

News From Vertex

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Vertexing

Beam Monitor + Vertex

Global event display

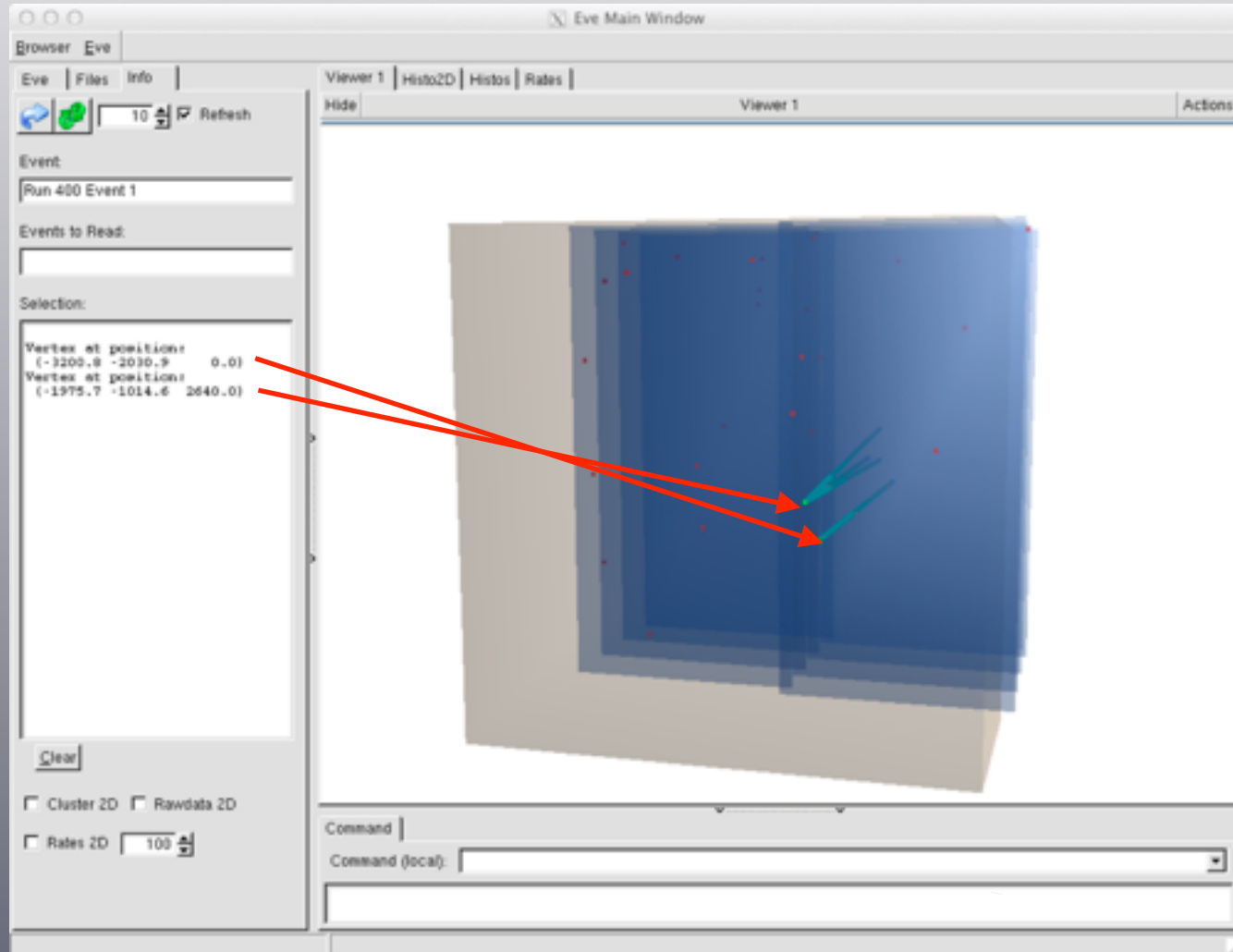
Conclusion

Vertexing (i)

• New algorithms implemented (Regina Rescigno):

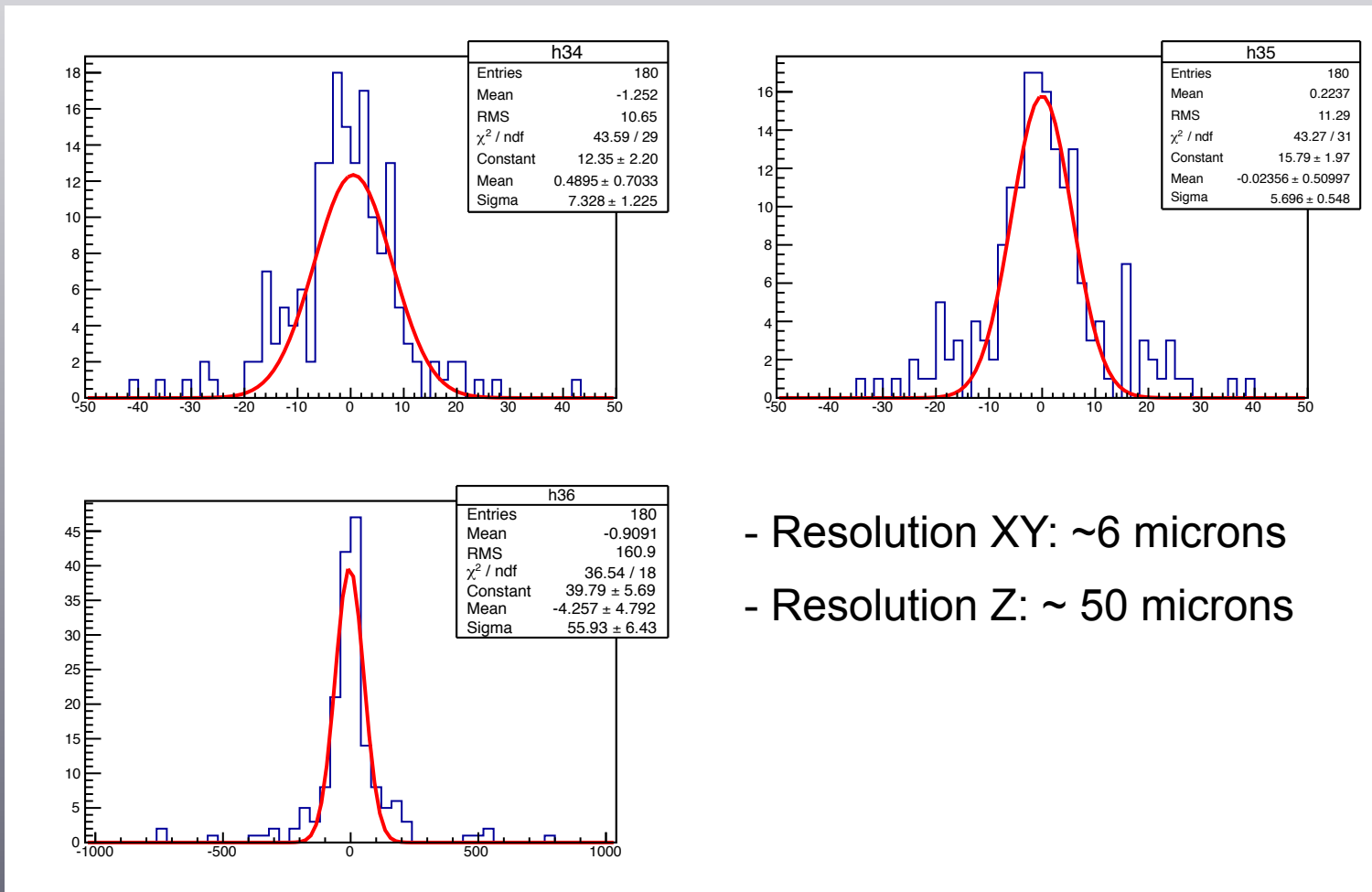
- based on distance criteria
- based on probability distributions

⇒ disentangle pileup vertices



Vertexing (ii)

- Comparison with MC (Regina Rescigno):
 - Residuals for reconstructed vertex minus MC one (MC intrinsic residual 2 times better than in real)

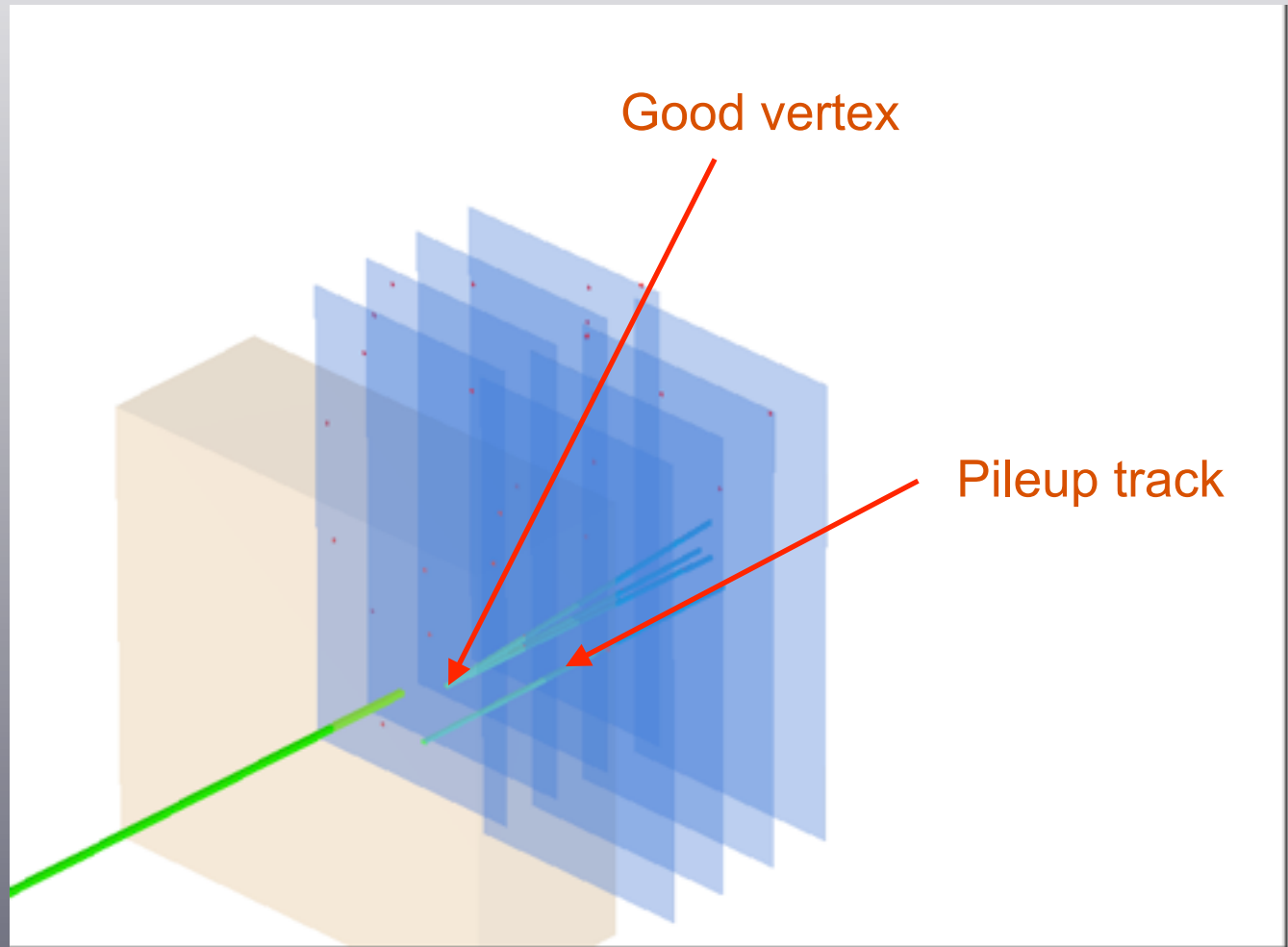


BM + VTX (i)

• New BM calibrations:

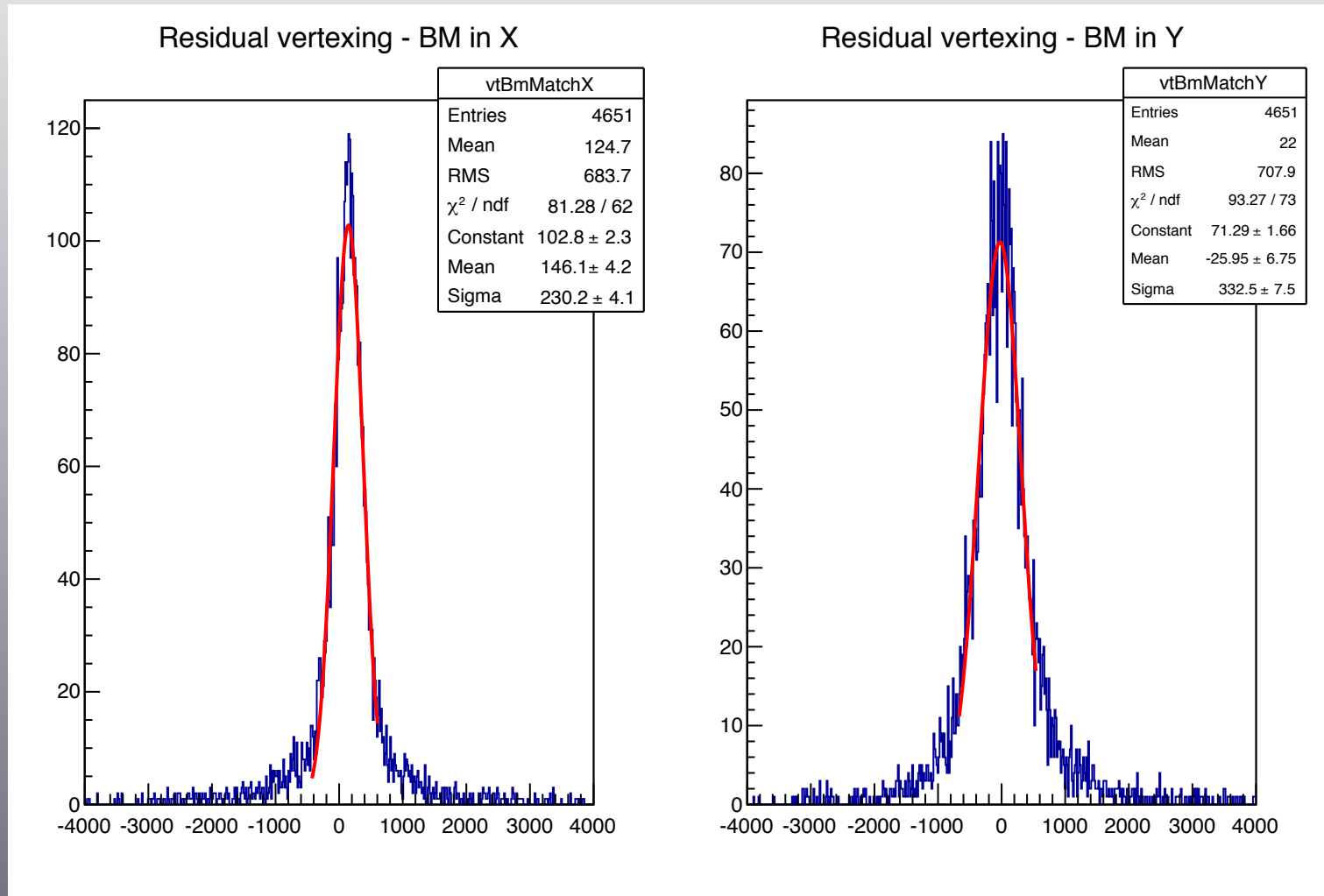
- Good alignment now, thanks to Alessio !

⇒ tag the right vertex !



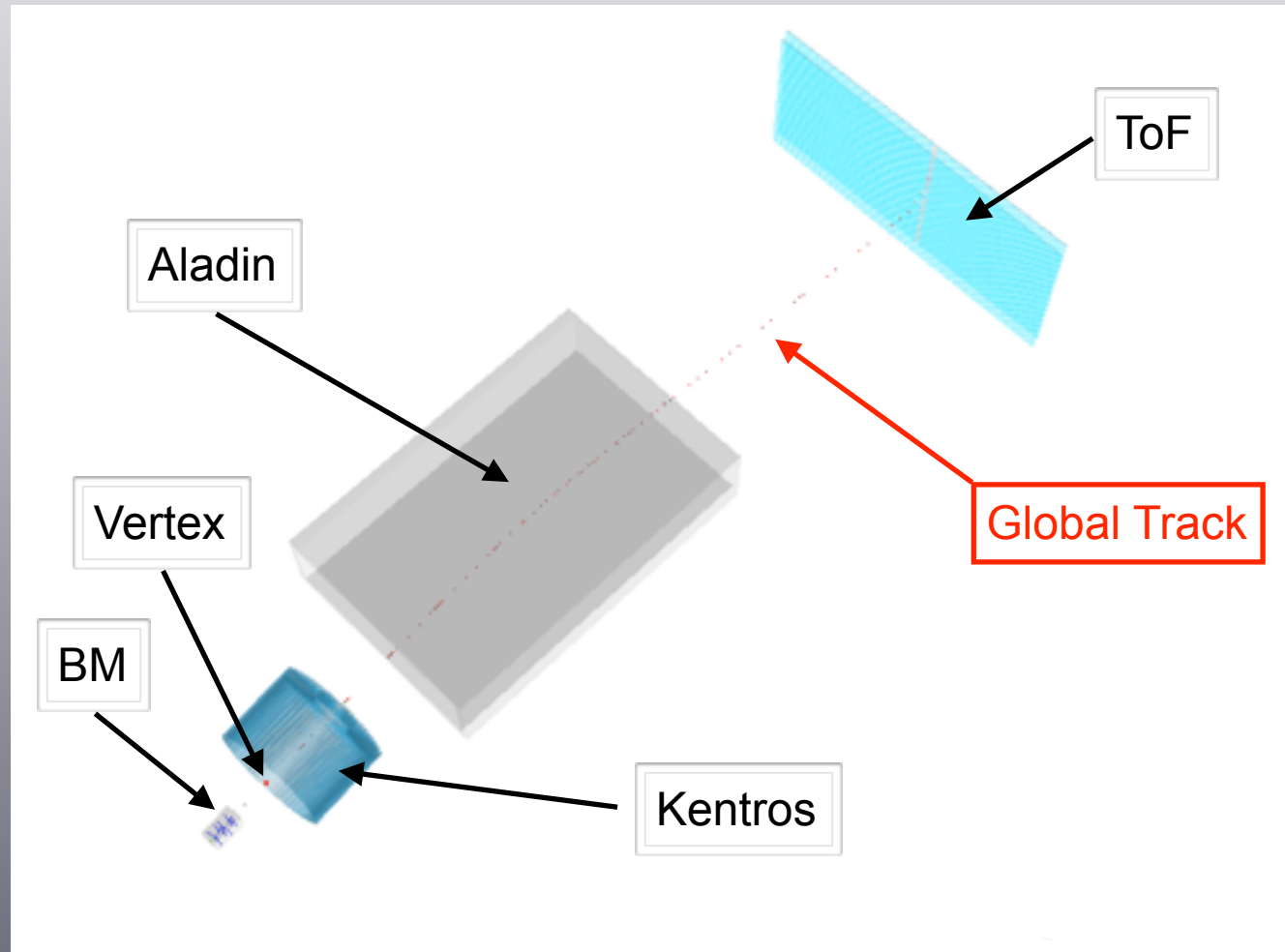
BM + VTX (ii)

Residual btw vertex position and extrapolated BM track :



Global 3D event display (i)

- Global tracking (BM+VTX+ToF) done in GLOBAL reference framework:
 - Changing code accordingly (see Didier's talk)



Global 3D event display (ii)

• Running 3D display: (see macro `GlbDisplay.C` in `macros/vertex` folder)

- Create root file from `I0(mc)reco Decode` pgm
- Load libraries in Root

Instance with file name

```
root > GlbEventDisplay* g = GlbEventDisplay::Instance("filename.root");
```

```
root > g->DisableKentros(); //g->DisableToF(); //g->DisableBM(); Enable/Disable
```

```
root > g->EnableGlb(); Enable Glb tracking
```

```
root> g->ShowDisplay(); Show Eve window
```

⇒ Click onto the buttons

Global 3D event display (iii)

Browser Eve

Eve | Files | Info

Viewer 1 | Histo2D | Histos | Rates | BM

Hide | Viewer 1 | Actions

Event: Run 400 Event 0

Events to Read:

Selection:

Glb Track#: 0
Mass: 11.55 (GeV/c²)
Momentum: 9.04 (GeV/c)
Charge: 6.0
TOF Δt : 0.0/31.1 (ns)

Cluster 2D Rawdata 2D
Rates 2D 100

Command
Command (local):

Global 3D event display (iii)

The screenshot shows the 'Eve Main Window' interface. On the left, there is a sidebar with the following sections:

- Event:** A text field containing 'Run 400 Event 0'.
- Events to Read:** An empty text field.
- Selection:** A text area displaying particle properties:

```
Glb Track#: 0  
Mass: 11.55 (GeV/c^2)  
Momentum: 9.04 (GeV/c)  
Charge: 6.0  
TOF f/r: 0.0/31.1 (ns)
```
- Buttons:** A 'Clear' button.
- Checkboxes:** 'Cluster 2D', 'Rawdata 2D', and 'Rates 2D'.
- Slider:** A slider for 'Rates 2D' set to 100.

The main 3D viewer area, titled 'Viewer 1', displays a 3D reconstruction of an event. It features a central grey rectangular volume, a blue cylindrical detector component, and a cyan rectangular detector component. A red dashed line indicates the path of a particle from the blue cylinder through the grey volume to the cyan detector. The interface also includes a 'Command' field at the bottom.

Global 3D event display (iii)

The screenshot shows the 'Eve Main Window' interface. On the left, there is a control panel with the following sections:

- Event:** A text box containing 'Run 400 Event 0'.
- Events to Read:** An empty text box.
- Selection:** A text area displaying particle properties:
Glb Track#: 0
Mass: 11.55 (GeV/c²)
Momentum: 9.04 (GeV/c)
Charge: 6.0
TOF $\frac{t}{r}$: 0.0/31.1 (ns)
- Buttons:** A 'Clear' button.
- Options:** Checkboxes for 'Cluster 2D', 'Rawdata 2D', and 'Rates 2D'. The 'Rates 2D' checkbox is checked, and a slider is set to 100.

The main 3D viewer area shows a grey rectangular detector volume with a blue cylindrical component. A red dashed line indicates a particle track passing through the detector. A cyan rectangular plane is positioned at the end of the track. Two red arrows point from the text 'Loop over given events' and 'Next event' to the refresh and next event icons in the top-left control panel.

At the bottom of the window, there is a 'Command' section with a text input field and a dropdown menu.

Global 3D event display (iii)

The screenshot shows the 'Eve Main Window' interface. On the left, there is a control panel with the following sections:

- Event:** A text box containing 'Run 400 Event 0'.
- Events to Read:** An empty text box.
- Selection:** A text area displaying particle properties:

```
Glb Track#: 0  
Mass: 11.55 (GeV/c^2)  
Momentum: 9.04 (GeV/c)  
Charge: 6.0  
TOF f/r: 0.0/31.1 (ns)
```
- Buttons:** 'Clear', 'Cluster 2D', 'Rawdata 2D', 'Rates 2D' (with a value of 100).

At the top left of the control panel, there are icons for navigation and a 'Refresh' button. Red arrows point from these icons to the text 'Loop over given events' and 'Next event'. Another red arrow points from the 'Selection' text area to the text 'Alt click for info'.

The main window area, labeled 'Viewer 1', displays a 3D visualization of a particle detector. It features a blue cylindrical component on the left, a grey rectangular block in the center, and a cyan rectangular component on the right. A red dashed line indicates a particle track passing through these components.

At the bottom of the window, there is a 'Command' section with a text input field and a dropdown menu.

Conclusions

- Finalized vertexing ✓
- Matching BM+VTX ✓
- Global tracking in global framework ✓