hits/points/clusters assigned to multiple tracks
- remove points assigned to tracks and study the rest;
what was not found and why
- construct momentum correlations and visualise/identify
pairs with momentum difference smaller than a small something
to study split tracks etc

Strategy for Developments

Users requirements were collected iterating with the PWGs

Prioritization of tasks by PB and PWGs

Critical overview of requirements to find common requirements on the framework

**Further development of the framework
building the basic common blocks and functionalities**

Progress in all fronts

- keeping in mind the priority list by PB**
- the common requirements on the framework**

for the record from previous presentations

Priorities??

1. Debug reconstruction

1. But developments needed for the TPC test with cosmics

since then progress with functionality for real and MC data

Current priorities

**ultra-extra-super high priority from PB:
debug reconstruction**

- inspect by eye “real” data
- one-to-one comparison with MC truth
- check not found objects and why

which means: get clusters and digits in

Who does what (disclaimer: I do not mean to overstep authority)

Access clusters in easy clean way (local to global transformation)

- Yuri ~ 1week for TPC, ITS
- Detectors following Yuri’s example and Andrei tutorial

Framework by Matevz

for the record: from Offline etc presentations

Read raw data format; real and simulated data

- detector and trigger inspection and monitoring; define parameters
- Dead channels
- get all reconstructed objects: clusters, tracks, main vertex (mark with errors) etc

Access info for inspection of reconstruction and comparisons

- get reconstruction flags for real data; by eye judgment
- visualise/highlight all points/tracks that belong to the same track/vertex
- visualise the effects of “quality cuts” (fit parameters or kinematics), tracks attributes
- click object to get individual info; selection bars based on fit and kine parameters
- get full info of MC truth via track label; (one-to-one comparisons)

Define appropriate projections,

Mark scale while zooming

Define and implement appropriate transformations to include ITS + TPCetc

Interactive reconstruction of tracks and vertices

- select few points (raw data or rec clusters) and fit a helix
- **vertexing**
- add or subtract points/tracks and refit a track/vertex
- **specific to secondary vertex analysis (see L. Gaudichet wish list too)**
 - calculate invariant mass for assigned mass hypothesis
 - calculate pt of secondaries on the line of flight of parent
 - calculate global impact parameter of secondary relative main vertex

for the record: from Offline etc presentations

Jets specific analysis

“fat” arrow for jet’s direction

Analysis/QA plots (lego plots of energy)

Possibility to play with cuts

Click on jets and put them on a list to calculate for selected jets.....

⇒ Interface to existing methods (use of parsers)

⇒ let the user select variables to cut in his/her code

Some requirements

Read real and simulated raw data

Done: for TPC test with cosmics for ROOTified raw data and digits

Missing: all other detectors in progress; see yesterday's session

Priorities: next detectors tests

3D visualisation of raw data for TPC test

The image displays two windows from the ROOT software interface. The left window, titled "ROOT's GL viewer", shows a 3D visualization of raw data points and tracks within a wireframe structure of a detector sector. The right window, titled "Reve", contains a control panel with the following elements:

- Object Browser:** A tree view showing the loaded objects: Geometry, TPCLoader, Sector2D 4, Sector2D 13, Sector3D 4, and Sector3D 13.
- Style Panel:** Controls for the selected object "Sector3D 13::Allieve::TPCSector3D".
 - RenderElement:** A checkbox labeled "Render element" is checked.
 - TPCSectorViz:** Includes controls for SectorID (13), Trans (checked), Inner (checked), Outer 1 (checked), Outer 2 (checked), Threshold (25), MaxVal (60), and Time (50 / 973).
 - TPCSector3D:** Includes a checked "ShowFrame" option and a "Drift Velocity factor" set to 2.273.

At the bottom right of the Reve window, the URL mtadel.home.cern.ch/mtadel is displayed. The status bar at the bottom of the Reve window shows "GUI created".

Some requirements

Inspection and comparisons of reconstruction

get all reconstructed objects and MC truth

- via track label one-to-one comparison with MC truth
- by eye judgment of reconstruction for real data

Done: ESD tracks, primary vertex, MC hits

Done: association of hits to a given track,

helped on tracking, Event Display and MC decay chain debugging

Missing: clusters, digits and secondary vertices

info and diagnostics for the “not-found”

import the full particle history tree (contribution by Alexandru Bercuci)

Missing: click an object and get “full” info

histogramming

selection bars

visualize the effects of “quality cuts

markup; scale, axis, labels while zooming or at the end

tracks, hits and points for selected track label

The image displays two windows from the ROOT software interface. The left window, titled "ROOT's GL viewer", shows a 3D visualization of particle tracks and hits. A central track is highlighted with a blue and green color gradient, and several points are marked with pink asterisks. The right window, titled "Reve", shows the "Object Browser" and "Style" panels. The "Object Browser" lists various objects, including "ESD Tracks" (ESDTrack 45, 4, 0, 31, 37, 7, 38, 13, 17, 23, 838, 841, 329, 882, 840, -328), "Primary Vertex", "SPD Vertex", "Clusters lab=7", "ITS Hits 'ITS.fTrack==7'", and "TPC Hits 'TPC2.fArray.fTrackID=...". The "Style" panel shows the "Name" field set to "Clusters lab=7::TPolyMarker3D" and the "Marker" field set to a blue square with a size of 5.0. The text "GetAliTrackPoint" is overlaid in blue at the bottom right of the Reve window.

ROOT's GL viewer

Reve

Object Browser Tree Selections Canvas HistoCanvas

Geometry

- Origin marker
- Event0
 - ESD Tracks
 - ESDTrack 45
 - ESDTrack 4
 - ESDTrack 0
 - ESDTrack 31
 - ESDTrack 37
 - ESDTrack 7
 - ESDTrack 38
 - ESDTrack 13
 - ESDTrack 17
 - ESDTrack 23
 - ESDTrack 838
 - ESDTrack 841
 - ESDTrack 329
 - ESDTrack 882
 - ESDTrack 840
 - ESDTrack -328
 - Primary Vertex
 - SPD Vertex
 - Clusters lab=7
 - ITS Hits 'ITS.fTrack==7'
 - TPC Hits 'TPC2.fArray.fTrackID=...

Style

Name

Clusters lab=7::TPolyMarker3D

Marker

5.0

GetAliTrackPoint

GUI created

Some requirements

Interactive reconstruction of tracks and vertices

- select few points (raw data or rec clusters) and fit a helix
 - add or subtract points/tracks and refit a track/vertex
- done: progress with “picking”
missing: pass info and activate actions
- info on dead channels (not to be forgotten)
 - specific to secondary vertex analysis (volunteer: L. Gaudichet)
 - calculate invariant mass for assigned mass hypothesis
 - calculate pt of secondaries on the line of flight of parent
 - calculate global impact parameter of secondary relative main vertex
 - jets specific analysis
 - arrow for jet’s direction
 - analysis/QA plots (lego plots of energy)

Interactive analysis

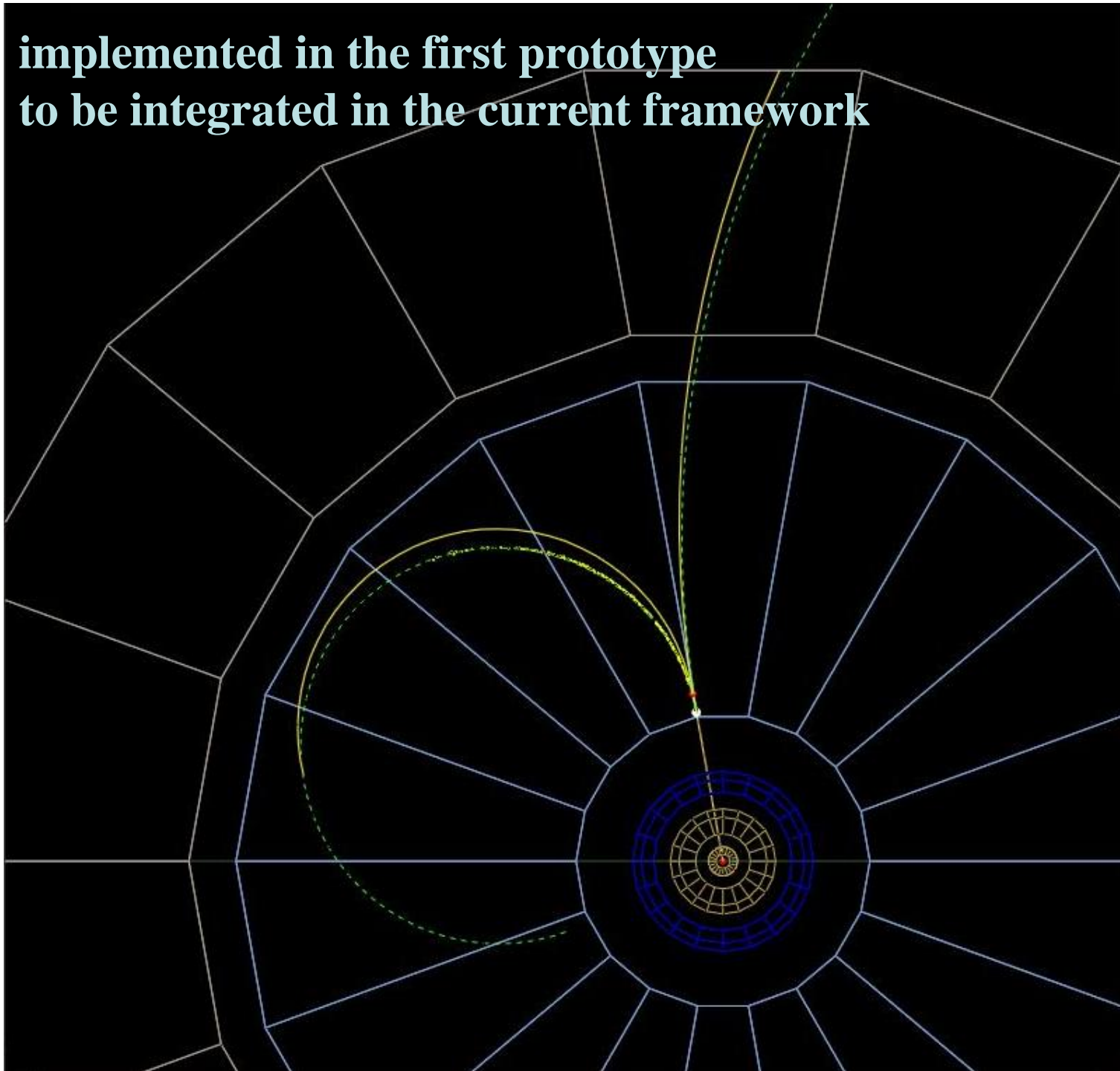
Possibility to play with cuts

Click on jets and put them on a list to calculate for selected jets.....

⇒ interface to existing methods

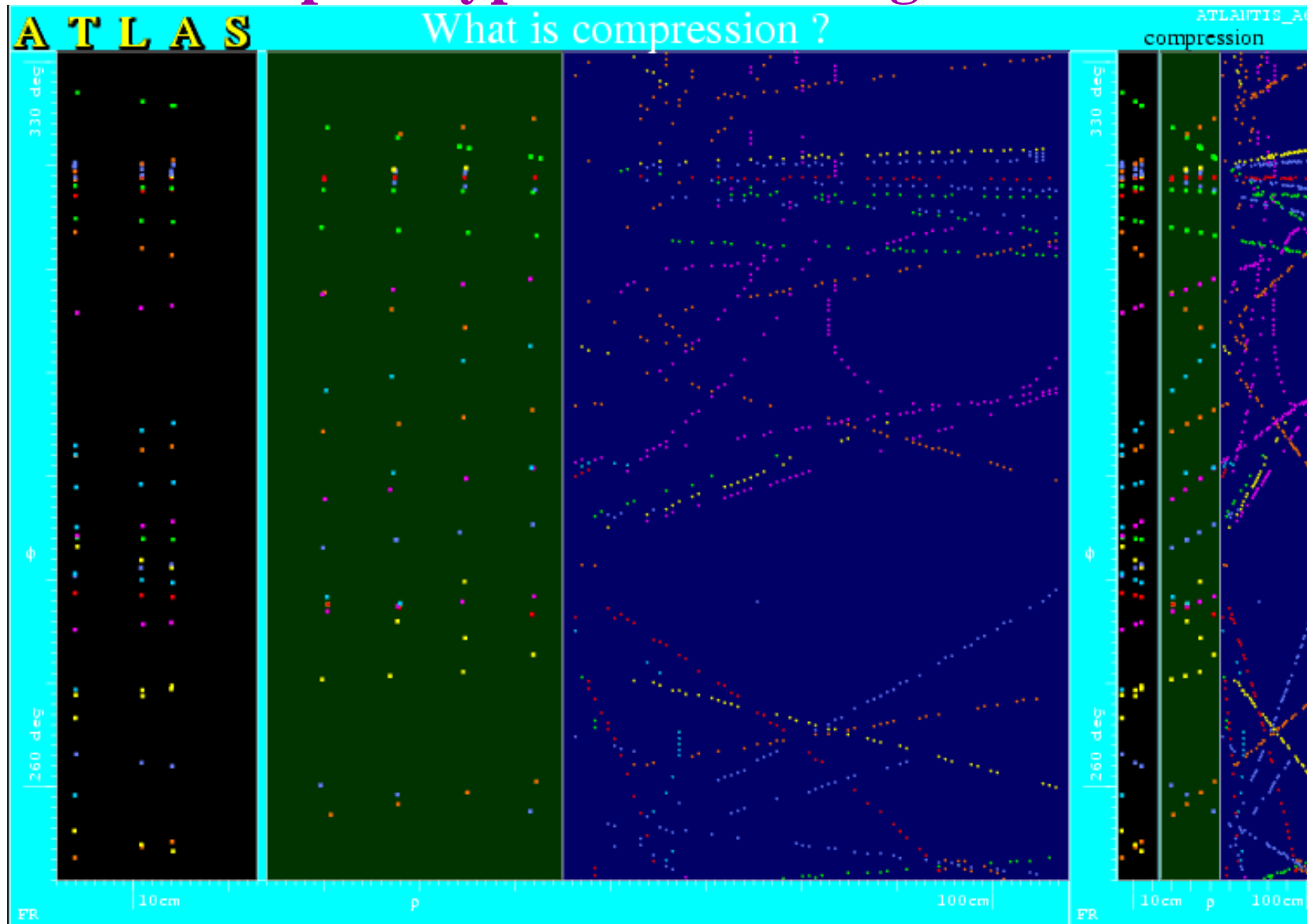
⇒ let the user select variables to cut in his/her code

**implemented in the first prototype
to be integrated in the current framework**



find appropriate projections and transformations

Done: first prototype starts existing



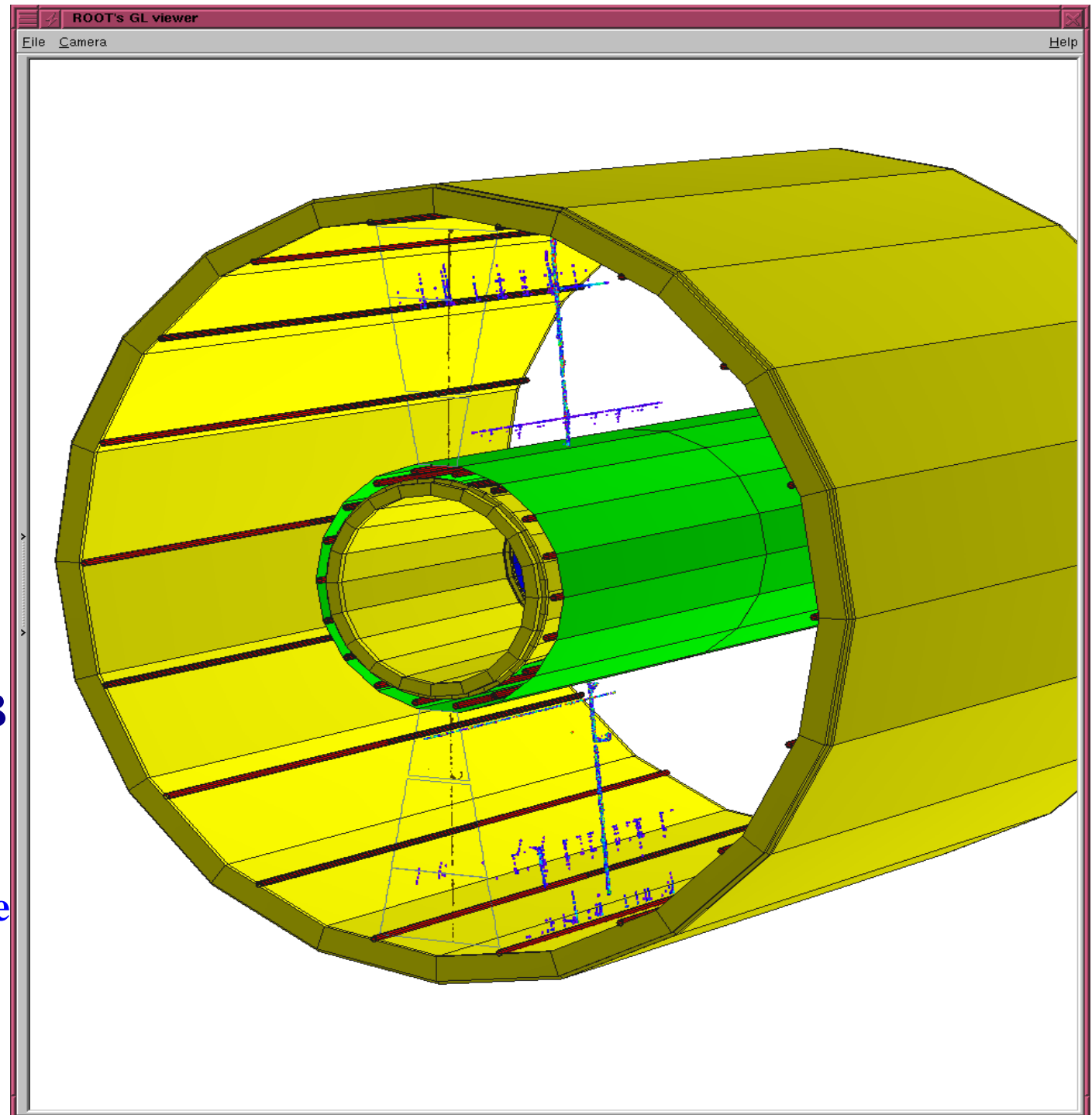
Made on 22-Nov-1999 10:25:16 by hamed with ATLANTIS
Filename: AC_991122_1024_PS_COMPRESSION

normal and compressed scale in the $\rho - \phi$ plane seminar by H. Drevermann

**Charged particle
multiplicity
measurement
based on
visual
scanning**

**Small conflict!!
High priority
for me !!
Not so high for PB**

**Visiting Matevz
get “easy” things done
needed for debugging
of reconstruction also**



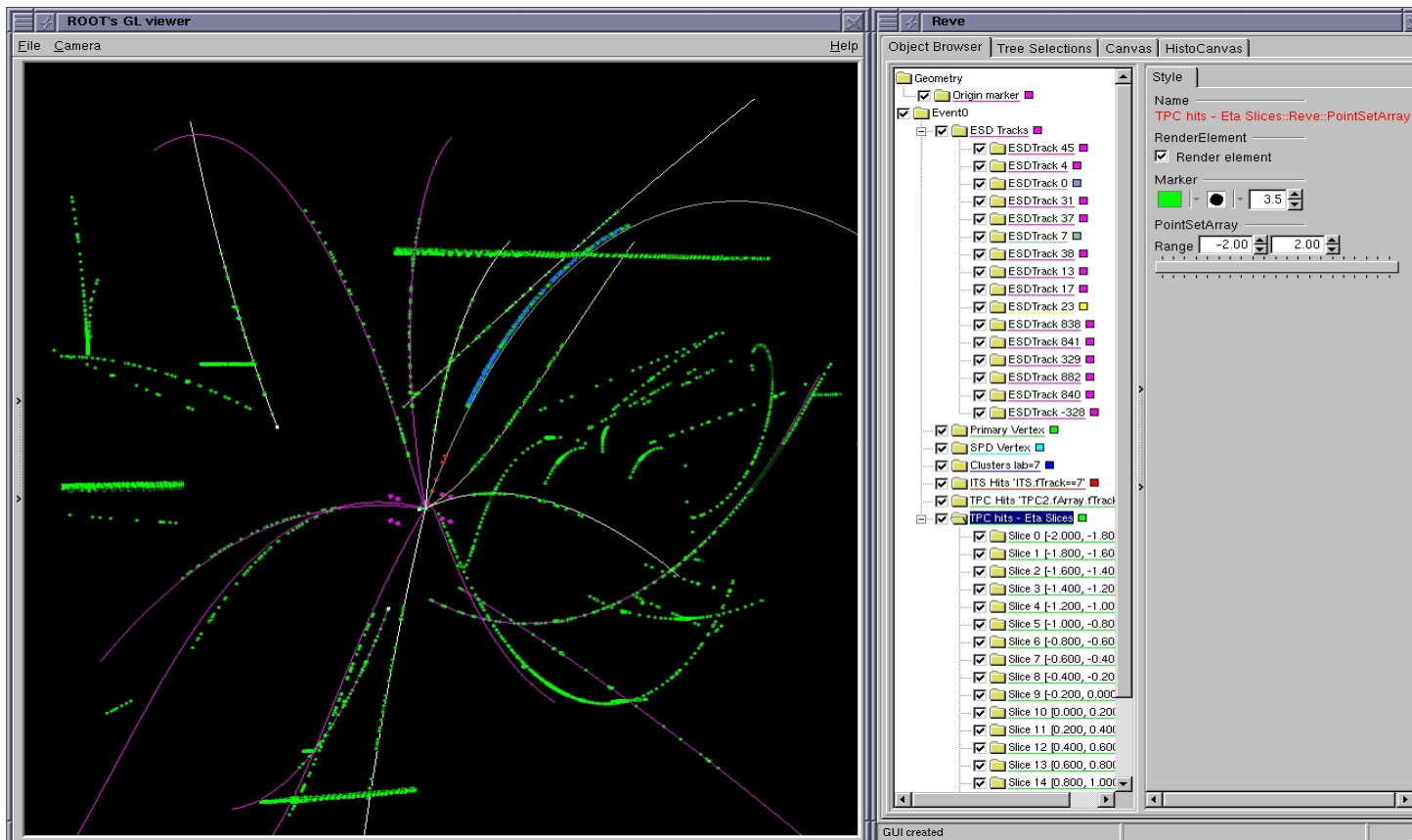
Visual Scanning Procedure

- **Read real and simulated data**
Done: TPC raw data, digits, points, hits
- **Define appropriate projections, transformations, scale compression**
Done: work on prototype
- **Select by eye and if we start from raw data or clusters**
click on points of a “track” (ADC colour coded max or clusters)
get xyz, give it input to helix parameterization class
Done: several steps procedure based on “picking”
first step developed
missing: pass input, activate actions
- **Ideal helix parameterization; get xyz as input**
output the fitted track parameters
and main vertex via extrapolation to beam axis
Done: Riemann sphere modified to be used (by M. Ivanov)
missing: to connect with previous step

Visual Scanning Procedure

from here on is the same as if we start from reconstructed tracks

- Get fitted info into the Event Display and visualize;
draw helix extrapolation based on fitted parameters
mark the main vertex
- done: debugging; tracks fall on hits (no energy loss, ideal helix, constant field)



Visual Scanning Procedure

- **Define the Interaction Point**

main vertex marked from ESD (from SPD and tracking)

with default marker (**no feeling of dimensions**)

missing: how to visually recognize primary vertex track

- **Count primary tracks (vertex in IP)**

disappear (paint black) tracks that were counted, increase counter

- **Get eta, pt**

fill out “electronic scanning sheet” and histograms

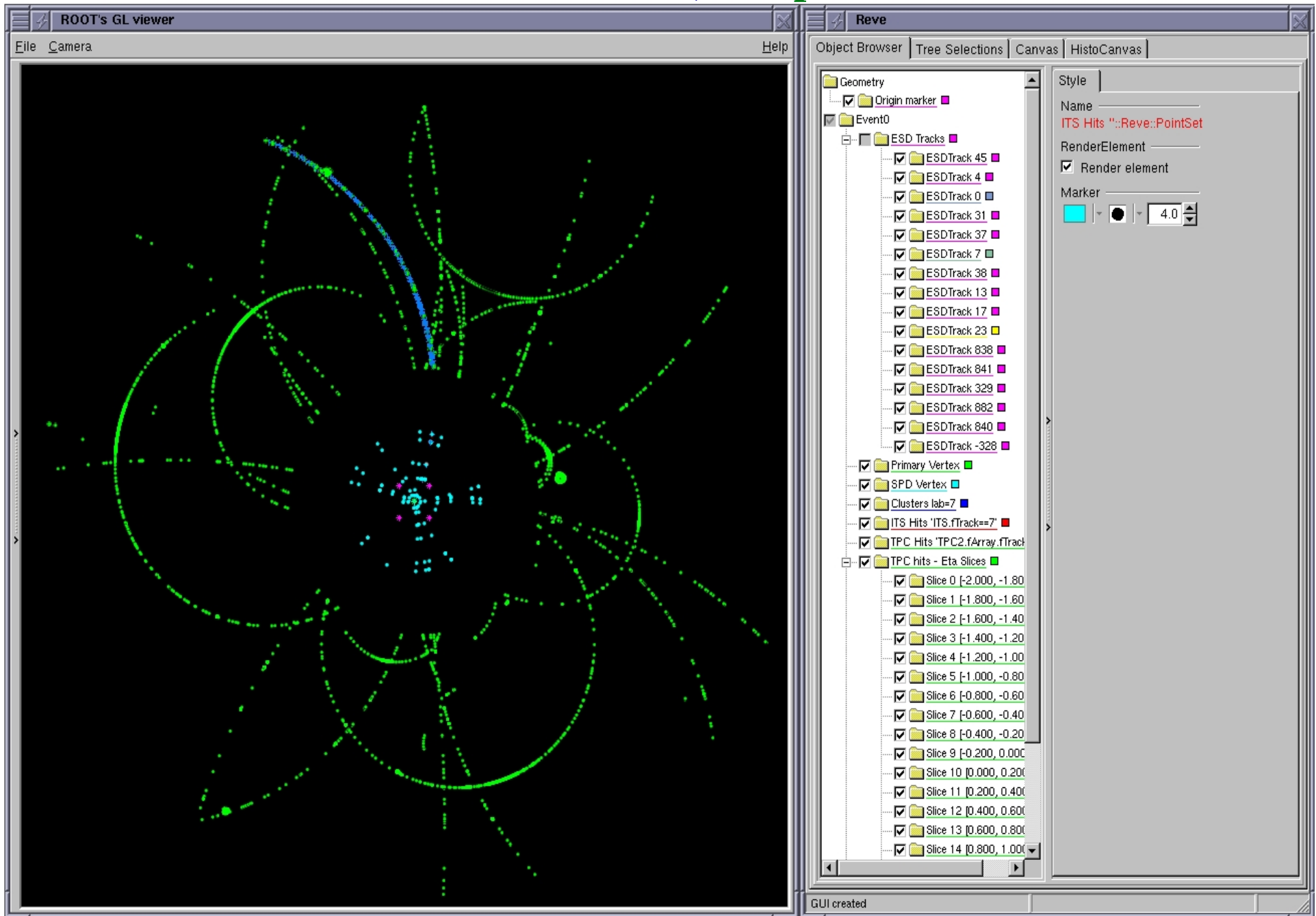
- **Efficiency/acceptance via embedding: MC tracks in real events**

done: merging of MC “signal” and real event (A. Morsch)

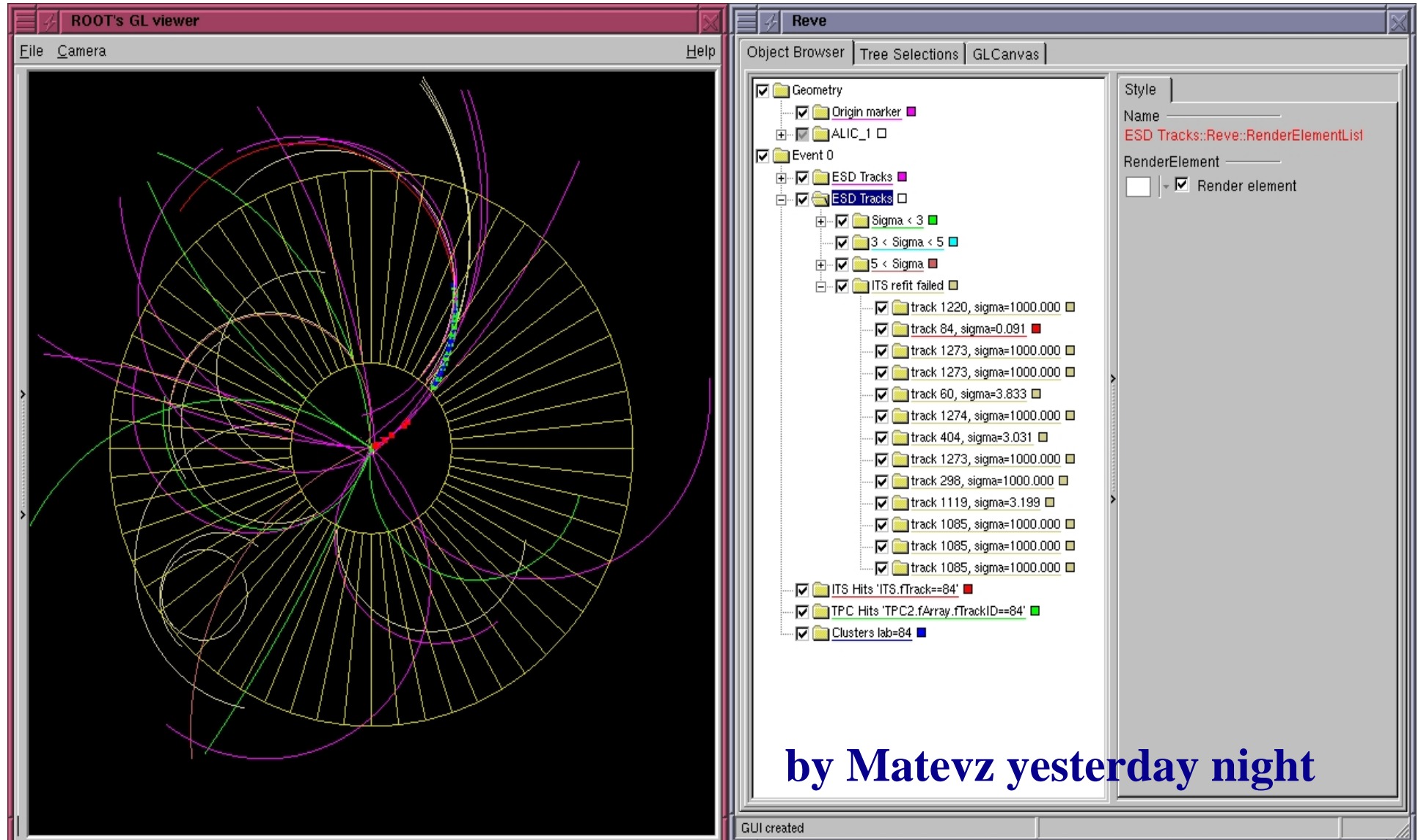
- ? **Procedure for scanners efficiency**

Have to give a number on Friday

ITS and TPC hits for full event, compression of scale needed



Tracks colour coded for different distance from vertex



The image displays two windows from the ROOT software interface. The left window, titled "ROOT's GL viewer", shows a 2D plot of particle tracks. The tracks are color-coded based on their distance from the vertex, with colors ranging from red (closest) to purple (farthest). The right window, titled "Reve", shows the Object Browser and Style panels. The Object Browser lists various objects, including tracks, with their names and sigma values. The Style panel shows the current style for the selected object, "ESD Tracks::Reve::RenderElementList", and the "Render element" checkbox is checked.

Object Browser | Tree Selections | GLCanvas

- Geometry
 - Origin marker
 - ALIC_1
- Event 0
 - ESD Tracks
 - ESD Tracks
 - Sigma < 3
 - 3 < Sigma < 5
 - 5 < Sigma
 - ITS refit failed
 - track 1220, sigma=1000.000
 - track 84, sigma=0.091
 - track 1273, sigma=1000.000
 - track 1273, sigma=1000.000
 - track 60, sigma=3.833
 - track 1274, sigma=1000.000
 - track 404, sigma=3.031
 - track 1273, sigma=1000.000
 - track 298, sigma=1000.000
 - track 1119, sigma=3.199
 - track 1085, sigma=1000.000
 - track 1085, sigma=1000.000
 - track 1085, sigma=1000.000
 - ITS Hits 'ITS.fTrack==84'
 - TPC Hits 'TPC2.fArray.fTrackID==84'
 - Clusters lab=84

Style

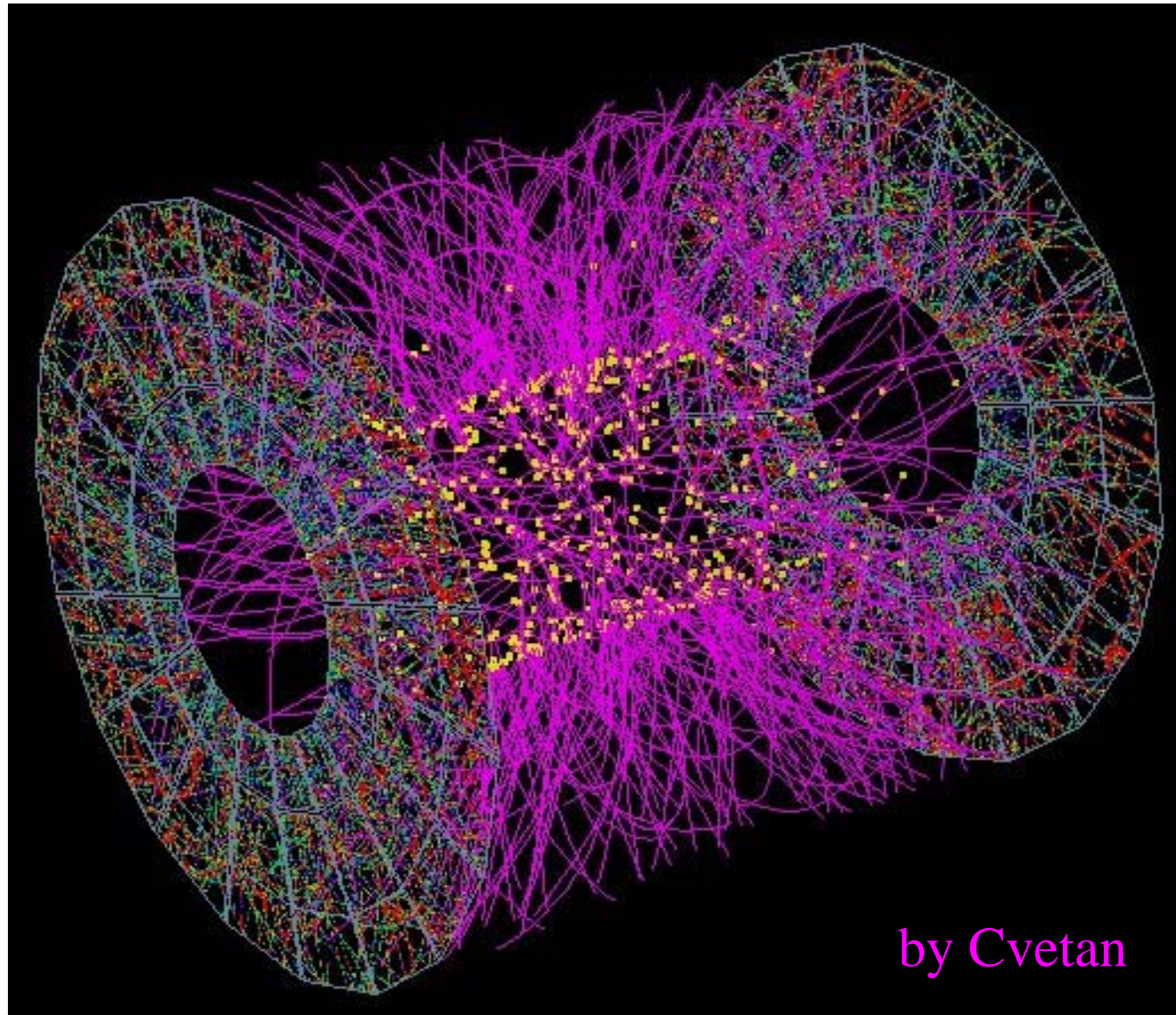
Name
ESD Tracks::Reve::RenderElementList

RenderElement
 Render element

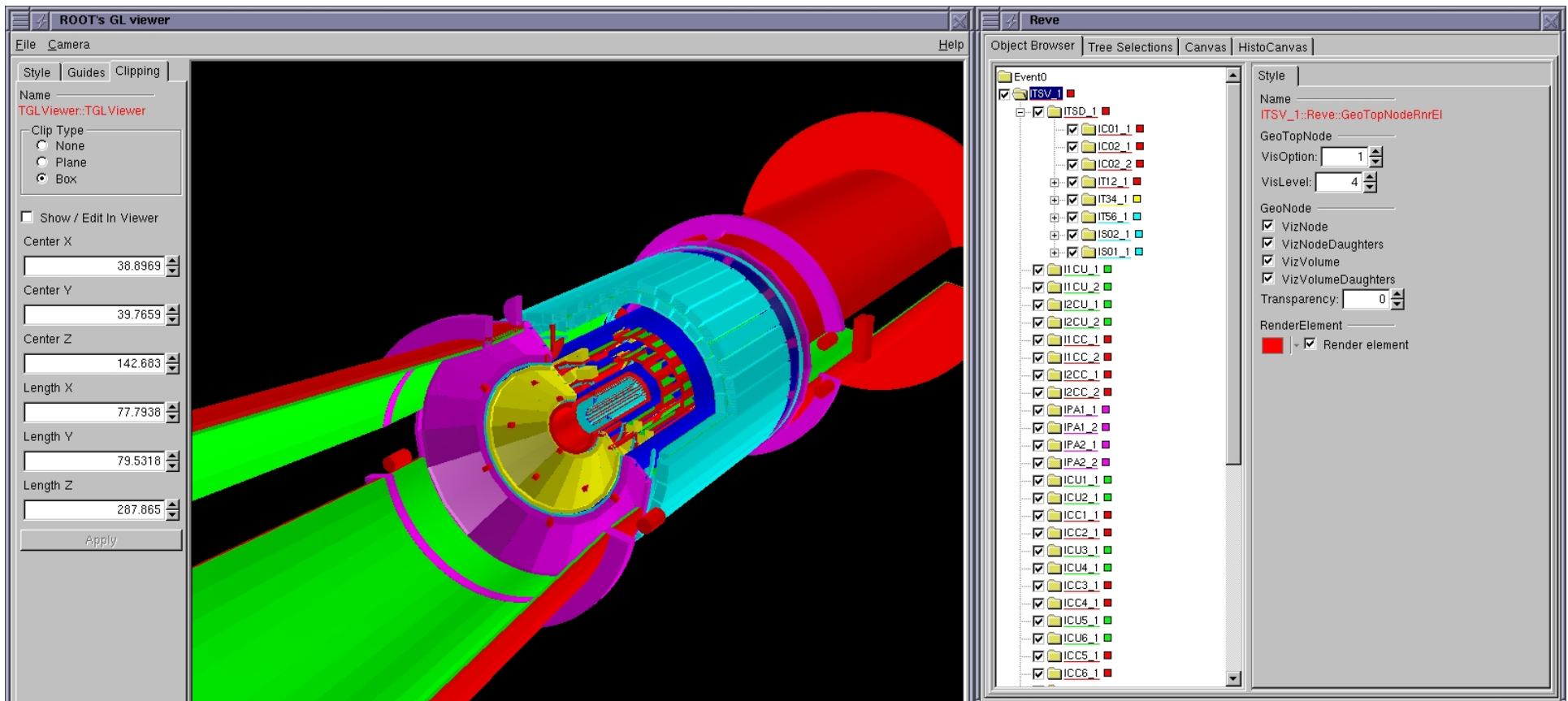
by Matevz yesterday night

GUI created

forget pileup and beam gas at the moment



nominal luminosity at 140 Khz; hard to tell events apart without ITS



for more details on EVE

nice pictures and presentations see Matevz home page

mtadel.home.cern.ch/mtadel

and

www.gled.org/screenshots

Mtadel.home.cern.ch/mtadel/Yiota-1

Mtadel.home.cern.ch/mtadel/Yiota-Bologna

several examples available in AliRoot cvs

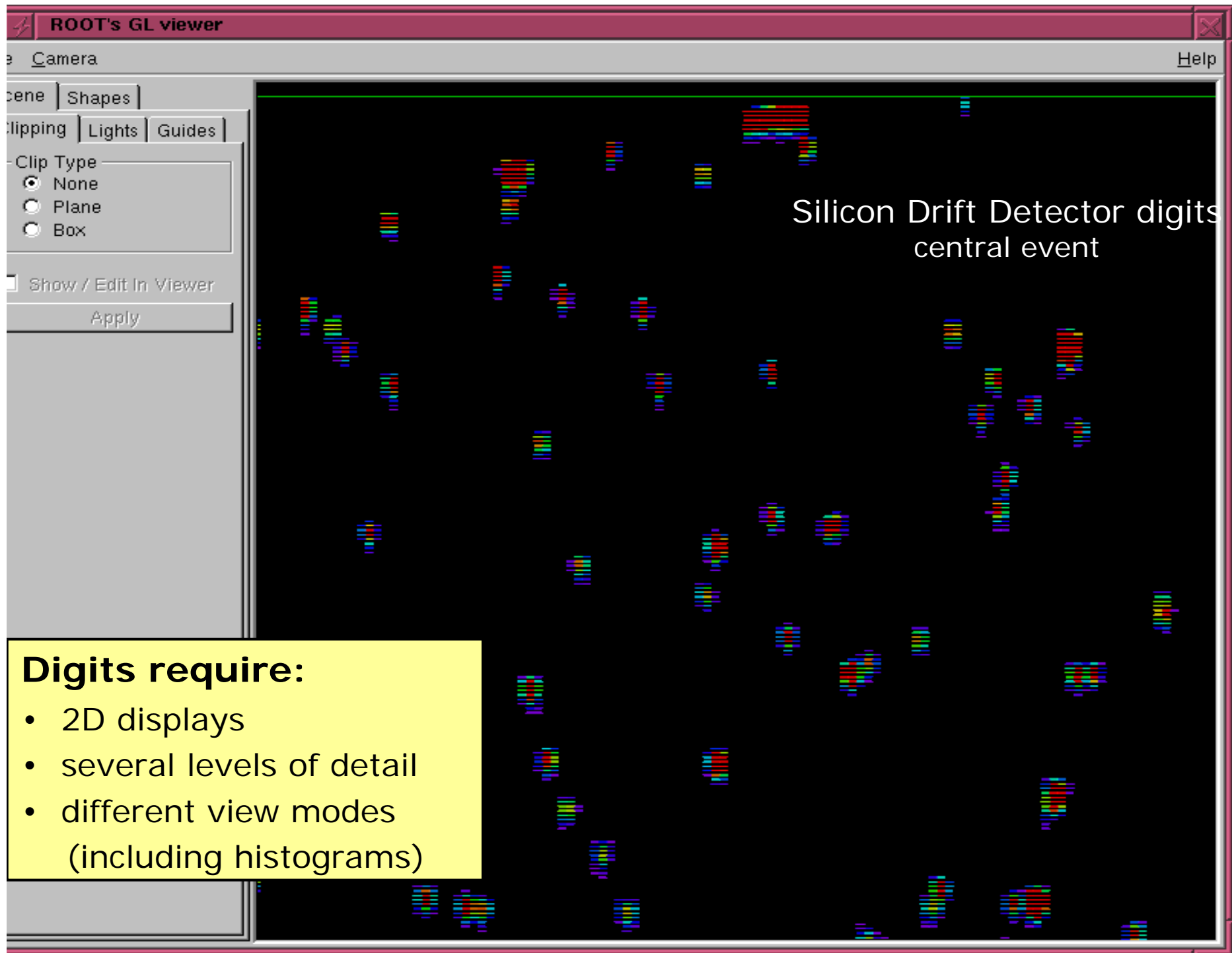
Example script: silicon detector hits

```
void hits_hits(const char *varexp    = "fX: fY: fZ",
              const char *selection = "",
              Option_t   *option     = "goff")
{
    AliRunLoader* rl = AliReve::Event::AssertRunLoader();
    rl->LoadHits("ITS");

    TTree* ht = rl->GetTreeH("ITS", false);
    ht->Draw(varexp, selection, option);

    ReveGui::GuiPointContainer* points = new
        ReveGui::GuiPointContainer("ITS Hits", ht);
    points->SetMarkerColor((Color_t)2);
    points->SetMarkerStyle((Style_t)6);

    gReveGui->AddRenderElement(points, Form("sel =\">%s\<", N=%d",
        selection, points->GetN()));
    gReveGui->DrawRenderElement(points);
}
```

Digits require:

- 2D displays
- several levels of detail
- different view modes (including histograms)

Display tracks and associated hits for different rapidity slices

The screenshot displays the ROOT software interface for visualizing particle tracks and hits. The main window, 'ROOT's GL viewer', shows a 3D visualization of tracks and hits in a detector geometry. The tracks are represented by colored lines, and the hits are represented by colored dots. The detector geometry is shown as a blue wireframe structure.

The 'Eta Selector' window shows a list of rapidity slices, with the following settings:

- Object Browser: Tree Selections, Canvas, HistoCanvas
- Event0
 - TPC hits - Eta Slices
 - Slice 0 [-2.000, -1.800]
 - Slice 1 [-1.800, -1.600]
 - Slice 2 [-1.600, -1.400]
 - Slice 3 [-1.400, -1.200]
 - Slice 4 [-1.200, -1.000]
 - Slice 5 [-1.000, -0.800]
 - Slice 6 [-0.800, -0.600]
 - Slice 7 [-0.600, -0.400]
 - Slice 8 [-0.400, -0.200]
 - Slice 9 [-0.200, 0.000]
 - Slice 10 [0.000, 0.200]
 - Slice 11 [0.200, 0.400]
 - Slice 12 [0.400, 0.600]
 - Slice 13 [0.600, 0.800]
 - Slice 14 [0.800, 1.000]
 - Slice 15 [1.000, 1.200]
 - Slice 16 [1.200, 1.400]
 - Slice 17 [1.400, 1.600]
 - Slice 18 [1.600, 1.800]
 - Slice 19 [1.800, 2.000]
- ESD Tracks
- ITSV_1
- TPC_M_1
 - TPC_Crft_1
 - TPC_GL_1
 - TPC_INJ_1
 - TPC_ICVM_1

The 'ROOT Object Browser' window shows the contents of a directory, including a C++ file named 'esd_tracks.C'.

```
void esd_tracks(Double_t min_pt=0.1, Double_t max_pt=100)
{
  AliESD* esd = AliEvent::AssertESD();
  AliESDtrack* at;
  Reve::RecTrack rt;
  Double_t pbuf[3], vbuf[3];

  Double_t minptsq = min_pt*min_pt;
  Double_t maxptsq = max_pt*max_pt;
  Double_t ptaq;

  TListTree* l_tree = gReve->GetListTree();
  TListTreeItem* parent = gReve->GetEventTreeItem();

  Reve::TrackList* cont = new Reve::TrackList("ESD Tracks");
  cont->SetMainColor(Color_t(6));

  TListTreeItem* holder = gReve->AddRenderElement(cont);

  Int_t count = 0;
  for (Int_t n=0; n<esd->GetNumberOfTracks(); n++) {
    at = esd->GetTrack(n);

    // Here would be sweet to have TObjectFormula.
```

```
--- Drawing 44 nodes with 1 visible levels
--- Drawing 87 nodes with 2 visible levels
--- Drawing 44 nodes with 1 visible levels
hslidor min=0.140574 max=10.000000
--- Drawing 87 nodes with 2 visible levels
--- Drawing 44 nodes with 1 visible levels
hslidor min=0.181148 max=10.000000
--- Drawing 87 nodes with 2 visible levels
--- Drawing 44 nodes with 1 visible levels
hslidor min=0.262295 max=10.000000
--- Drawing 87 nodes with 2 visible levels
--- Drawing 44 nodes with 1 visible levels
hslidor min=0.384016 max=10.000000
--- Drawing 87 nodes with 2 visible levels
--- Drawing 44 nodes with 1 visible levels
hslidor min=0.424590 max=10.000000
--- Drawing 87 nodes with 2 visible levels
--- Drawing 44 nodes with 1 visible levels
--- Drawing 87 nodes with 2 visible levels
--- Drawing 44 nodes with 1 visible levels
```

some input and contributions

mails with feedback after trying and further suggestions from:

- **TPC group**
- **HMPID**
- **MUON (in cvs by Bogdan)**

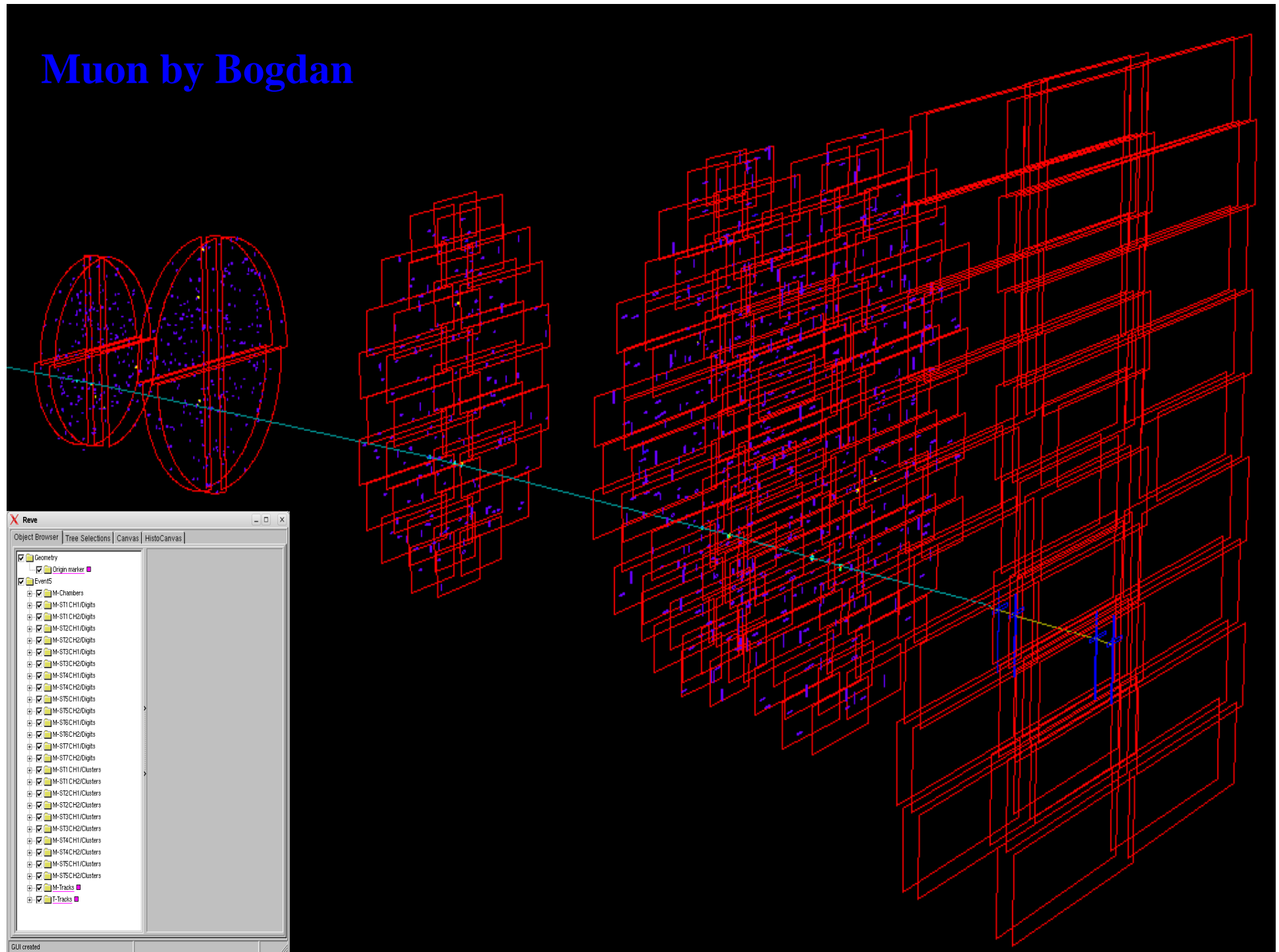
TRD with cosmics (by Minjung Kweon)

Particle tree (by Alexandru Bercuci)

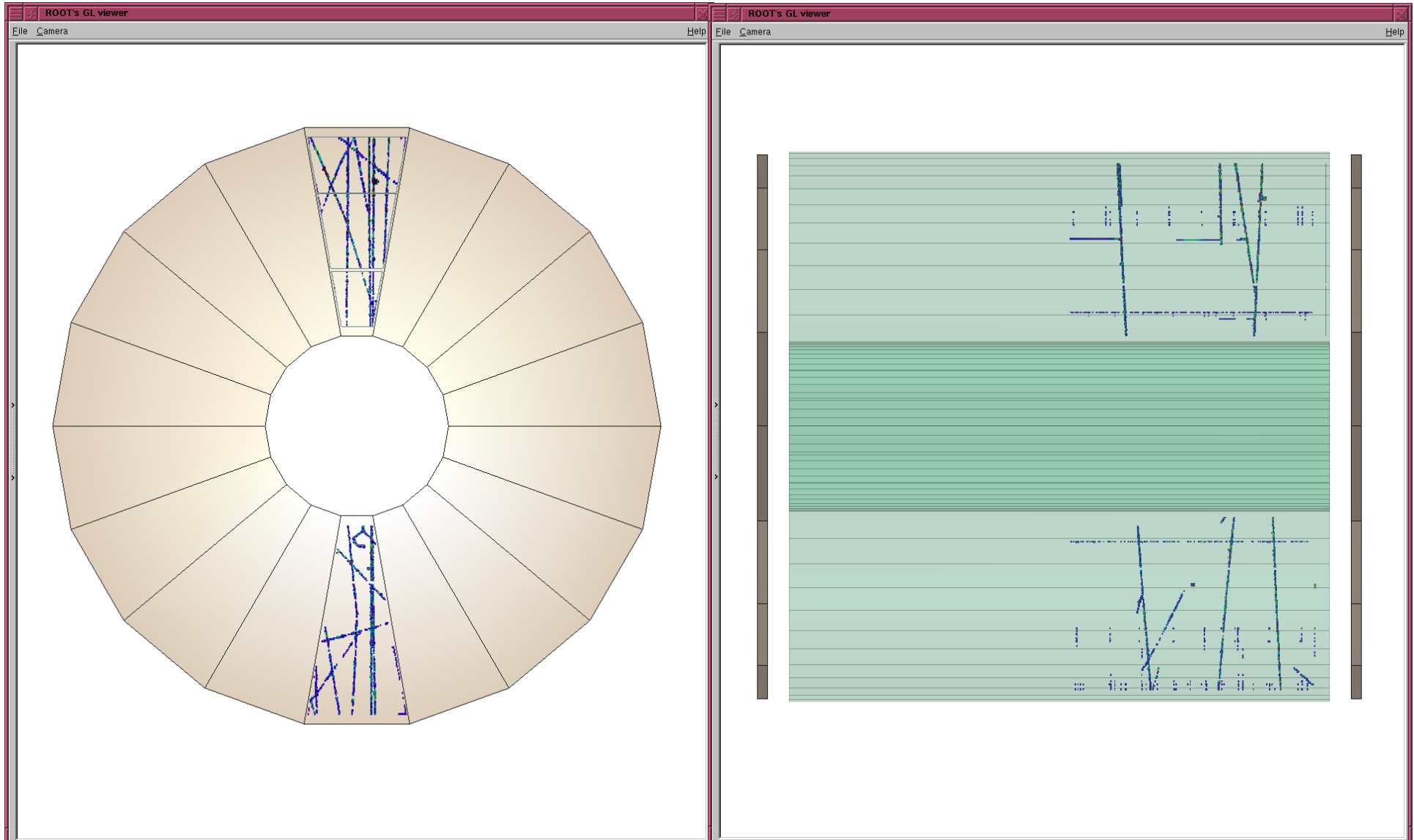
ToDo:

- **collect nice screenshots**
- **collect macros**

Muon by Bogdan



**Lots to be done and real data is almost here!!
volunteers needed to exercise the framework
and tailor it to specific needs**

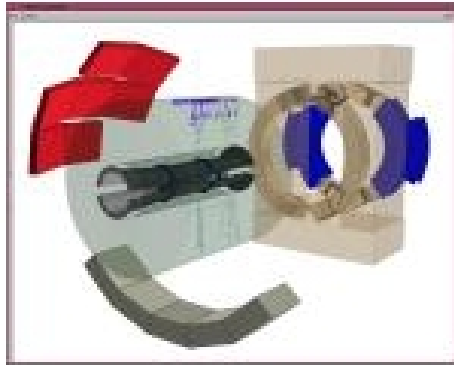


Summary on priorities so that users can contribute more

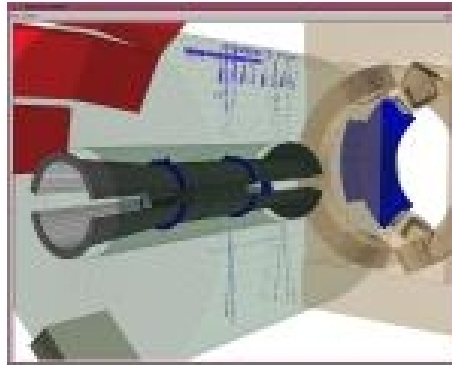
- clusters, digits**
- interface to users methods**

**Thanks to all contributors
I may have missed names....**

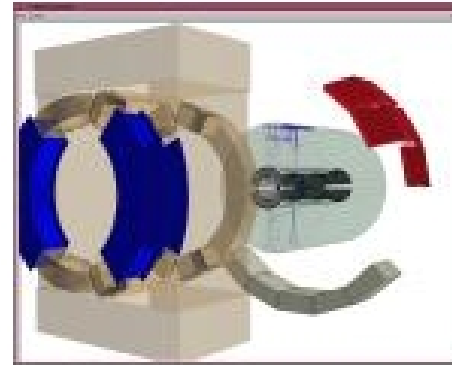
collection on some real data from the TPC test with cosmics



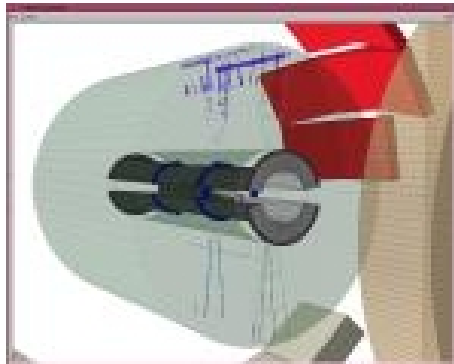
556.1-10.png
1287x1035 (272.3 K)



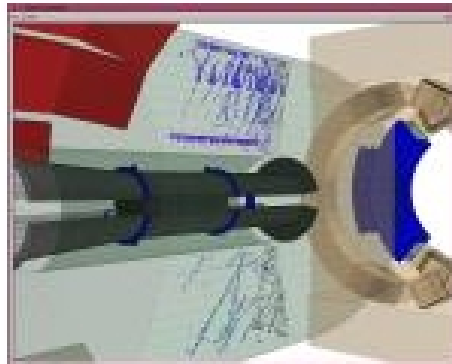
556.1-10a.png
1287x1035 (384.1 K)



556.1-10b.png
1287x1035 (284.9 K)



556.1-10c.png
1287x1035 (268.2 K)

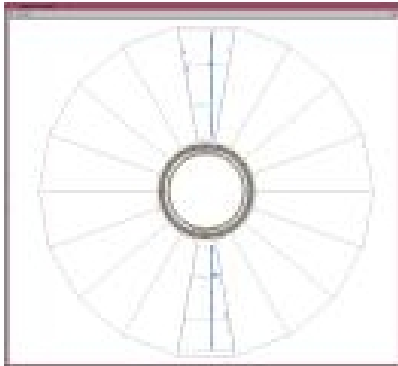


561.1-1.png
1287x1035 (445.2 K)

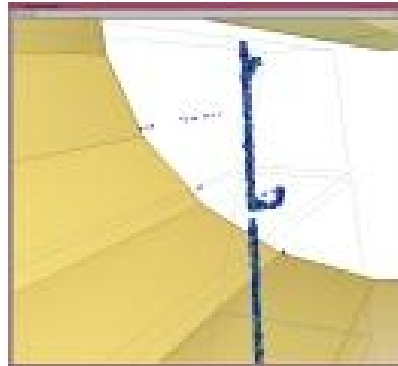


561.1-10.png
1185x1035 (146.8 K)

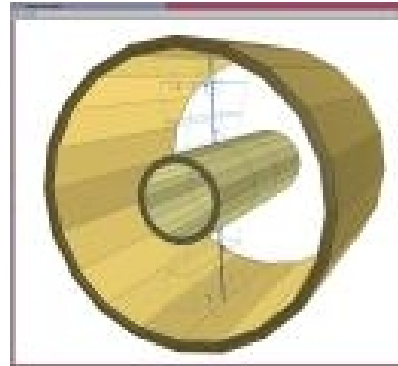
and some real ESD tracks



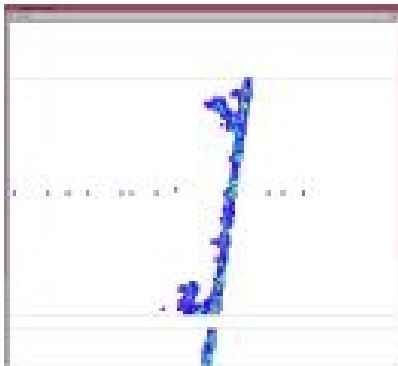
568.2-37-front.png
1310x1200 (40.9 K)



568.2-37-persp-zoom.png
1310x1200 (105.7 K)



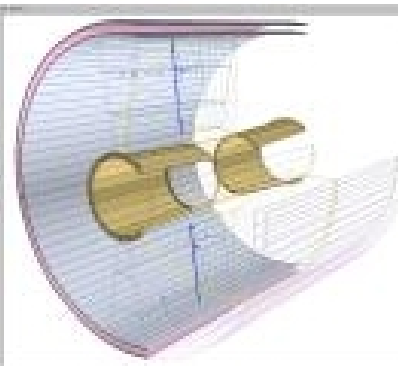
568.2-37-persp.png
1310x1200 (80.6 K)



568.2-37-side-zoom.png
1310x1200 (18.5 K)

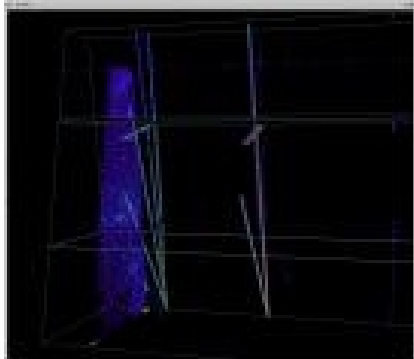


568.2-37-side.png
1310x1200 (23.2 K)

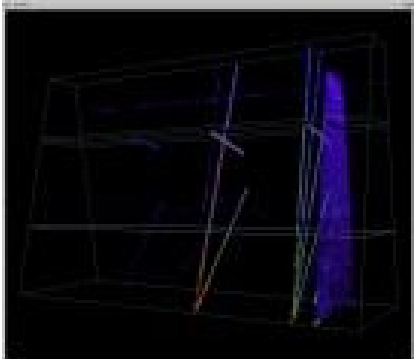


568.2-37a-persp.png
1350x1268 (203.4 K)

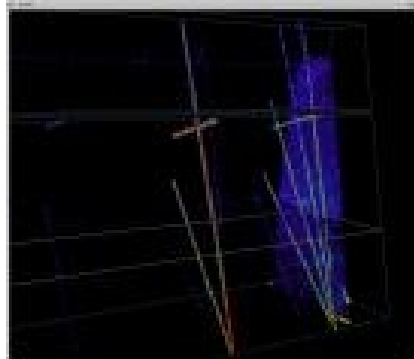
laser tracks



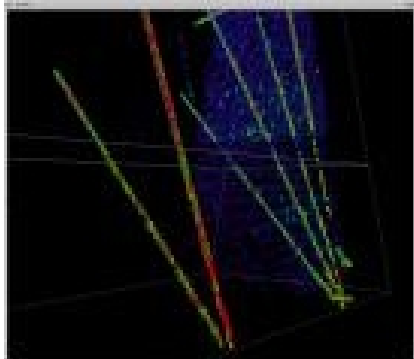
387.1-0.png
1250x1100 (326.6 K)



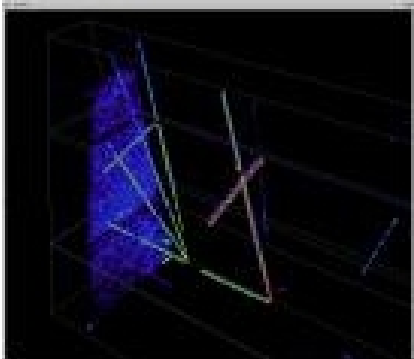
387.1-0a.png
1250x1100 (278.8 K)



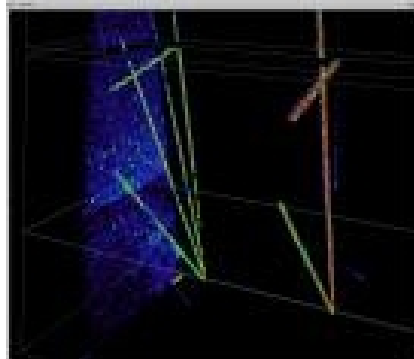
387.1-0b.png
1250x1100 (354.3 K)



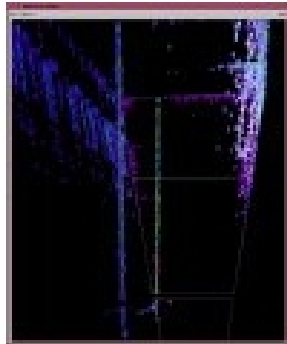
387.1-0c.png
1250x1100 (441.3 K)



387.1-0d.png
1250x1100 (398.6 K)



387.1-0e.png
1250x1100 (497.9 K)



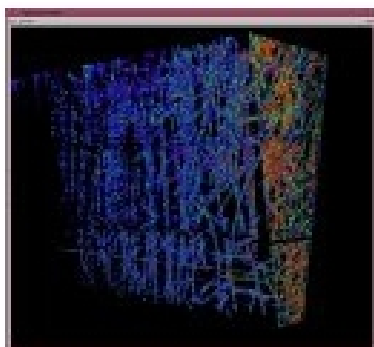
911x1107 (156.8 KB)
273.1-14.png



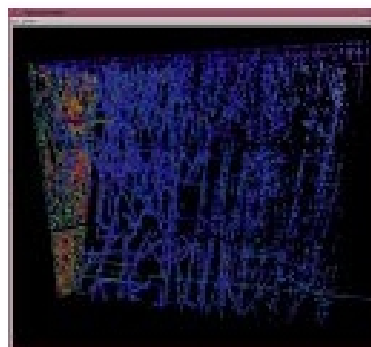
882x994 (95.4 KB)
273.1-2.png



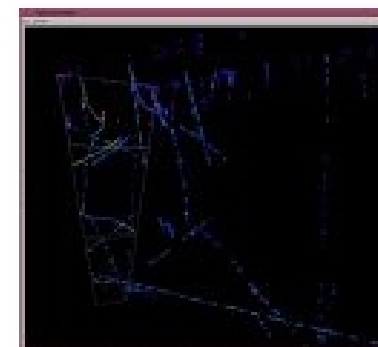
882x994 (93.9 KB)
273.1-4.png



1130x1044 (558.7 KB)
273.1-5.png

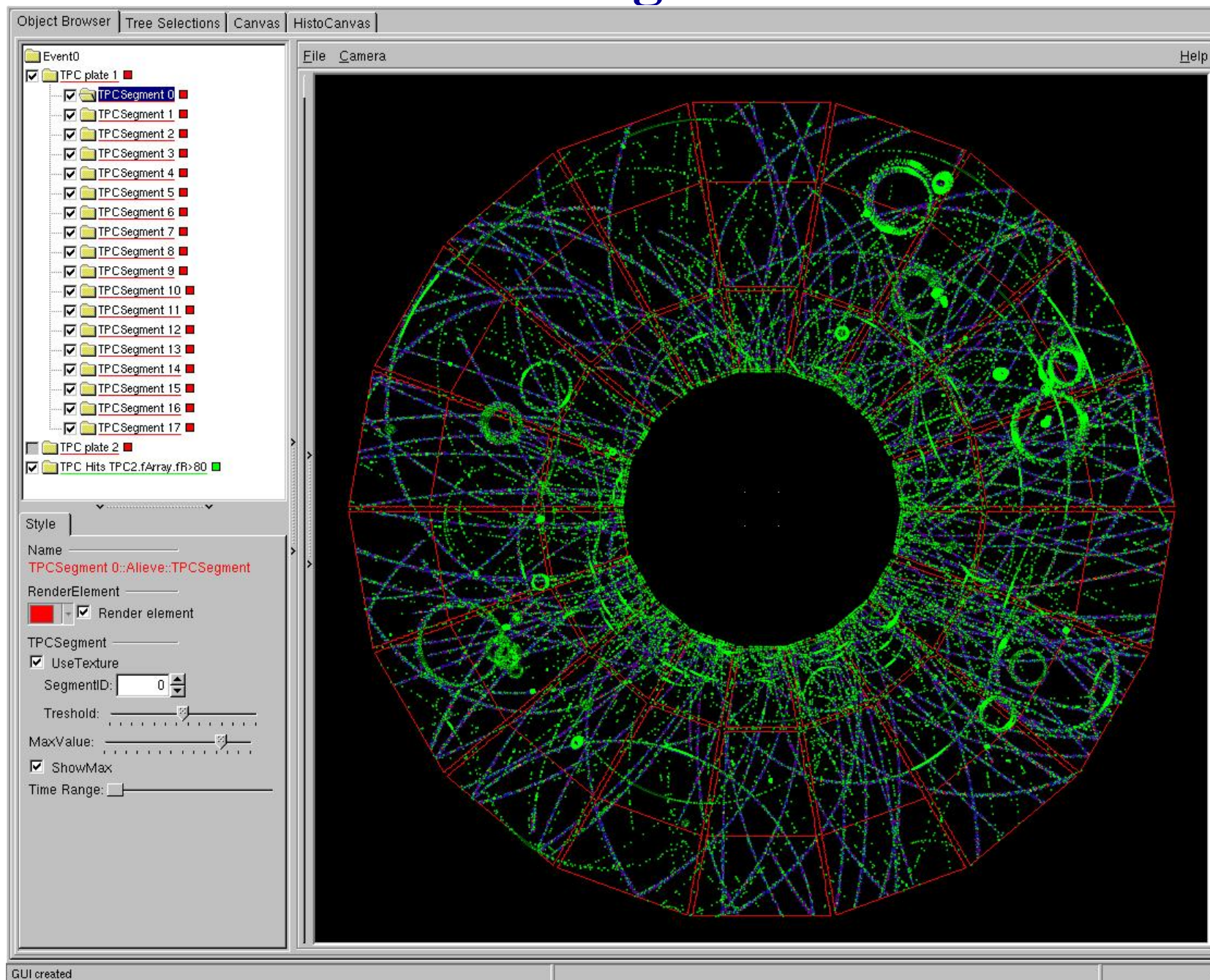


1130x1044 (653.4 KB)
273.1-5a.png

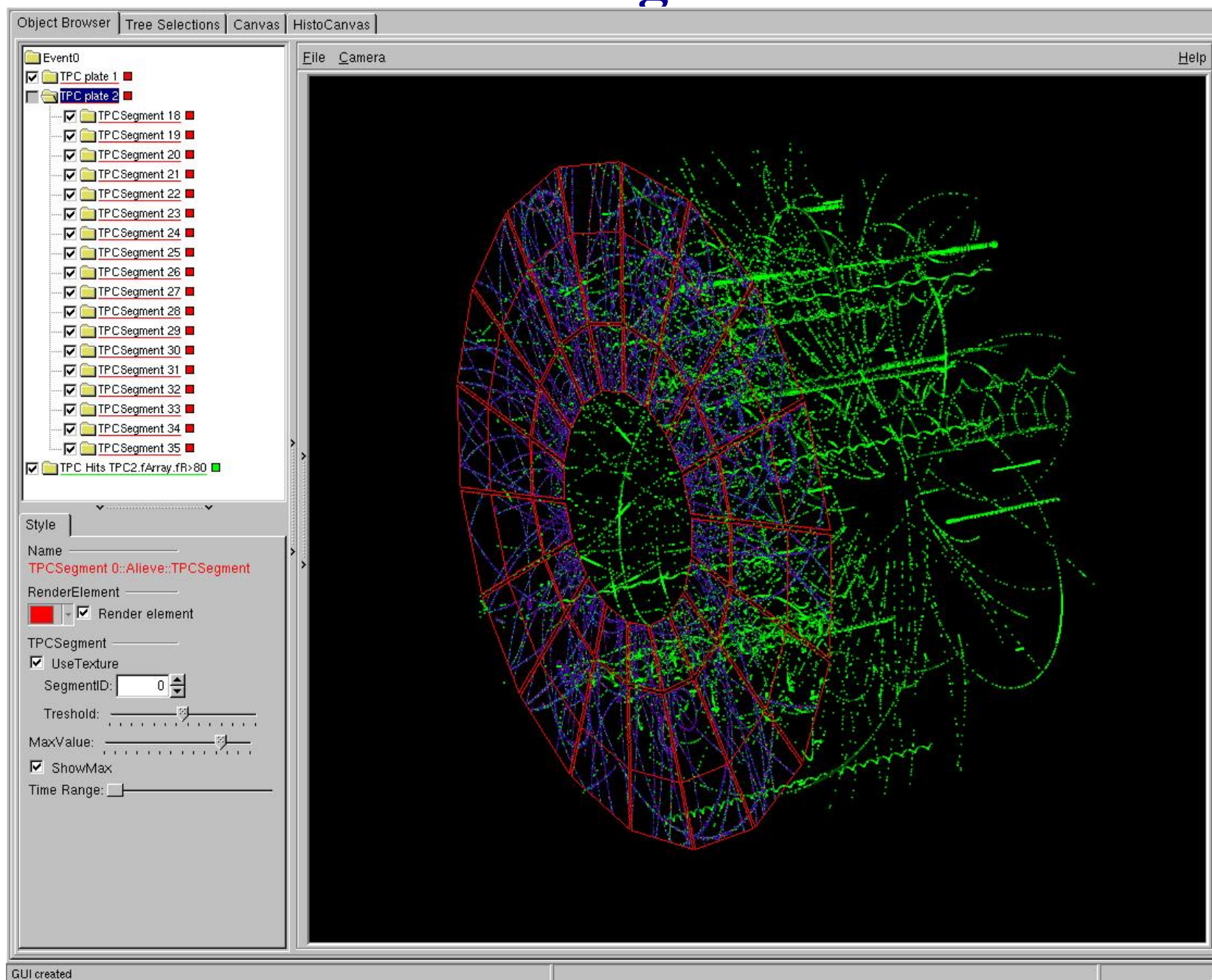


1130x1044 (91.7 KB)
273.1-5b.png

TPC digits and hits



TPC digits and hits



Hits of given track for high pt selection

The image displays a ROOT visualization environment. The main window, titled "ROOT's GL viewer", shows a 3D wireframe model of the ALICE detector geometry. A track is highlighted in green, and its hits are shown as yellow dots. The "Revue" window on the right shows the object browser and style settings. The object browser lists various detector components, and the style settings show the track and hits are visible. The bottom left shows a terminal window with the following output:

```
RGBrowser::DbClickListItem expanded by 11
--- Drawing 57 nodes with 3 visible levels
--- Drawing 57 nodes with 3 visible levels
--- Drawing 57 nodes with 3 visible levels
--- Drawing 57 nodes with 3 visible levels
--- Drawing 57 nodes with 3 visible levels
--- Drawing 13 nodes with 3 visible levels
--- Drawing 13 nodes with 3 visible levels
dbclick item TPC_holder_1
RGBrowser::DbClickListItem expanded by 1
dbclick item TPC_1
RGBrowser::DbClickListItem expanded by 16
--- Drawing 13 nodes with 3 visible levels
--- Drawing 13 nodes with 3 visible levels
--- Drawing 13 nodes with 3 visible levels
STG02 - /castor/cern.ch/user/p/phristov/pp2006/results/123760/galice.root : stagein err
currently being migrated
STG98 - Device or resource busy
/castor/cern.ch/user/p/phristov/pp2006/results/123760/galice.root : Device or resource
--- Drawing 13 nodes with 3 visible levels
--- Drawing 13 nodes with 3 visible levels
```

tracks only, front view

The image displays two windows from the ROOT software interface. The left window, titled "ROOT's GL viewer", shows a front view of particle tracks. The tracks are represented by colored lines (purple, green, yellow) originating from a central point and extending outwards. There are four purple asterisk-like markers arranged in a square pattern around the central origin. The right window, titled "Reve", is the graphical user interface for the tracks. It features an "Object Browser" on the left and a "Style" panel on the right. The "Object Browser" shows a tree structure of objects, including "Geometry", "Origin marker", "Event0", and a list of "ESD Tracks" (e.g., ESDTrack 45, ESDTrack 4, ESDTrack 0, ESDTrack 31, ESDTrack 37, ESDTrack 7, ESDTrack 38, ESDTrack 13, ESDTrack 17, ESDTrack 23, ESDTrack 838, ESDTrack 841, ESDTrack 329, ESDTrack 882, ESDTrack 840, ESDTrack -328). The "Style" panel shows the selected object is "ESDTrack 7::Reve::Track" with a line width of 1 and the "Render element" checkbox checked. The status bar at the bottom of the "Reve" window indicates "GUI created".

tracks and clusters for selected track label

The image displays two windows from the ROOT software interface. The left window, titled "ROOT's GL viewer", shows a 3D visualization of particle tracks and clusters on a black background. A prominent blue track is visible, along with several magenta tracks and clusters. The right window, titled "Reve", shows the "Object Browser" and "Style" panels. The "Object Browser" lists the following objects:

- Geometry
 - Origin marker
 - Event0
 - ESD Tracks
 - ESDTrack 45
 - ESDTrack 4
 - ESDTrack 0
 - ESDTrack 31
 - ESDTrack 37
 - ESDTrack 7
 - ESDTrack 38
 - ESDTrack 13
 - ESDTrack 17
 - ESDTrack 23
 - ESDTrack 838
 - ESDTrack 841
 - ESDTrack 329
 - ESDTrack 882
 - ESDTrack 840
 - ESDTrack -328
 - Primary Vertex
 - SPD Vertex
 - Clusters lab=7

The "Style" panel shows the following settings:

- Name: Clusters lab=7::TPolyMarker3D
- Marker: Blue square with a size of 5.0

At the bottom of the Reve window, it says "GUI created".

tracks only, side view

The image displays two windows from the ROOT software interface. The left window, titled "ROOT's GL viewer", shows a side view of particle tracks. The tracks are represented by thin lines radiating from a central point, with some tracks highlighted in purple and others in green. There are four star-shaped markers, each with eight lines, positioned in the corners of the viewer. The right window, titled "Reve", is the graphical user interface for the tracks. It features an "Object Browser" on the left and a "Style" panel on the right. The "Object Browser" shows a tree structure of objects, including "Origin marker", "Event0", "ESD Tracks", "Primary Vertex", and "SPD Vertex". The "ESD Tracks" folder is expanded, showing a list of tracks with checkboxes and colored squares. The "Style" panel shows the selected track, "ESDTrack 7::Reve::Track", with its name, line width, and render element settings.

ROOT's GL viewer

File Camera Help

Reve

Object Browser Tree Selections Canvas HistoCanvas

Geometry

- Origin marker
- Event0
 - ESD Tracks
 - ESDTrack 45
 - ESDTrack 4
 - ESDTrack 0
 - ESDTrack 31
 - ESDTrack 37
 - ESDTrack 7
 - ESDTrack 38
 - ESDTrack 13
 - ESDTrack 17
 - ESDTrack 23
 - ESDTrack 838
 - ESDTrack 841
 - ESDTrack 329
 - ESDTrack 882
 - ESDTrack 840
 - ESDTrack -328
 - Primary Vertex
 - SPD Vertex

Style

Name

ESDTrack 7::Reve::Track

Line

1

1

RenderElement

Render element

GUI created

tracks and hits for full event

The image displays two windows from the ROOT software: 'ROOT's GL viewer' and 'Reve'.

ROOT's GL viewer: This window shows a 3D visualization of particle tracks and hits. The tracks are represented by solid lines of various colors (purple, blue, green) originating from a central vertex. The hits are shown as green dotted lines along the tracks. The background is black.

Reve: This window provides a hierarchical tree view of the event data and a style configuration panel.

- Object Browser:** Shows the event structure:
 - Geometry
 - Origin marker
 - Event0
 - ESD Tracks
 - ESDTrack 45
 - ESDTrack 4
 - ESDTrack 0
 - ESDTrack 31
 - ESDTrack 37
 - ESDTrack 7
 - ESDTrack 38
 - ESDTrack 13
 - ESDTrack 17
 - ESDTrack 23
 - ESDTrack 838
 - ESDTrack 841
 - ESDTrack 329
 - ESDTrack 882
 - ESDTrack 840
 - ESDTrack -328
 - Primary Vertex
 - SPD Vertex
 - Clusters lab=7
 - ITS Hits 'ITS.fTrack==7'
 - TPC Hits 'TPC2.fArray.fTrack'
 - TPC hits - Eta Slices
 - Slice 0 [-2.000, -1.800]
 - Slice 1 [-1.800, -1.600]
 - Slice 2 [-1.600, -1.400]
 - Slice 3 [-1.400, -1.200]
 - Slice 4 [-1.200, -1.000]
 - Slice 5 [-1.000, -0.800]
 - Slice 6 [-0.800, -0.600]
 - Slice 7 [-0.600, -0.400]
 - Slice 8 [-0.400, -0.200]
 - Slice 9 [-0.200, 0.000]
 - Slice 10 [0.000, 0.200]
 - Slice 11 [0.200, 0.400]
 - Slice 12 [0.400, 0.600]
 - Slice 13 [0.600, 0.800]
 - Slice 14 [0.800, 1.000]

- Style Panel:** Shows the style configuration for the selected object, 'TPC hits - Eta Slices::Reve::PointSetArray'.
- Name: TPC hits - Eta Slices::Reve::PointSetArray
- RenderElement: Render element
- Marker: Size: 3.5
- PointSetArray: Range [-2.00, 2.00]

GUI created