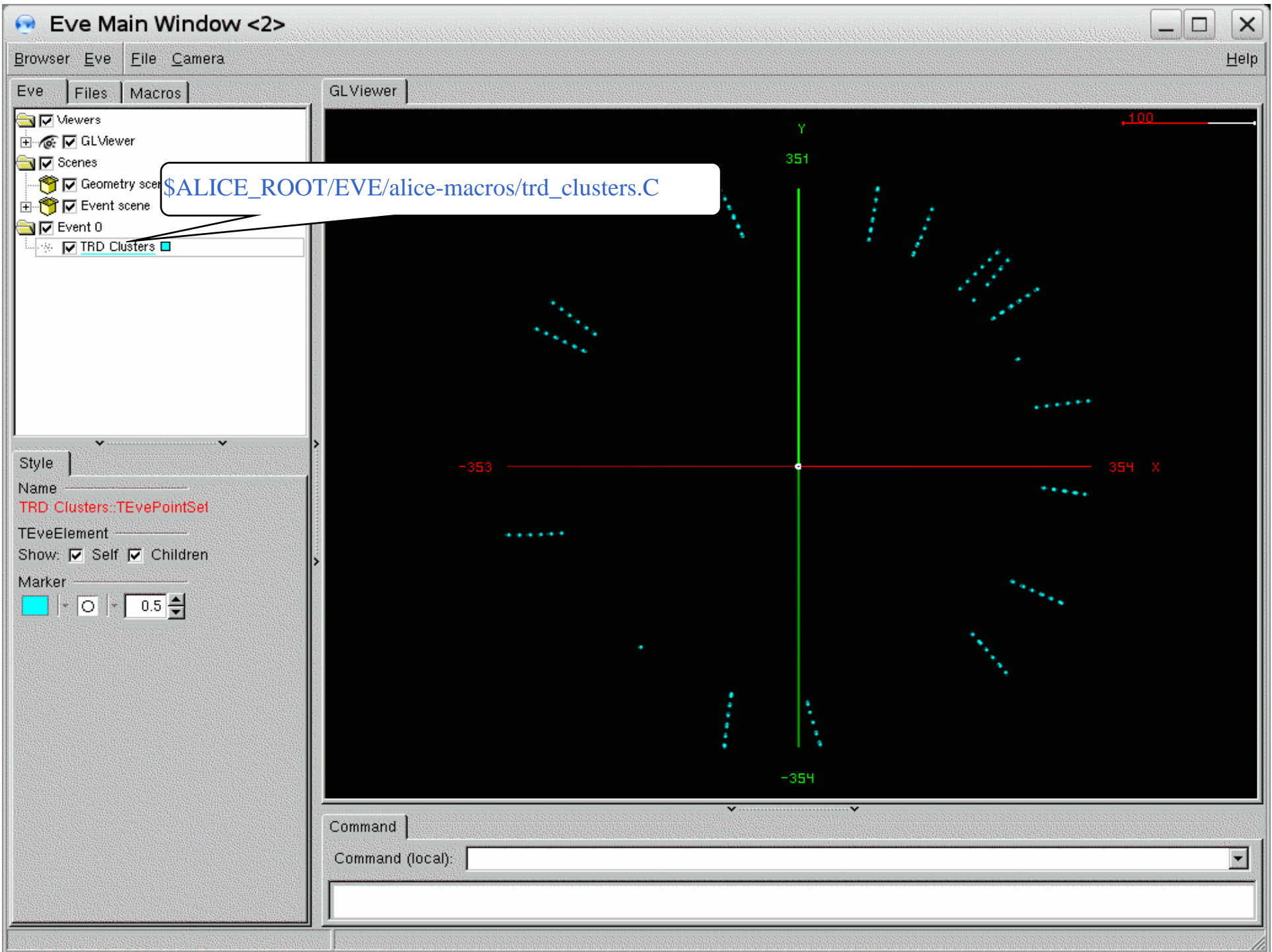


# TRD Visualization Status

*Alex Bercuci*

# Overview

- The evolution of TRD visualization
- Present status
- What can be done further
  - from *detector* to *barrel visualization*



Eve Main Window <2>

Browser Eve File Camera

Help

Eve Files Macros

- Viewers
  - GLViewer
- Scenes
  - Geometry scene
  - Event scene
    - Event 0
- Event 0
  - TRD Clusters
  - ESD Tracks

Style Refs

Name: ESD Tracks::TEveTrackList

TEveElement

Show:  Self  Children

Marker:   1.0

Line:  1

Draw Marker  Draw TEveLine

Pt rng: 0.00 4.50

P rng: 0.00 5.00

RenderStyle

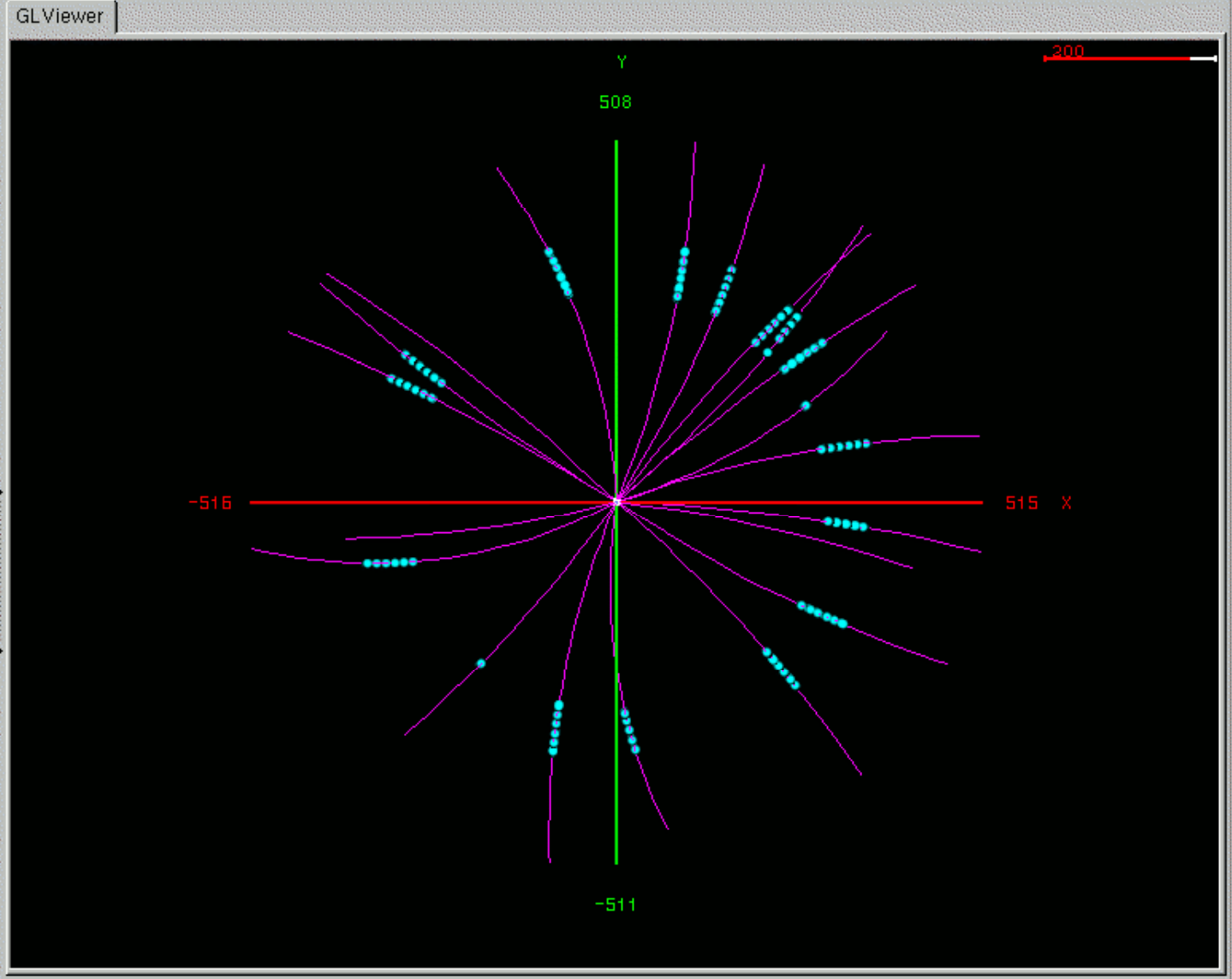
Max R: 520.0

Max Z: 450.0

Orbits: 0.5

Angle: 45.0

Delta: 0.100



Command

Command (local):

Eve Main Window <2>

Browser Eve File Camera Help

Eve Files Macros GLViewer

Viewers  
GLViewer  
Scenes  
Geometry scene  
Event scene  
Event 0  
Event 0  
TRD Clusters  
ESD Tracks  
TRD Detectors  
SM000  
Stack004  
Chmb024  
UT24\_1  
clusters  
digits  
Chmb025  
Chmb026

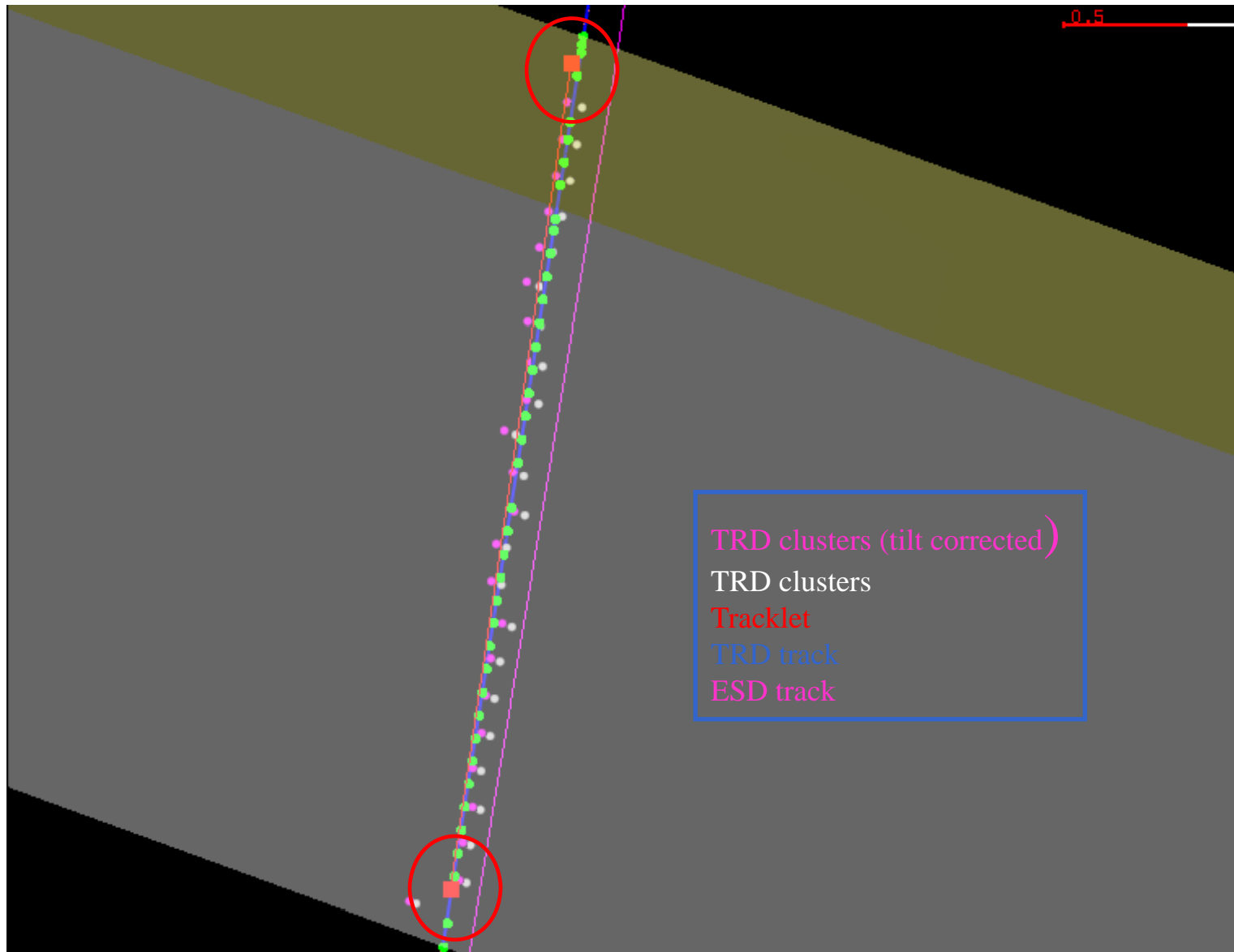
Style  
Name  
Chmb024:AllEveTRDChamber  
TEveElement  
Show:  Self  Children  
TRD Detector  
Hits  
 Display  
Digits  
 Display  Threshold  
 Log  Box  
Clusters  
 Display

`$ALICE_ROOT/EVE/alice-macros/trd_detectors.C`

Command  
Command (local):

TRD Visualization Status

# Track visualization



Eve Main Window

Browser Eve File [\\$ALICE\\_ROOT/EVE/alice-macros/trd\\_tracks.C](#) Help

Eve Files Macros

TRD Tracks



- [ 0] muon
  - tracklet
    - clusters
    - tracklet
    - tracklet
    - tracklet
    - tracklet
    - tracklet
- [ 1] pion
- [ 2] muon
- [ 3] proton
- [ 5] muon
- [ 6] electron
- [ 7] muon


Style

Name: [ 1] pion::AliEveTRDTrack

TEveElement: \_\_\_\_\_

Show:  Self  Children

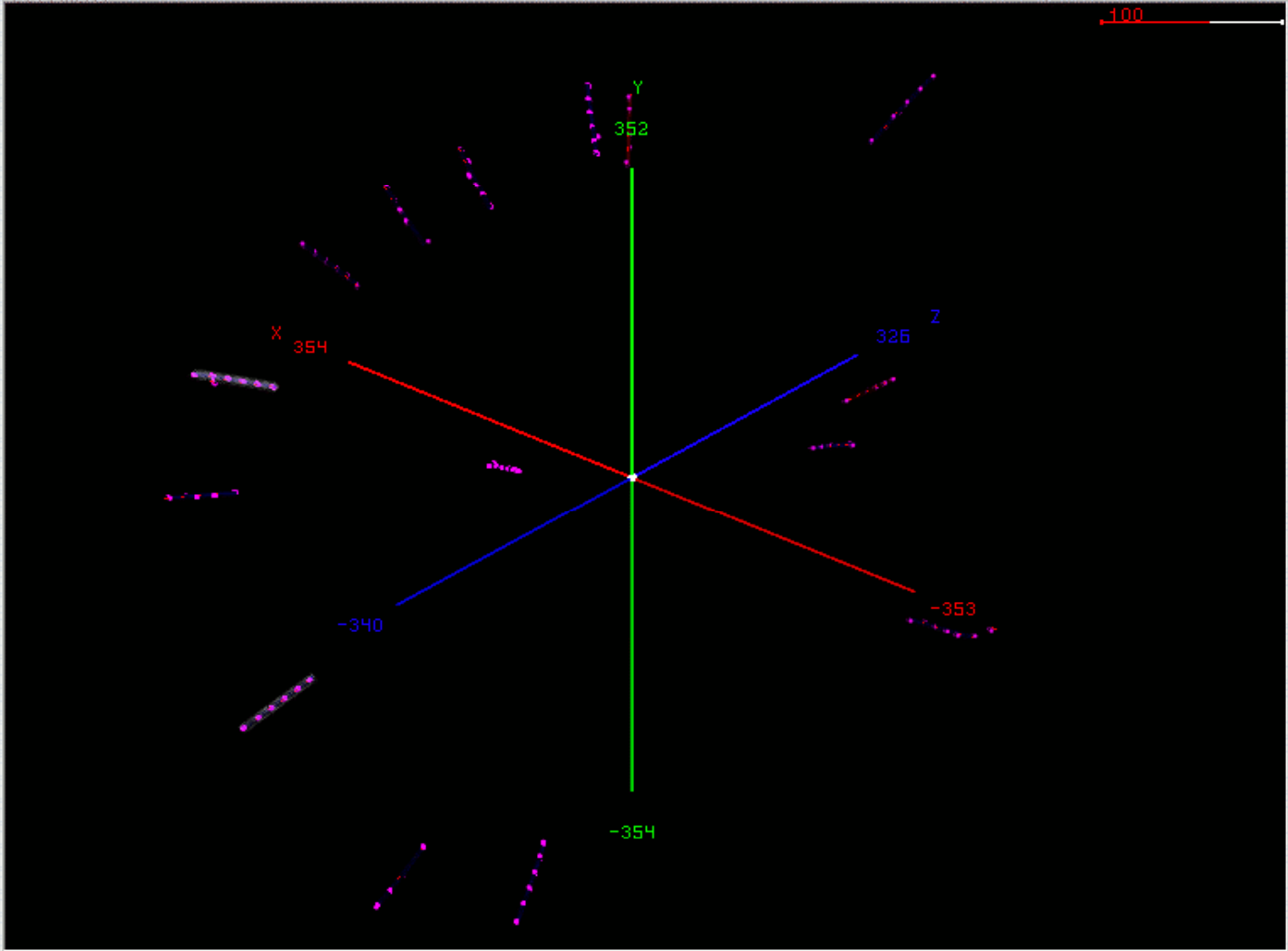
Marker:   1.0

Line:  2

1

Draw Marker  Draw Line

Smooth line



Command

Command (local): \_\_\_\_\_



The screenshot shows the 'Eve' software interface with three main panels:

- File Tree (Left):** Shows a hierarchy starting with 'TRD Tracks'. Underneath, there are several sub-items including '[ 0 ] muon', '[ 1 ] pion', '[ 2 ] muon', '[ 3 ] proton', '[ 5 ] muon', and '[ 6 ] electron'. Each of these has a 'tracklet' sub-item, which in turn has 'clusters' sub-items.
- Style Panel (Bottom Left):** Has tabs for 'Style', 'Process', and 'Results'. The 'Style' tab is active. It shows 'Name: TRD Tracks::AliEveTRDTrackList', 'TEveElement', and 'Show: Self Children'. Below are 'Track model' and 'Color model' sections with radio buttons for 'Rieman', 'Kalman', 'Line', 'PID LQ', 'PID NN', and 'ESD Source'.
- Process Panel (Bottom Center):** Has tabs for 'Style', 'Process', and 'Results'. The 'Process' tab is active. It shows 'Name: TRD Tracks::AliEveTRDTrackList' and 'Add macro(s):'. Below this is a 'Selection macros' list and a 'Process plugins' list. The 'Process plugins' list includes:
  - DetChecker->PlotChargeDepo
  - DetChecker->PlotChi2
  - DetChecker->PlotClusterCharge
  - DetChecker->PlotMeanNClusters
  - DetChecker->PlotNClusters
 At the bottom of the process panel are buttons for 'Apply plugin(s)' and 'Remove plugin(s)'.

The 'Open' dialog box shows the following details:

- Title:** Open
- Look in:** sim\_mu
- Multiple files:** Checked
- File List:**

AliEve	c.C	sim.C
merge	chargeDistrHist.C	tracklet.C
test	clusterSelection.C	trackletCrossRow.C
ConfigMu.C	iteration.C	trd_friend_tracks.C
PH.C	lblSelect.C	trd_track_ref.C
TEST.C	macrosWizzard.C	
TEST2.C	rec.C	
TEST3.C	residuals.C	
- File name:** (Empty text field)
- Files of type:** ROOT macros (\*.C)
- Buttons:** Open, Cancel

The 'TRD Macro Wizzard' dialog box contains the following information:

- Title:** TRD Macro Wizzard
- Name\*:** example
- Comment:** This is an example on how to use the macro wizard
- Author:** TRD
- Type\*:** (Empty dropdown menu)
- Footer:** (\*) Mandatory fields

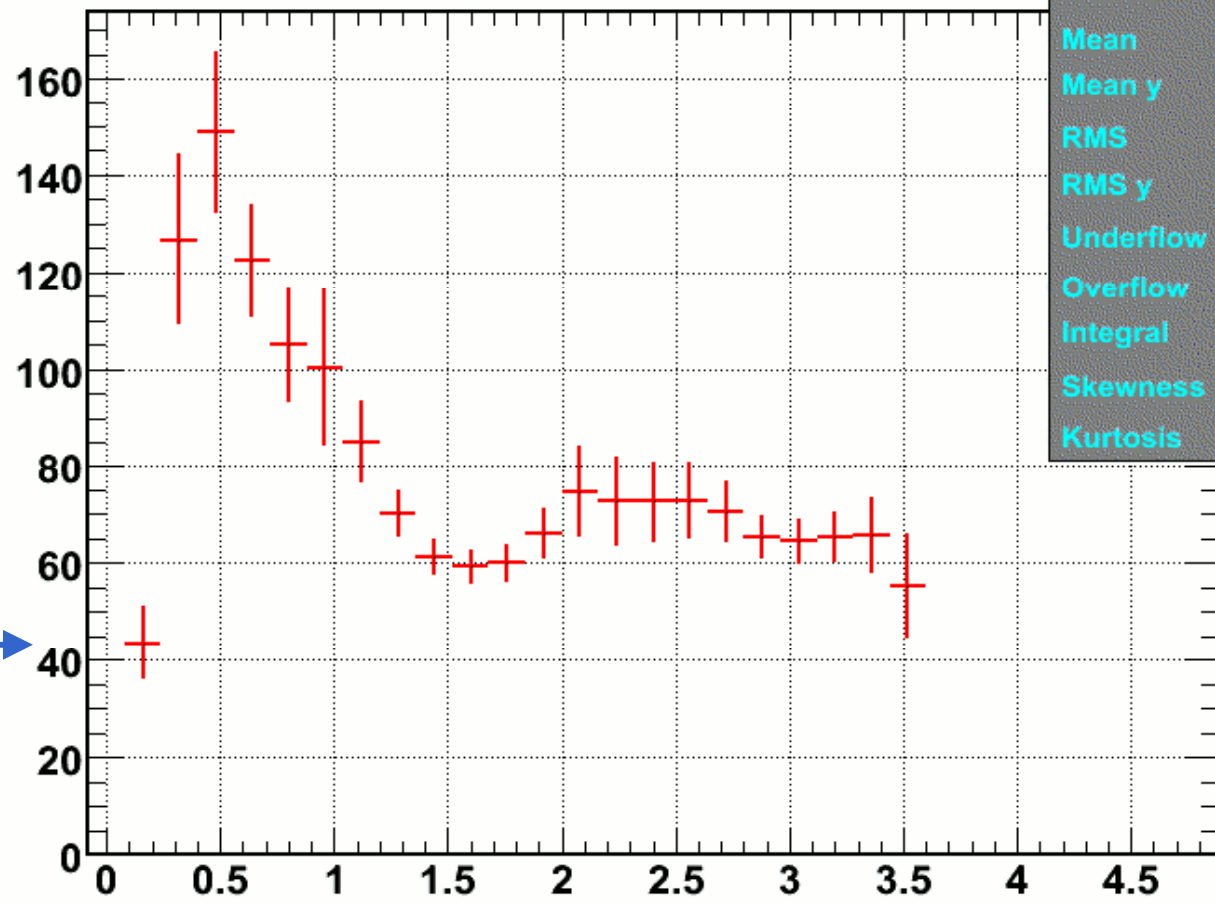
- Eve
- Files
- Macros
- Viewers
  - GLViewer
- Scenes
  - Geometry scene
  - Event scene
- Event 0
  - TRD Tracks
  - ESD Tracks
  - Hits

- Style Process Results
- Name
- TRD Tracks::AllEveTRDTrackList
- Data from plugins:
- DetChecker->PlotClusterCharge (histo
  - DetChecker->PlotMeanNClusters (histo
  - DetChecker->PlotNTracklets (histo mac
  - DetChecker->PlotPHSdistance (histo m
  - DetChecker->PlotPulseHeight (histo ma

Draw projections

GLViewer TRD Tracks

### Average PH



hPHdistance	
Entries	1770
Mean	1.813
Mean y	79.78
RMS	0.9629
RMS y	88.18
Underflow	0
Overflow	0
Integral	1728
Skewness	-0.2514
Kurtosis	-0.815

Mon Dec 8 13:04:07 2008

Command

Command (local):

# TRD visualization status

- TRD data with AliEve wrappers
  - MC hits
  - Digits, raw digits
  - Clusters
  - Tracklets
  - Tracks
- Steering TRD visualization
  - individual macros (\$ALICE\_ROOT/EVE/alice-macros/trd\_\*)
  - online reconstruction (“alieve rec.C”)
    - detectors, tracks

## To Do

*Track references*

*Online tracklets*

*raw digits*

# Further developments

from *detector* to *barrel* and *beyond* (*my wishes*)

*The visualization framework provides all tools for easy integration of any visualization task (thanks Matevz)*

- *Integrated pointer to data*
- *Interaction with CINT*
- *Container based organization (TEveElement)*

## Reconstruction

- factorization of algorithms
  - track models, PID algorithms(\*)
  - AliTRDtrackerV1::FitMethod()
  - AliTRDseedV1::Fit()
- data structures
  - AliESDfriendTrack, AliKalmanTrack
  - AliTRDtrackV1
    - AliTRDseedV1
    - AliTRDcluster

## AliEve/Root

- “for\_each” algorithms @
  - TEveElement
  - TCollection
- method wrappers
  - TMethod(Call)
  - T(Eve)Macro

AliEve is *easy*

Bremsstrahlung in the barrel

