

BBQ

A TPC event display

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Outline

- Motivation
- Implementation
- Short non-interactive demo
- Where to get it
- Conclusion

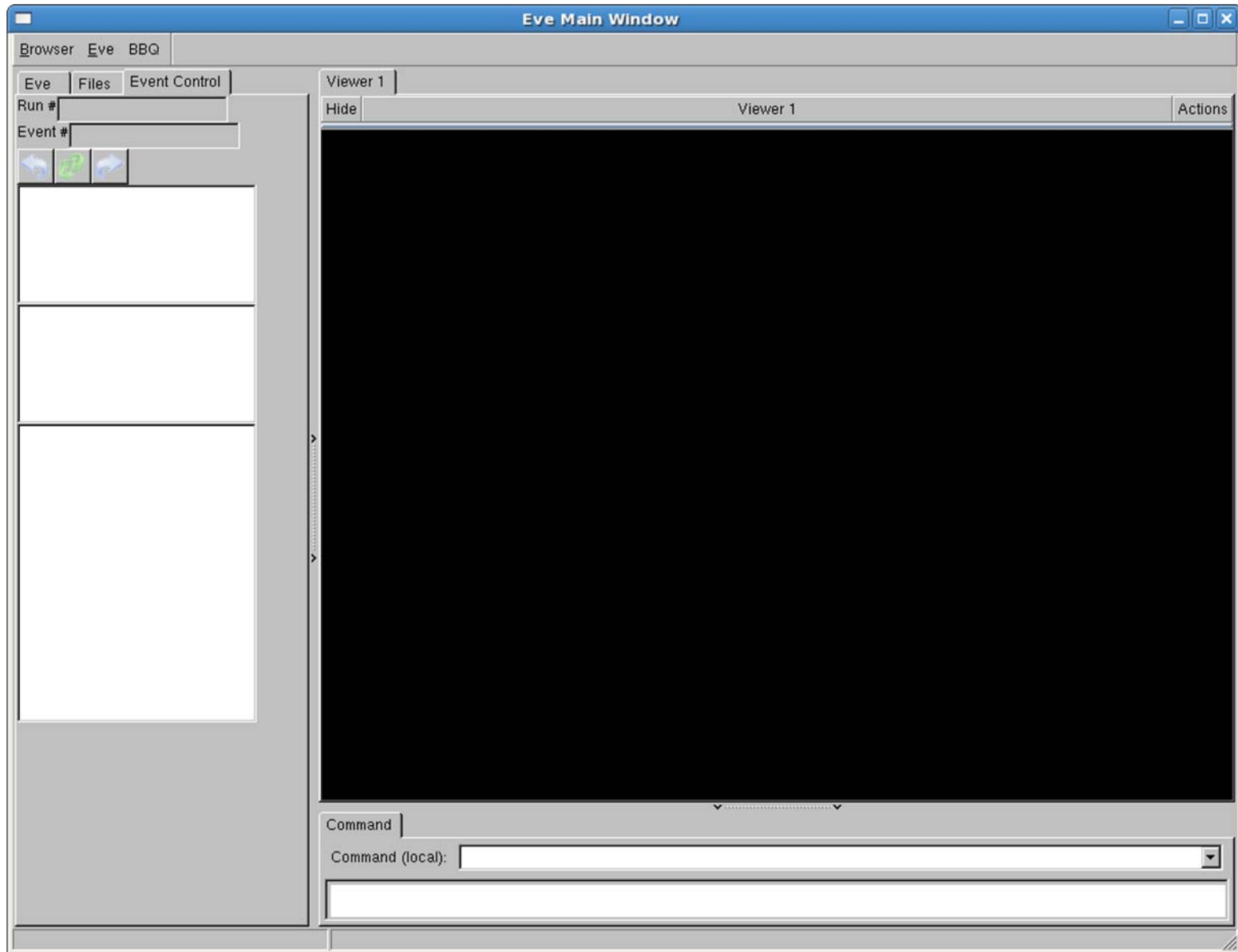
Motivation

- BBQ, a new TPC event display.
 - What do we want?
 - Inspect hits, tracks, pulses and pads in 3D
 - GEAR support
 - LCIO support
 - High performance
 - Why not use DRUID?
 - DRUID shows full events in the full detector
 - DRUID doesn't show TPC details e. g. pulses
 - Level of TPC detail too high for average DRUID use-case
 - Information only relevant for TPC studies
 - It affects performance

Implementation

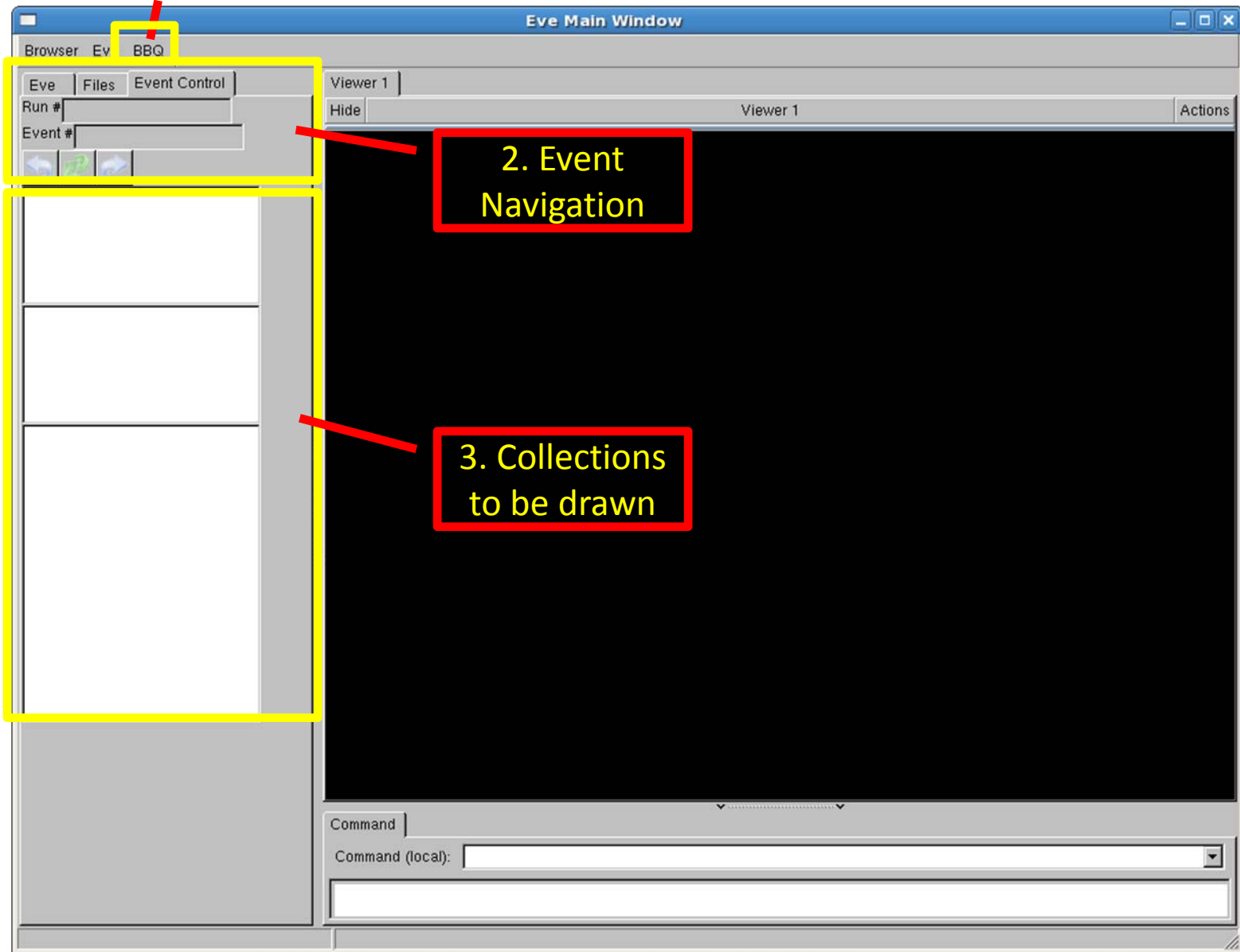
- TEve based
 - C++, ROOT
 - OpenGL: 3D hardware acceleration
 - Object browser
 - Picking and highlighting
- Full GEAR support
 - All pad layouts
 - Multiple modules
- LCIO support
 - Read in files
 - Select collections

Starting screen

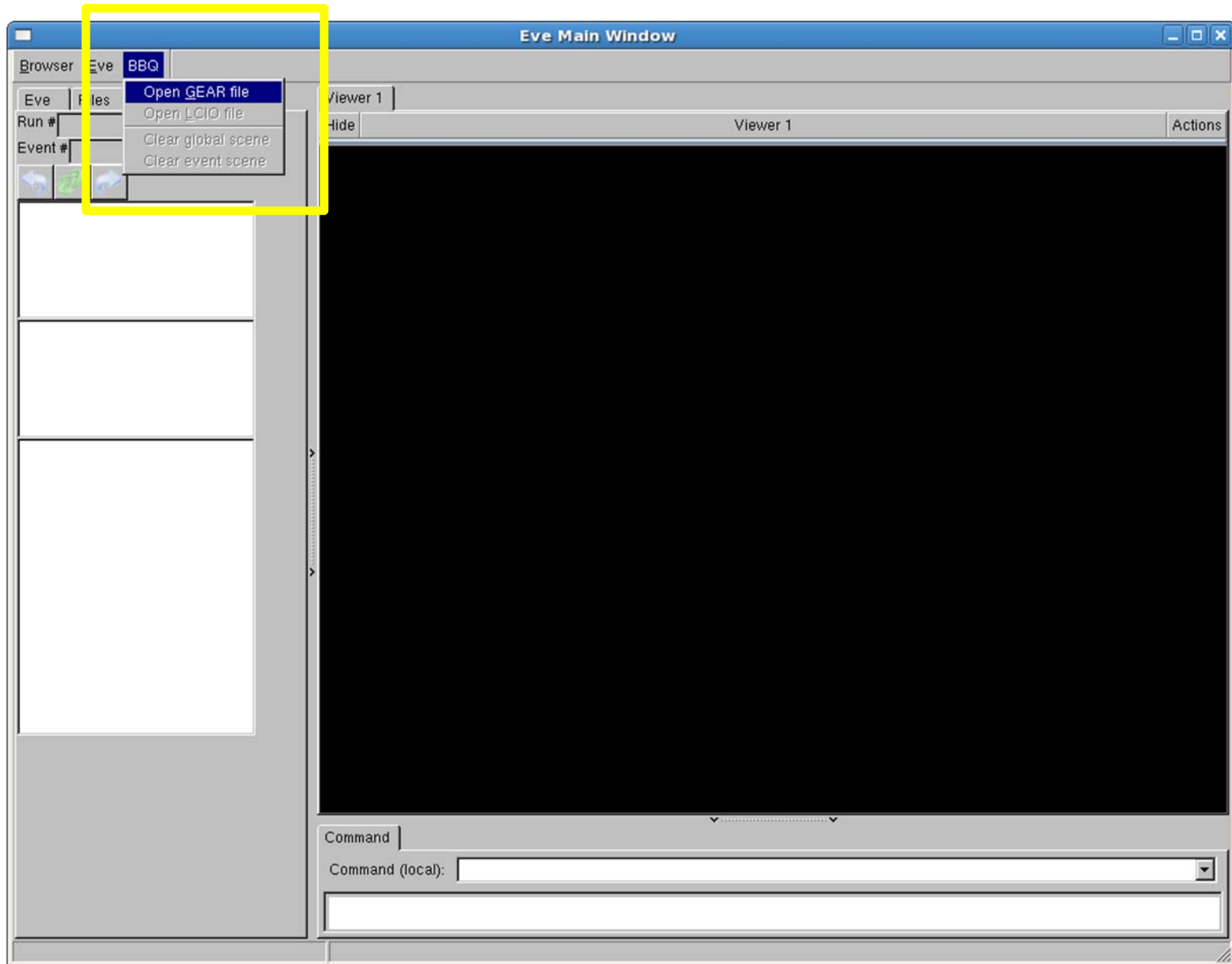


1. BBQ Menu

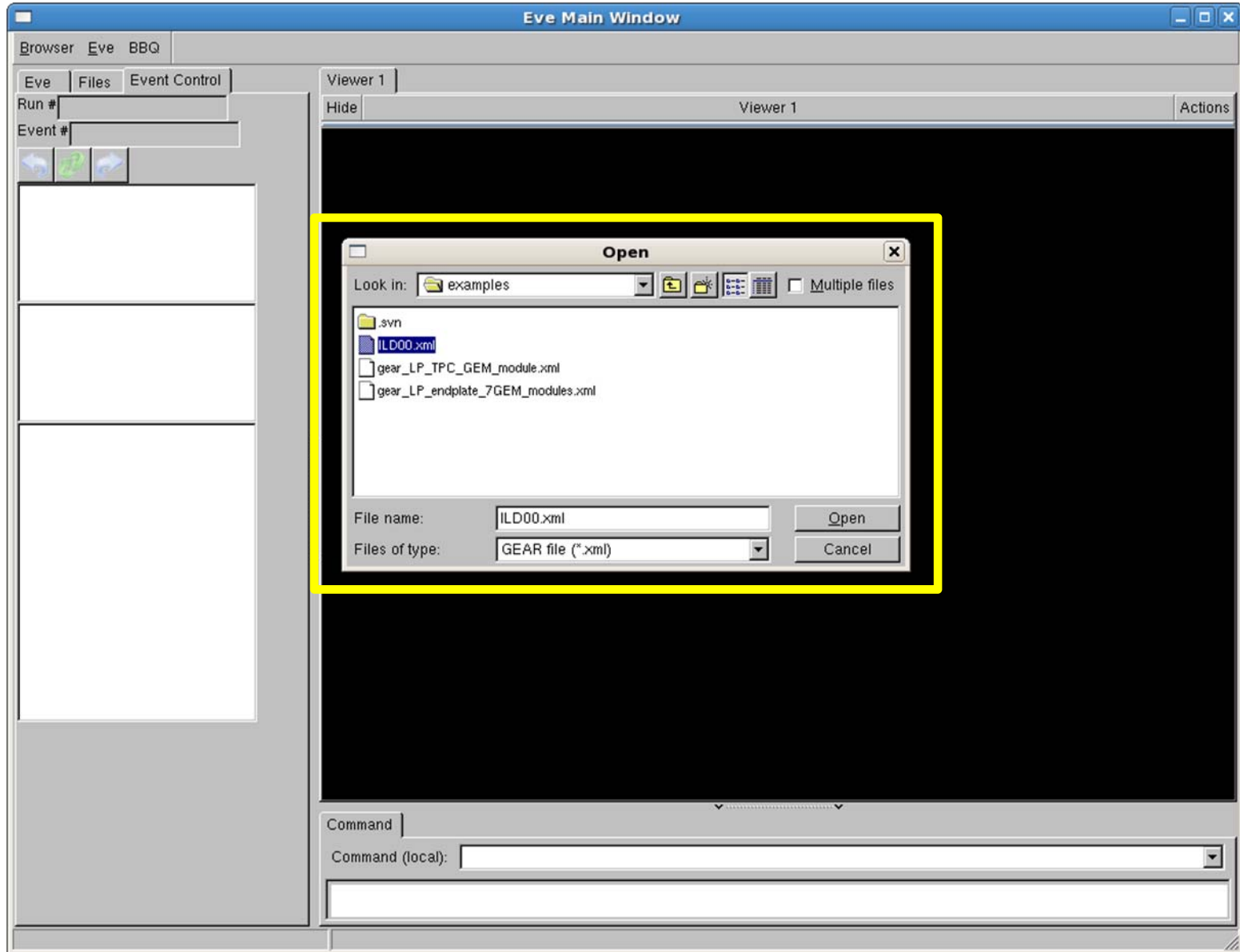
BBQ specific controls



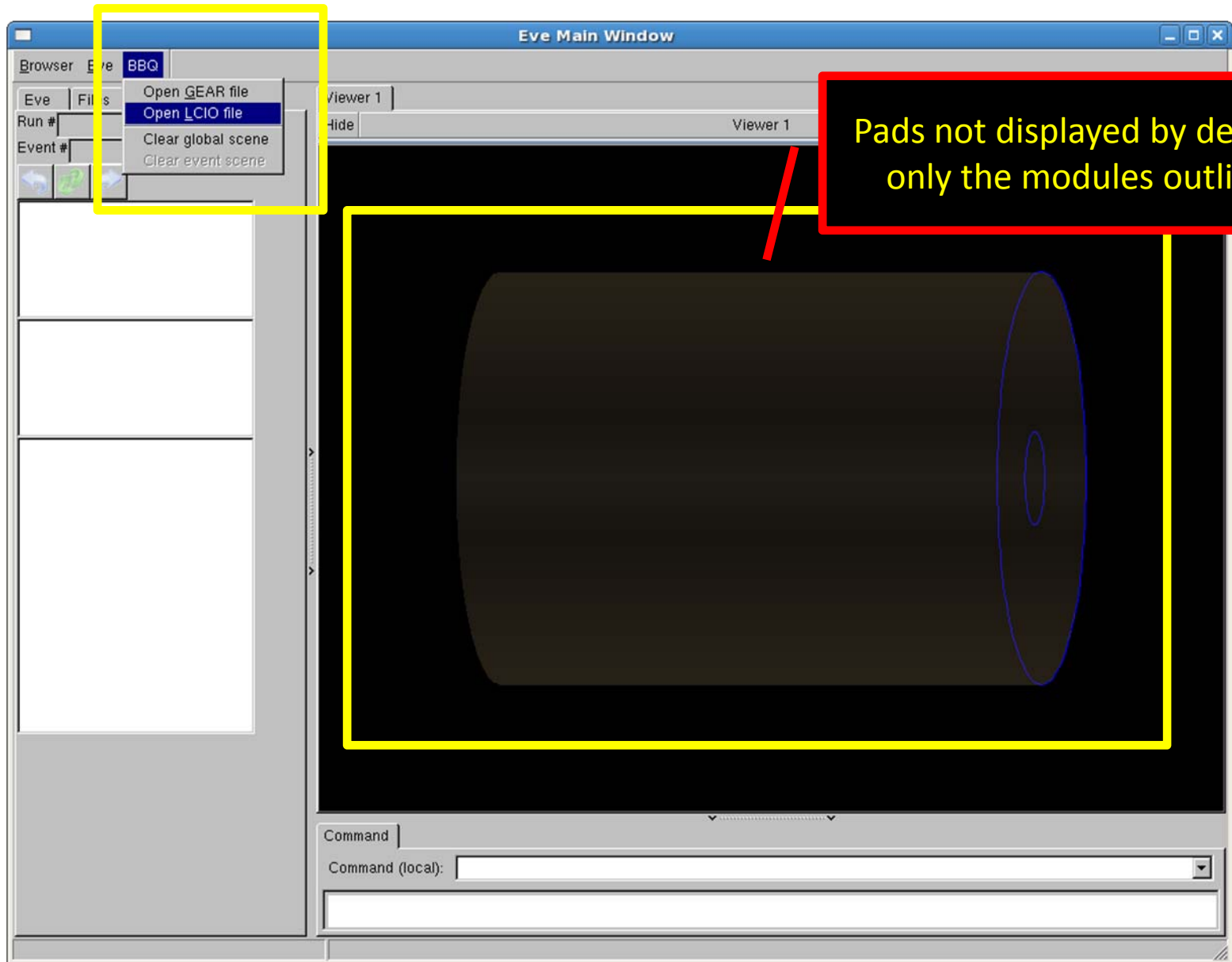
Load GEAR file



Select a GEAR file



GEAR file loaded



Draw the collections

The screenshot shows the 'Eve Main Window' interface. On the left, a list of data collections is displayed, with 'TPCPulsesPositive', 'TPCHits', and 'TPCSeedTracks' highlighted in blue. A yellow box encloses this list, and a red arrow points from a '2. Reload' box to the 'Files' menu. On the right, a 3D visualization of a detector is shown, with a red arrow pointing from a '3. Results' box to the visualization. A red arrow also points from a '1. Select which collections to draw and press "Reload".' box to the bottom of the collection list.

2. Reload

Pulses

Hits

Tracks

3. Results

1. Select which collections to draw and press "Reload".

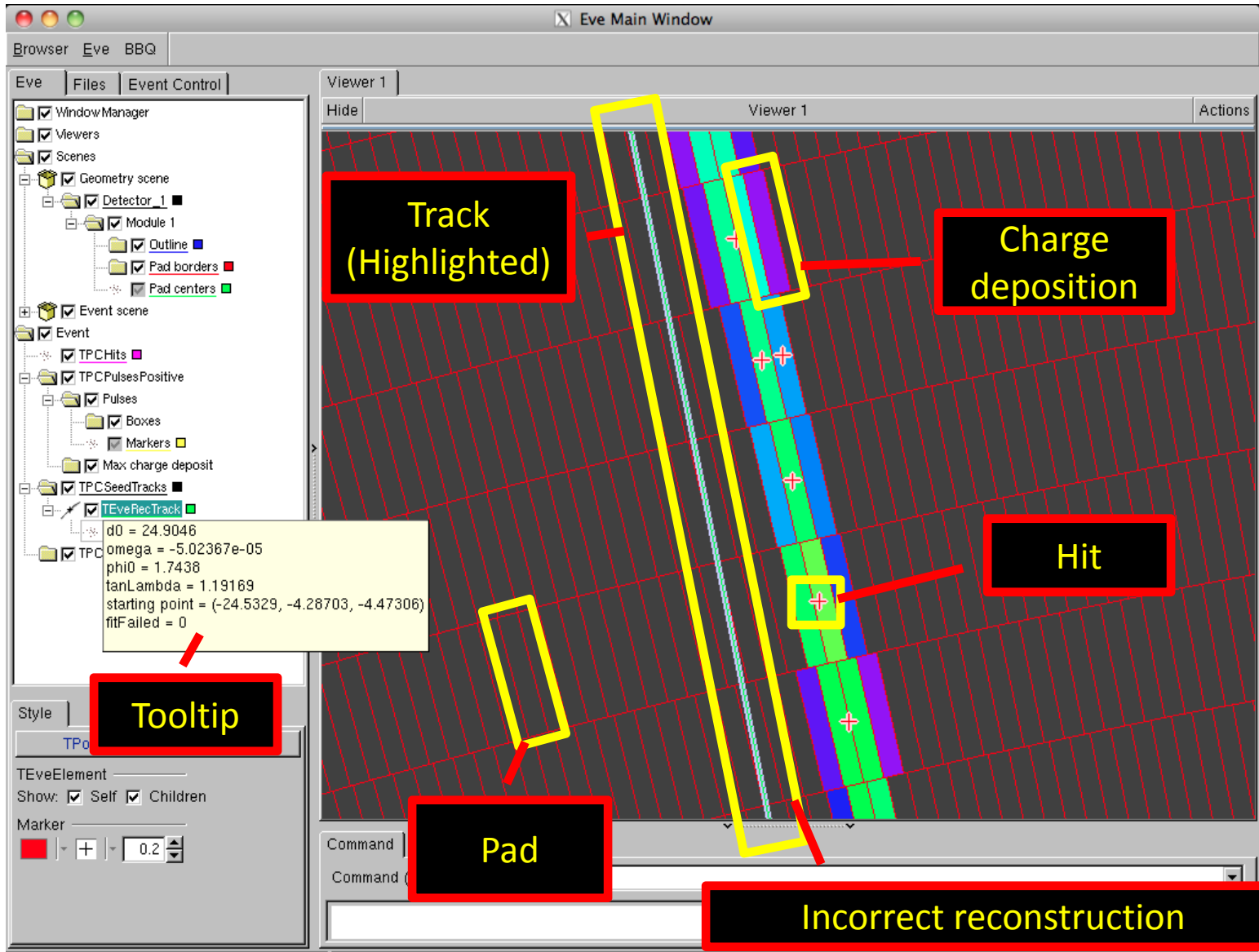
TEve Basics

- Slides on basic usage are provided at the end of the presentation as a reference
 - Rotation, translation and zoom of the 3D view
 - Change the pivoting point used for rotation
 - Change view to orthographic/perspective
 - Enable axes

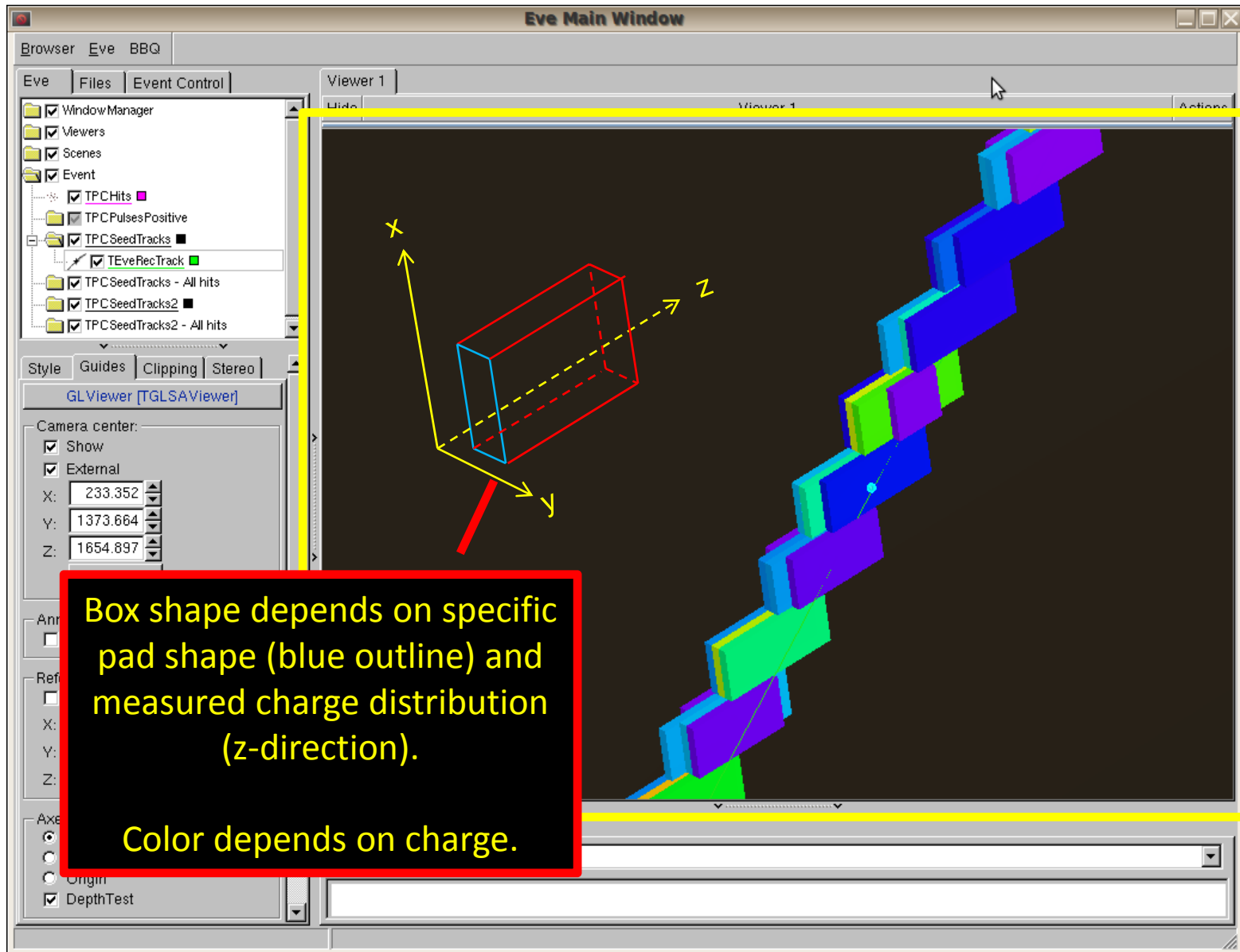
Pads displayed

The image shows a screenshot of the 'Eve Main Window' software interface. On the left, a 'Browser' pane displays a tree view of the scene hierarchy. Under 'Detector_1', 'Module 1' is expanded, showing 'Outline', 'Pad borders', and 'Pad centers'. A red arrow points from the 'Pad borders' checkbox to a red-bordered text box that says 'Enable pad borders'. Another red arrow points from the 'Pad borders' checkbox to a larger red-bordered text box in the center of the viewer. This text box contains the text: 'Pads not displayed by default, only the modules outline.' and '1.5 Million pads are drawn here.' The main 'Viewer 1' window shows a large red circle with a smaller dark grey circle in the center, representing the detector pads. The interface also includes a 'Style' pane with various settings like 'Update behaviour', 'Max HQ draw time', and 'Light sources'.

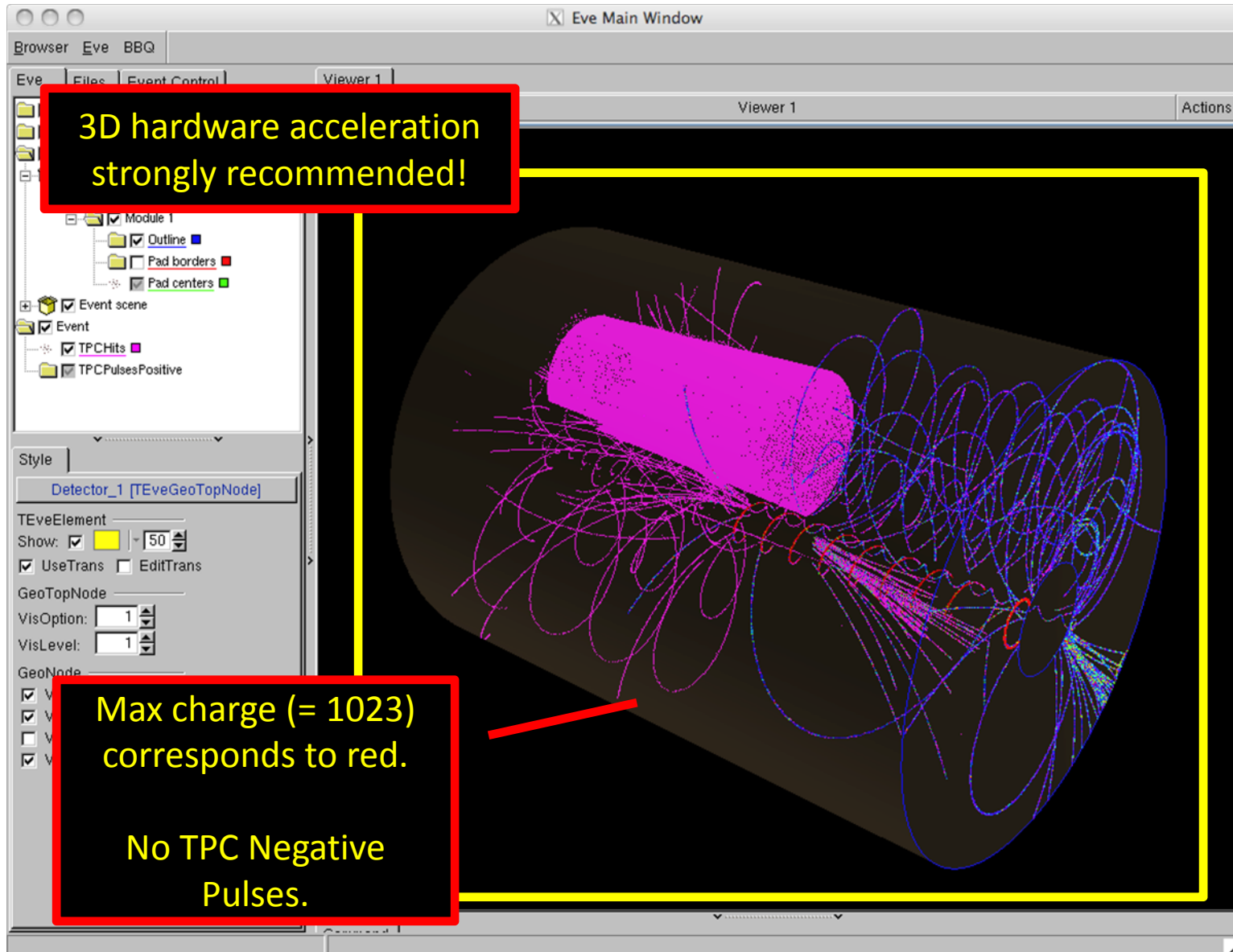
Detailed view, orthographic



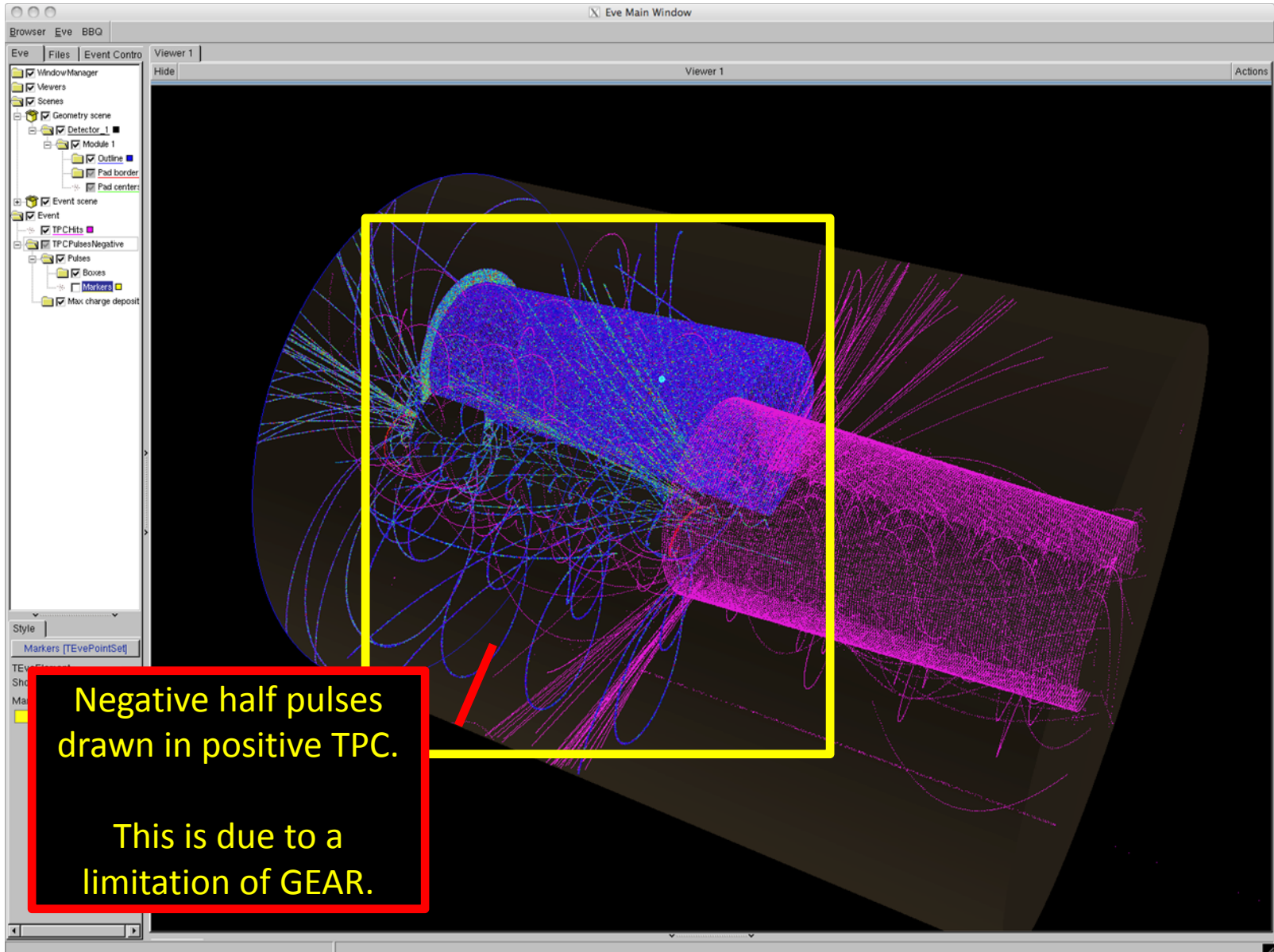
Detailed view, 3D



Complex example, t-tbar event



Negative half TPC



Where to get it

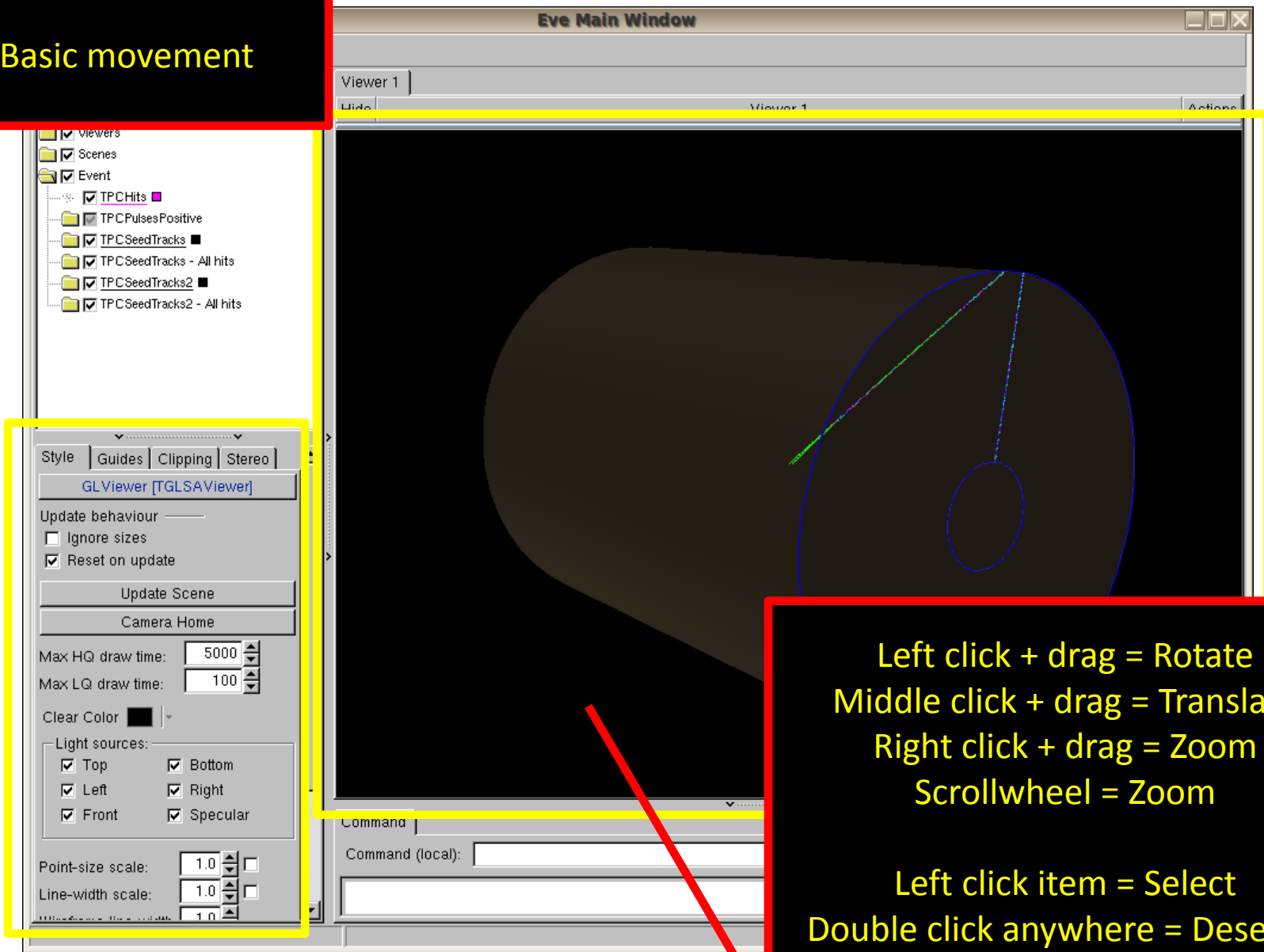
- <https://svnsrv.desy.de/public/bbq/trunk>
- Please try it out and give feedback
- Depends on and tested successfully with (as of 26/08/2010)
 - ROOT \geq 5.26 (OpenGL & TEve)
 - GEAR \geq 00-13
 - LCIO \geq 01-12-03
 - ILCSOft \geq 01-08 CMake modules

Conclusion

- BBQ, a new TPC event display.
 - Inspect hits, tracks, pulses and pads in 3D
 - Full GEAR support
 - LCIO support
 - High performance
- Outlook
 - Manual is on the way
 - Draw negative half TPC (GEAR limitation)
 - Make drift velocity and readout frequency configurable (currently hardcoded)

Slides for reference

Basic movement



Left click + drag = Rotate
Middle click + drag = Translate
Right click + drag = Zoom
Scrollwheel = Zoom

Left click item = Select
Double click anywhere = Deselect

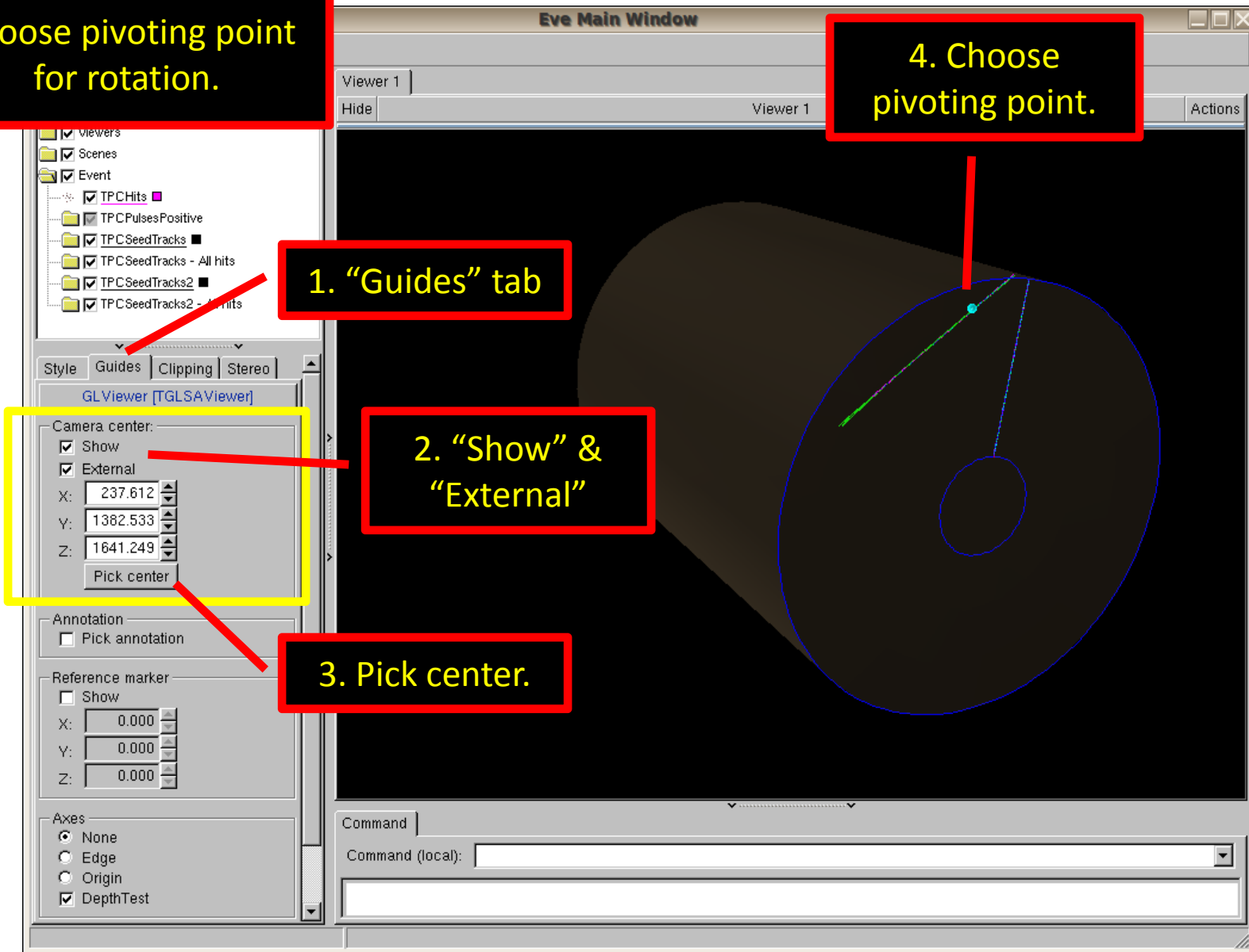
Choose pivoting point for rotation.

4. Choose pivoting point.

1. "Guides" tab

2. "Show" & "External"

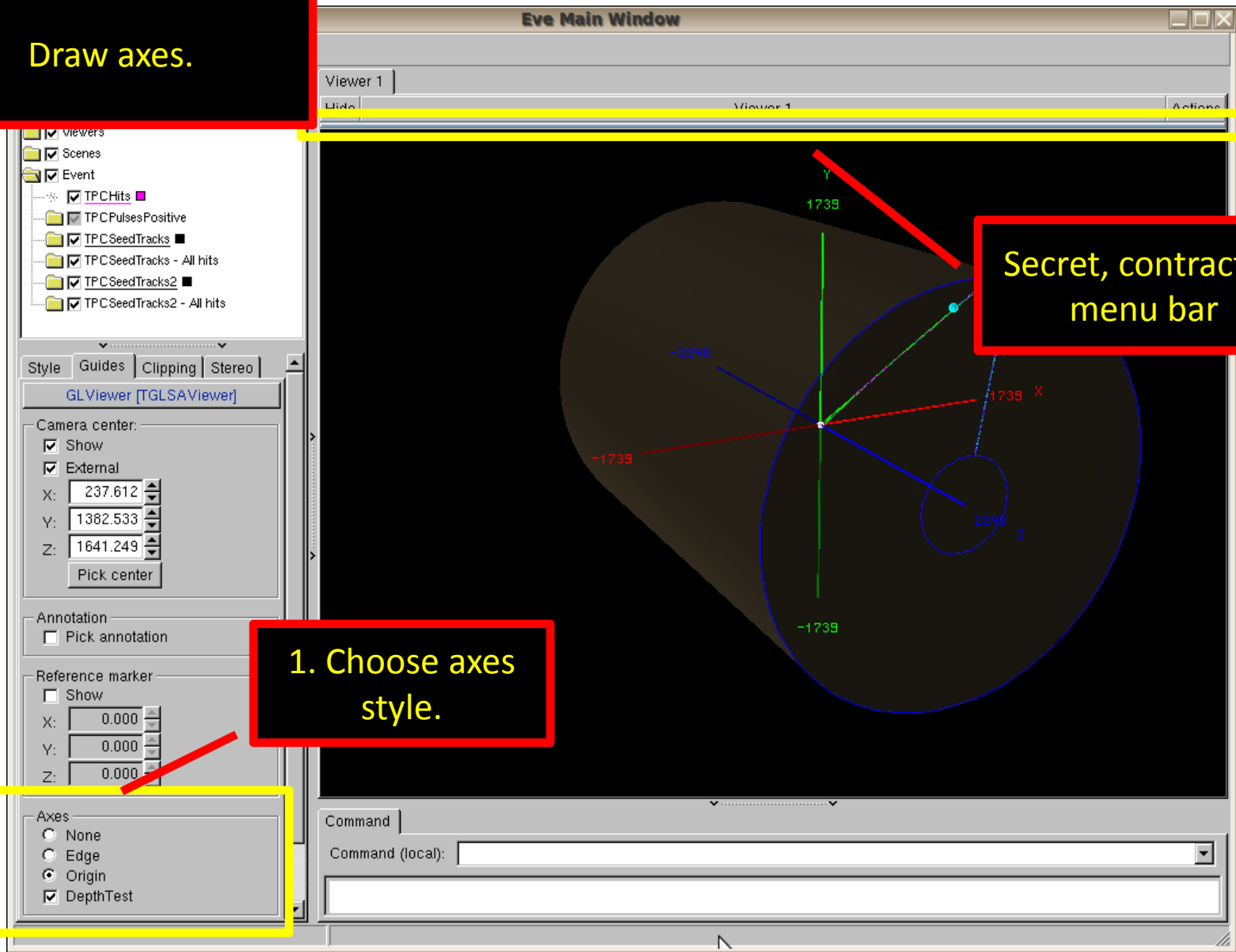
3. Pick center.



Draw axes.

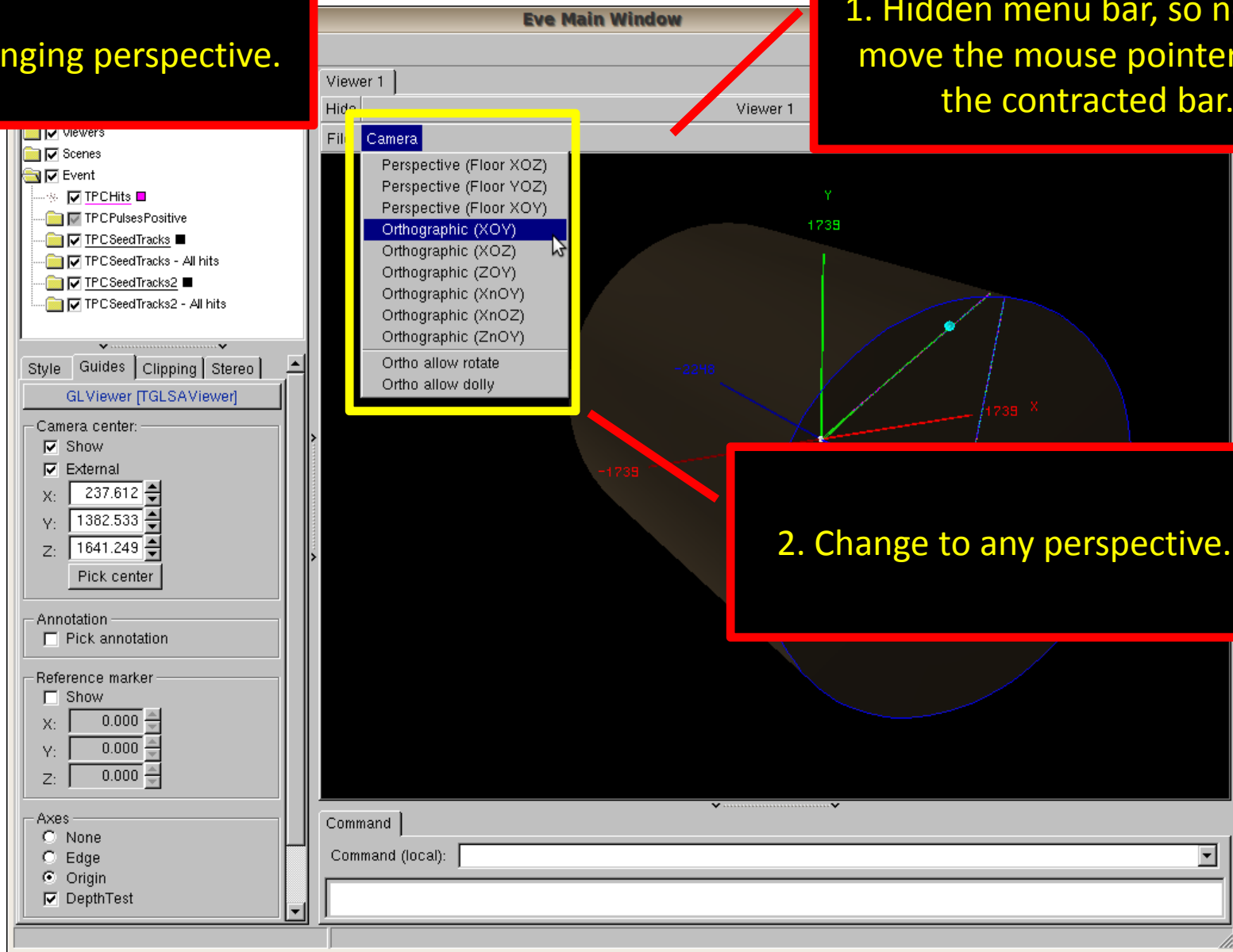
1. Choose axes style.

Secret, contracted menu bar



Changing perspective.

1. Hidden menu bar, so need to move the mouse pointer over the contracted bar.



2. Change to any perspective.