

Vertex @ GSI

Event display

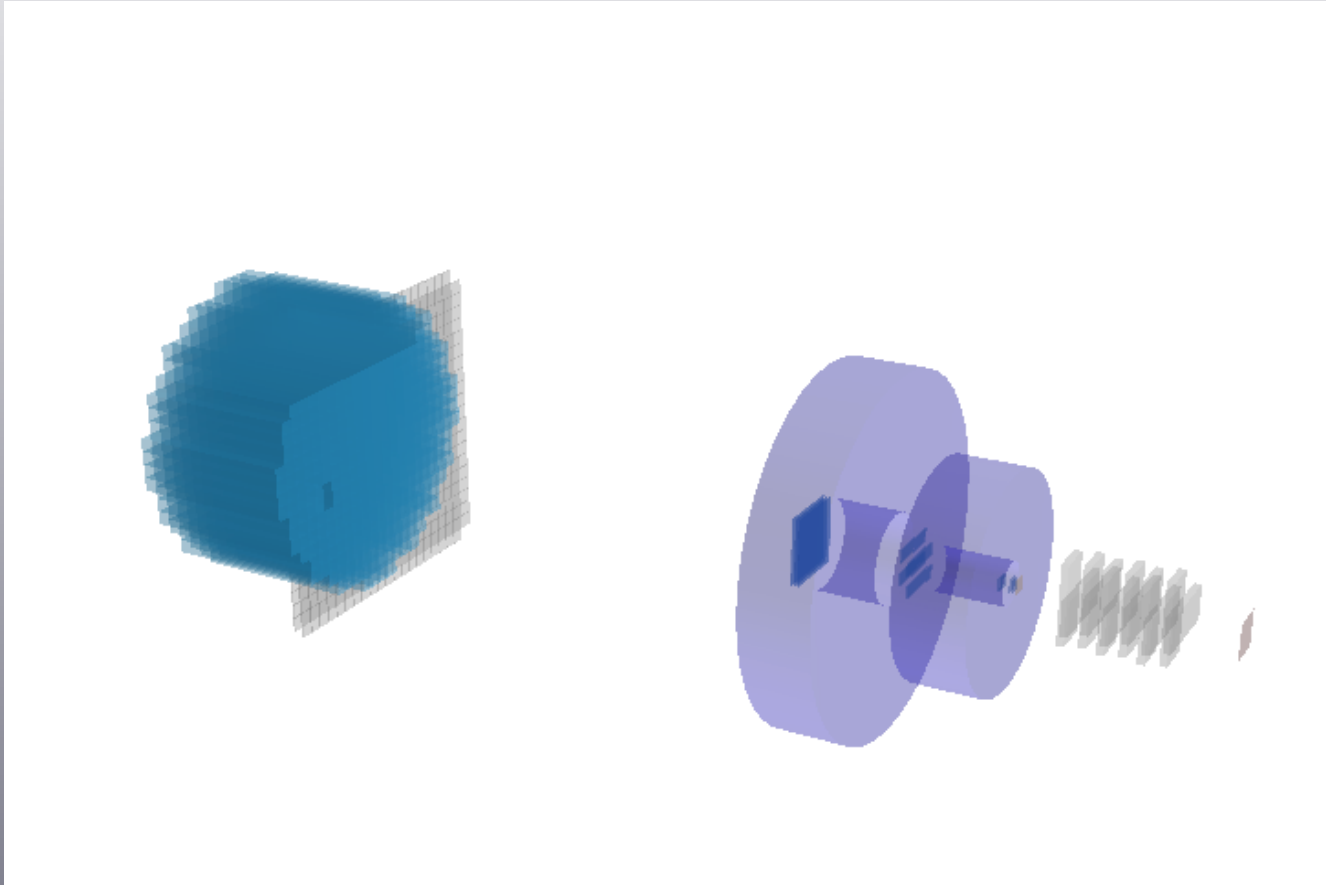
Rawdata reconstruction

Vertex

Conclusions

Event display

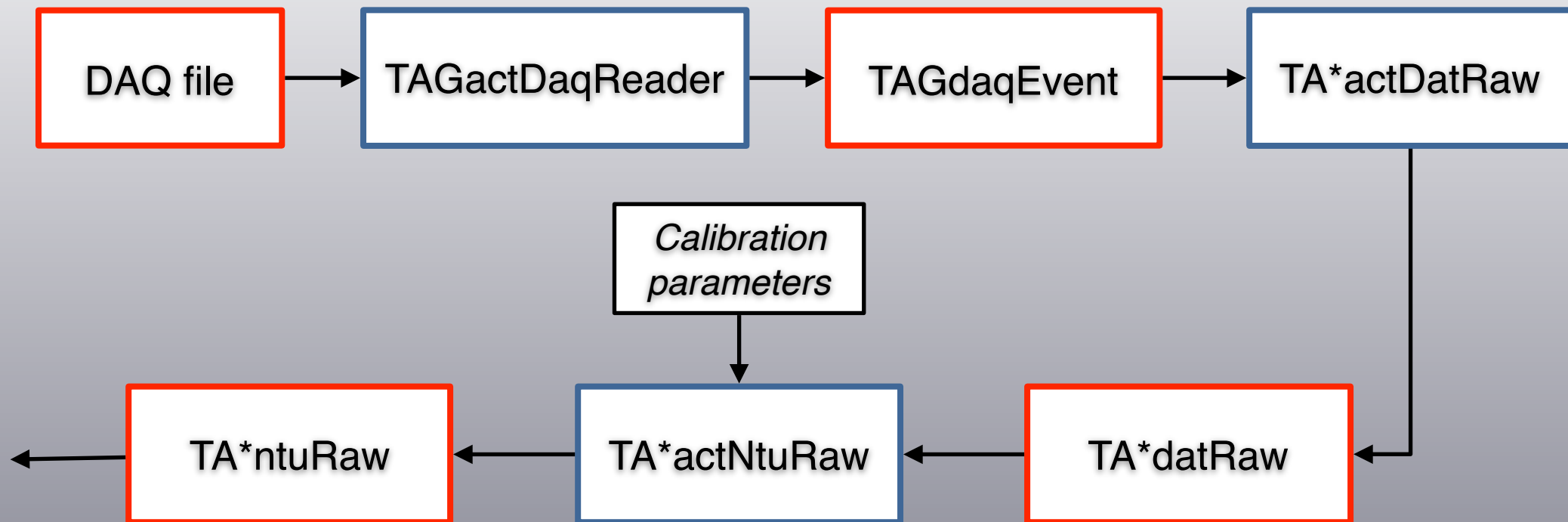
• FOOT event display



- Event with ST+BM+VTX+IT+TW+CAL:

Rawdata reconstruction (i)

• Scheme:



- TAGactDaqReader: interface with DAQ in TAGdaq folder
- To pack/unpack DAQ event provided by DAQ and put in TAGdaqApi
- TAGactDaqReader and TAGdaqEvent implemented
- TA*actDatRaw and TA*datRaw
or/and TA*actNtuRaw and TA*ntuRaw implemented

Rawdata reconstruction (ii)

• Macro (for VTX):

```
void FillVertex()
{
    TAGparaDsc* vtMap      = new TAGparaDsc("vtMap", new TAVTparMap());
    TAVTparMap* map        = (TAVTparMap*) vtMap->Object();
    map->FromFile("./config/TAVTdetector.map");

    TAGparaDsc* vtGeo      = new TAGparaDsc("vtGeo", new TAVTparGeo());
    TAVTparGeo* geomap     = (TAVTparGeo*) vtGeo->Object();
    geomap->FromFile("./geomaps/TAVTdetector.map");

    TAGparaDsc* vtConf     = new TAGparaDsc("vtConf", new TAVTparConf());
    TAVTparConf* parconf   = (TAVTparConf*) vtConf->Object();
    parconf->FromFile("./config/TAVTdetector.cfg");

    TAGdataDsc* vtDaq      = new TAGdataDsc("vtDaq", new TAGdaqEvent());
    TAGdataDsc* vtNtu      = new TAGdataDsc("vtNtu", new TAVTntuRaw());

    daqActReader  = new TAGactDaqReader("daqActReader", vtDaq)

    vtActRaw      = new TAVTactNtuRaw("vtActRaw", vtNtu, vtDaq, vtGeo, vtConf, vtMap);
    vtActRaw->CreateHistogram();
}
```

Rawdata reconstruction (iii)

➤ Output (for VTX):

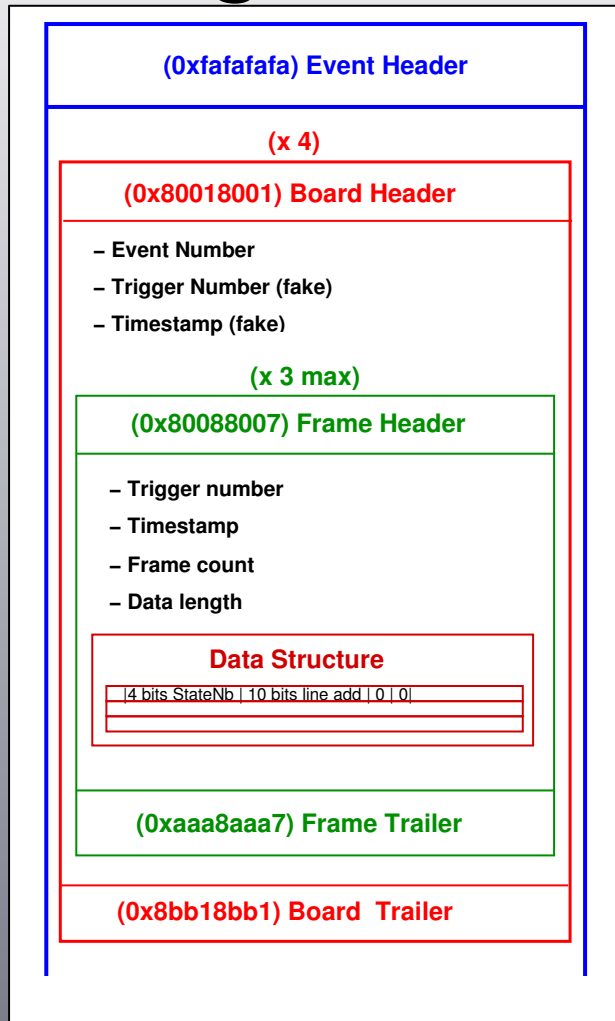
```
Processing ReadVtxRaw.C+...
Info in <TGeoManager::TGeoManager>: Geometry FOOT, FOOT Geometry created
Opening file data_test.00001431.physics_foot.daq.RAW._lb0000._EB-RCD._0001.data

-----HEADER OF FILE-----
Info Header WRITER=: EB-RCD
Info Header FILENAME=: data_test.00001431.physics_foot.daq.RAW._lb0000._EB-RCD
Info Header number of file=: 1
Info Header GUID: GUID=FAE41818-4F47-E911-A977-3CFDFED01448
Info Header stream: Stream=physics_foot
Info Header project: Project=data_test
Info Header lumi: LumiBlock=0
-----END OF HEADER FILE-----

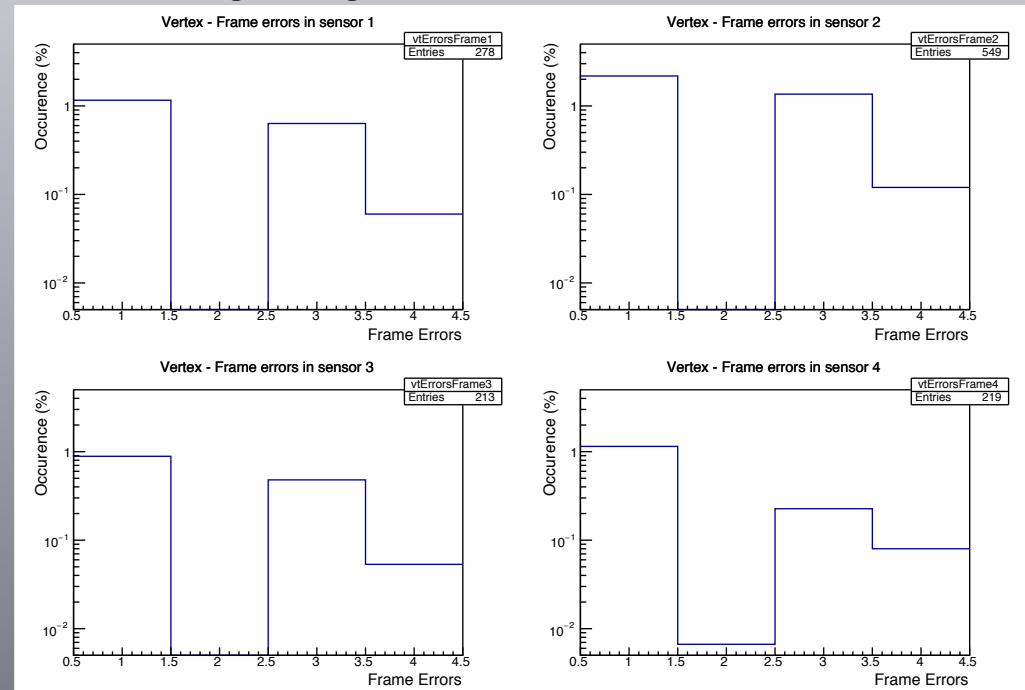
TAGroot:
Known Actions:
  name          type
  outFile       TAGactTreeWriter
  daqActReader  TAGactDaqReader
  vtActRaw      TAVTactNtuRaw
Known ParaDsc's:
  name          type
  vtMap         TAVTparMap
  vtGeo         TAVTparGeo
  vtConf        TAVTparConf
Known DataDsc's:
  name          type          produced by
  vtDaq         TAGdaqEvent
  vtNtu         TAVTntuRaw    vtActRaw
Required Actions:
  daqActReader  TAGactDaqReader
  vtActRaw      TAVTactNtuRaw
  outFile       TAGactTreeWriter
```

Vertex

Rawdata @ GSI:



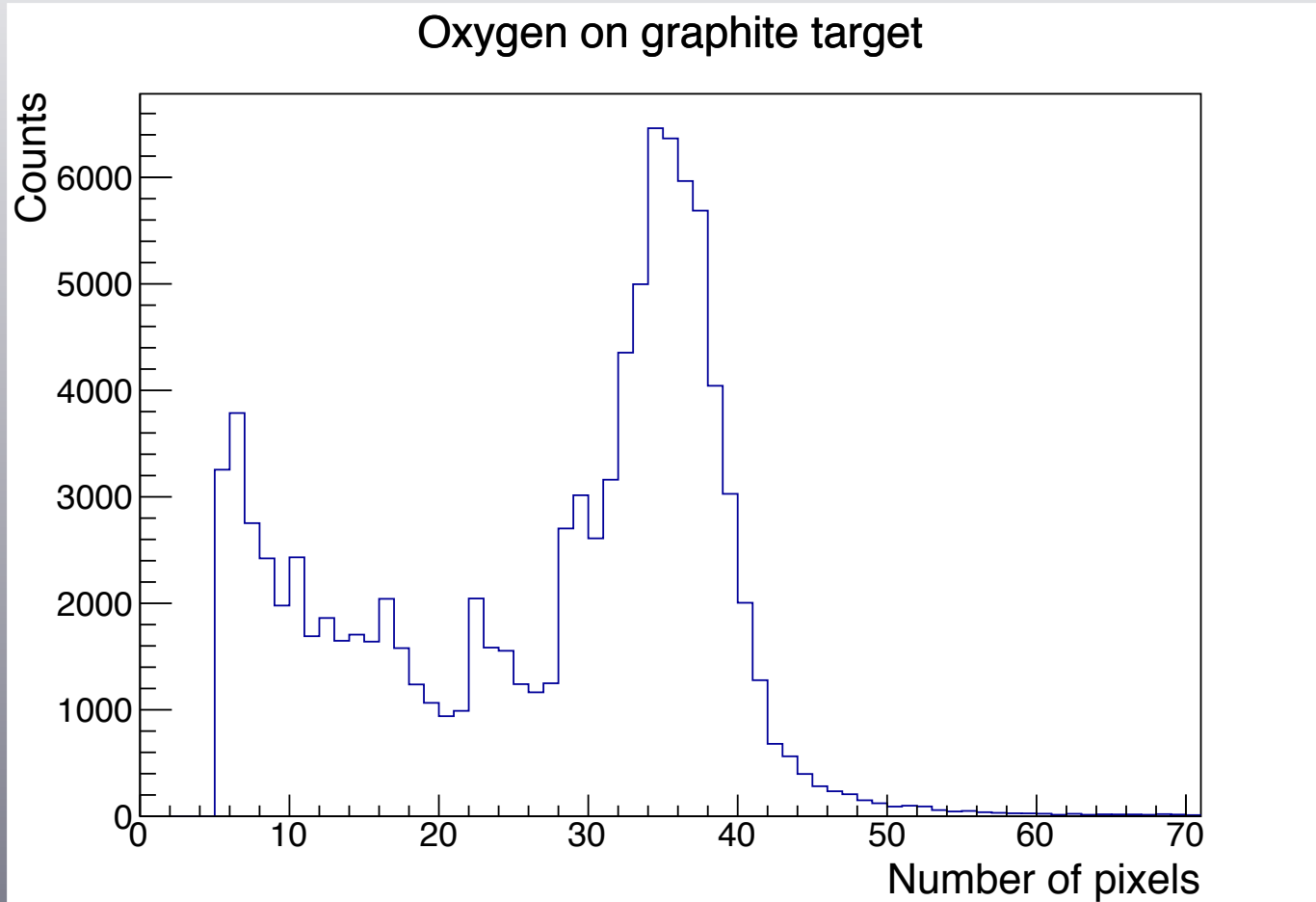
- Noise problems lead to corrupted frame structure:
 - wrong or absent frame trailer (err1 and err2)
 - wrong data length (err3)
 - wrong trigger number (err4)
- ➔ Still investigating



- Event/trigger number synchronized with DAQ
 - Frame counter consecutive for each sensor
 - Time stamp with inner clock
- FOOT SW

Vertex Standalone (i)

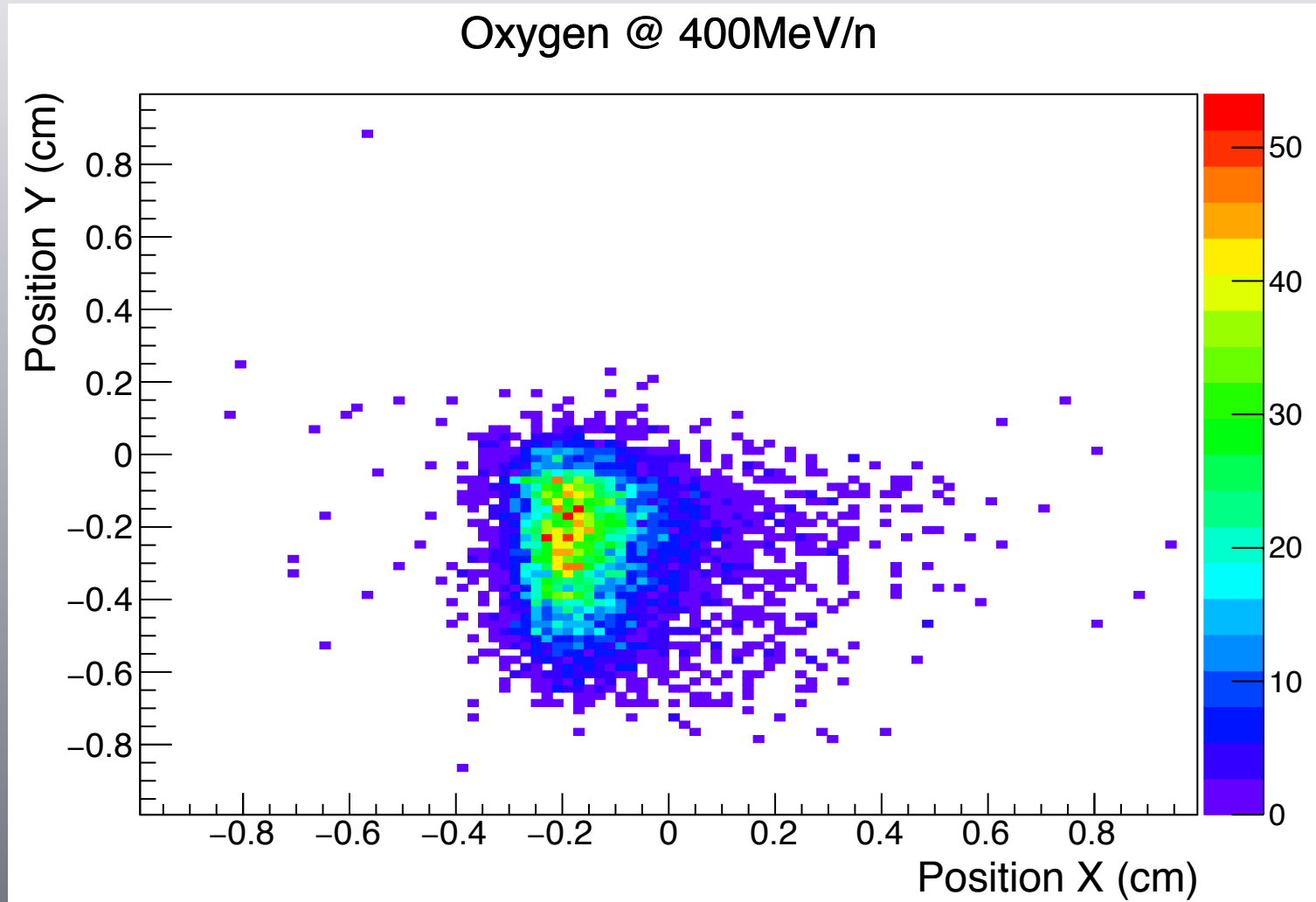
• Cluster size (sensor 2):



- Cut at 5 pixels
- See different cluster size due to fragments

Vertex Standalone (ii)

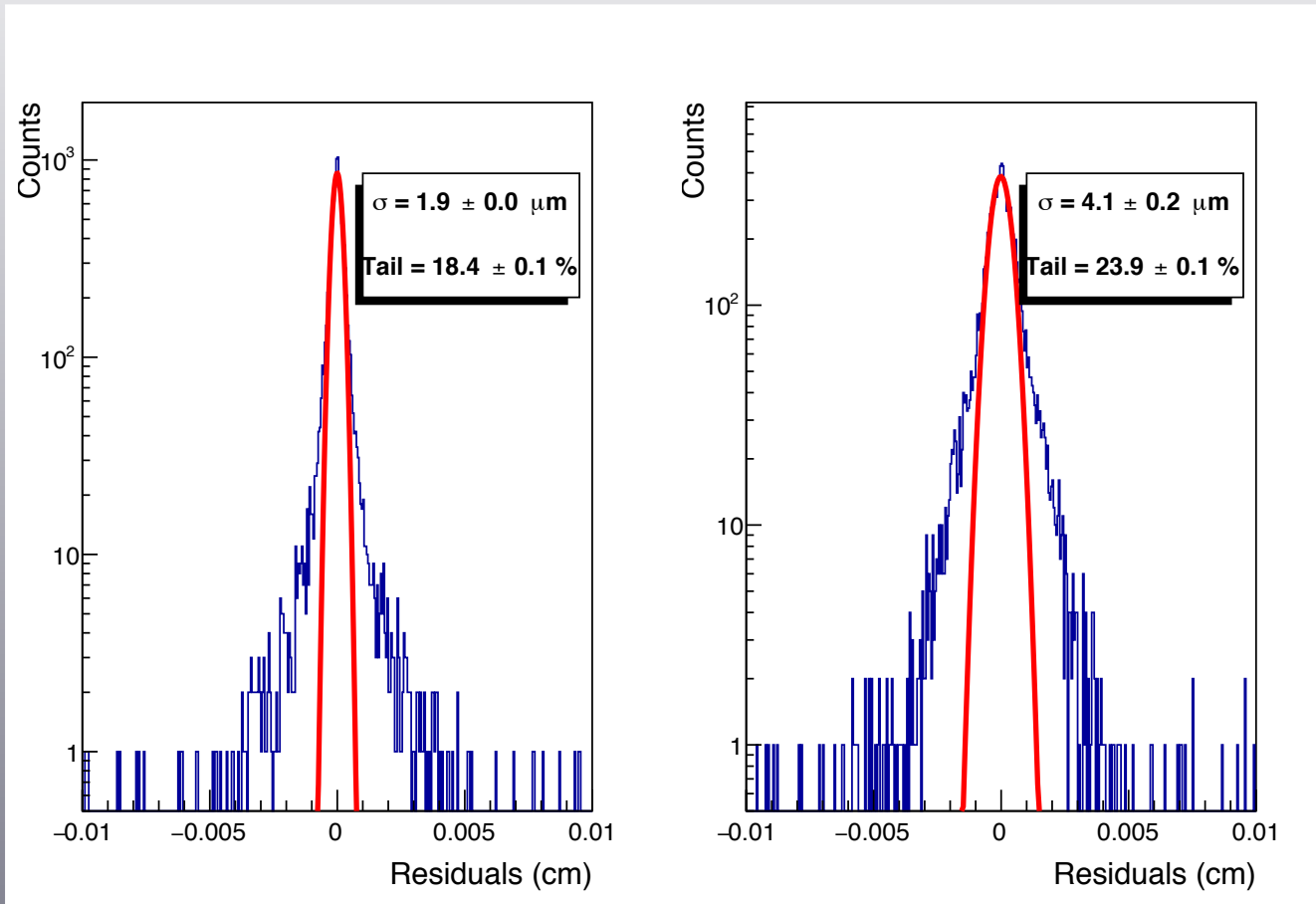
• Beam profile (sensor 4):



- The beam is not gaussian (especially in Y) with tails

Vertex Standalone (iii)

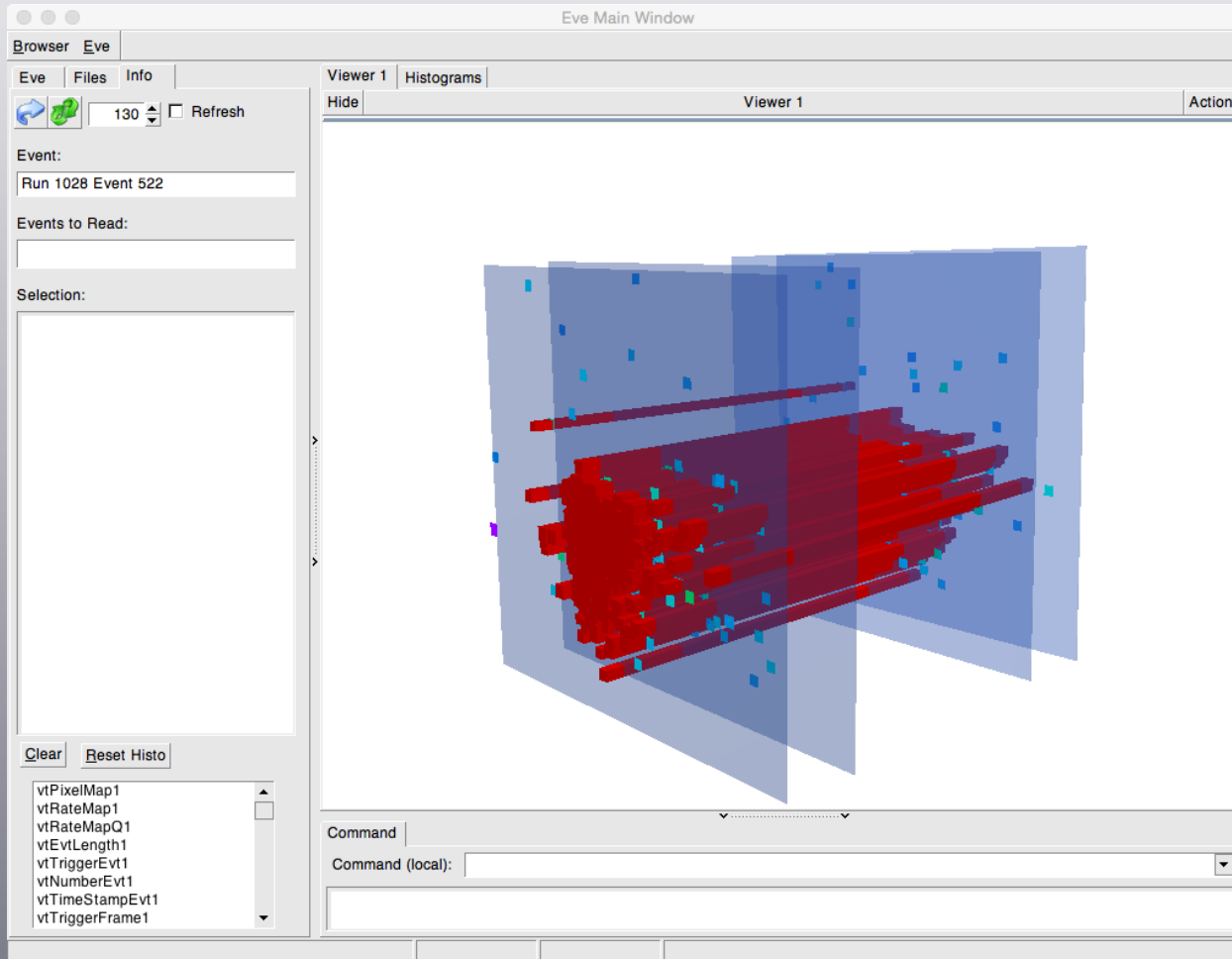
Alignment:



- Low statistics
- Bad shaped beam
- ➡ Good alignment considering the conditions !

Vertex Standalone (iv)

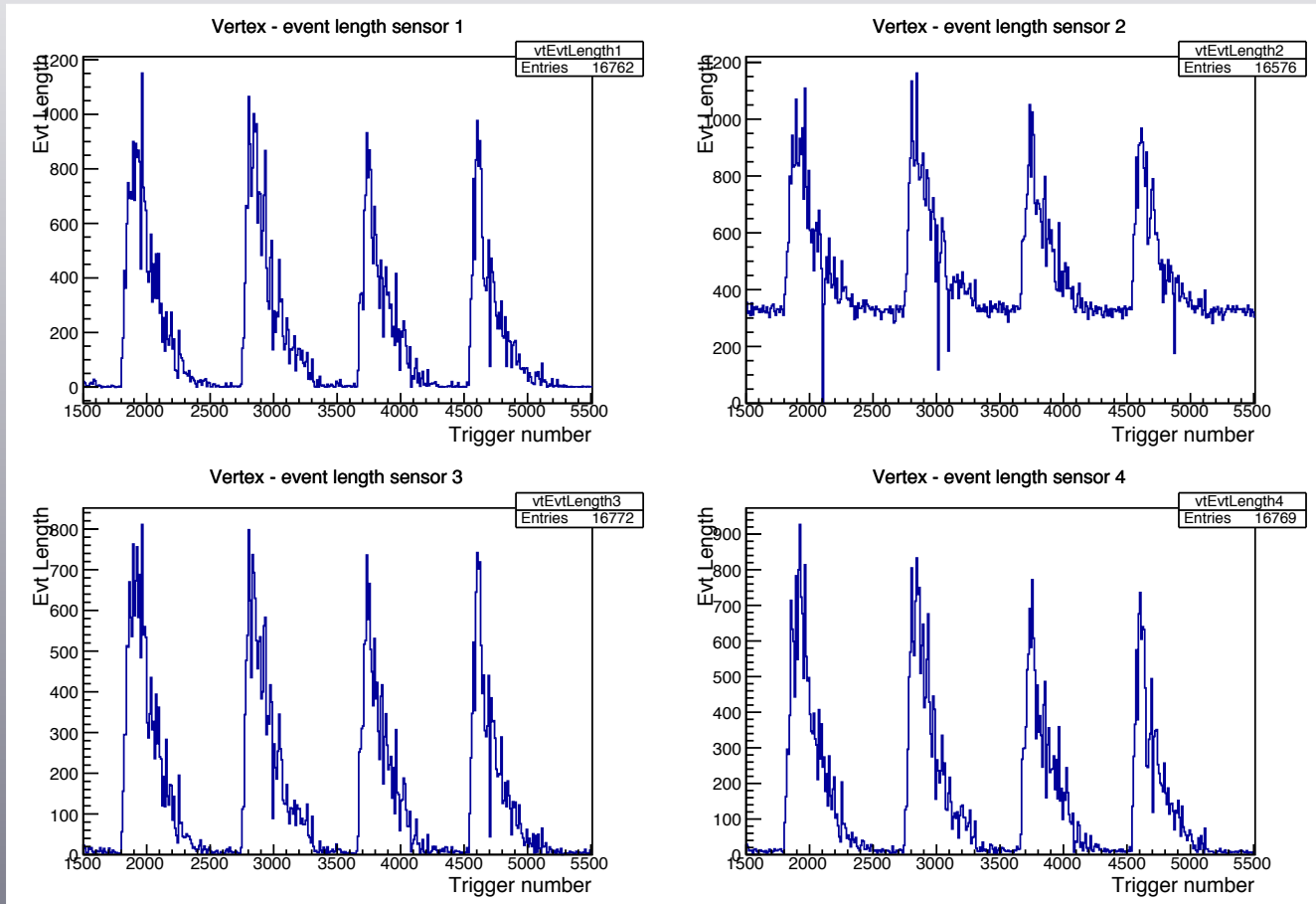
• Event display (cluster size > 5):



- Beam tracks
- Track presence: ~40%, structure intra-spill or trigger ?

Vertex Standalone (v)

• Event length

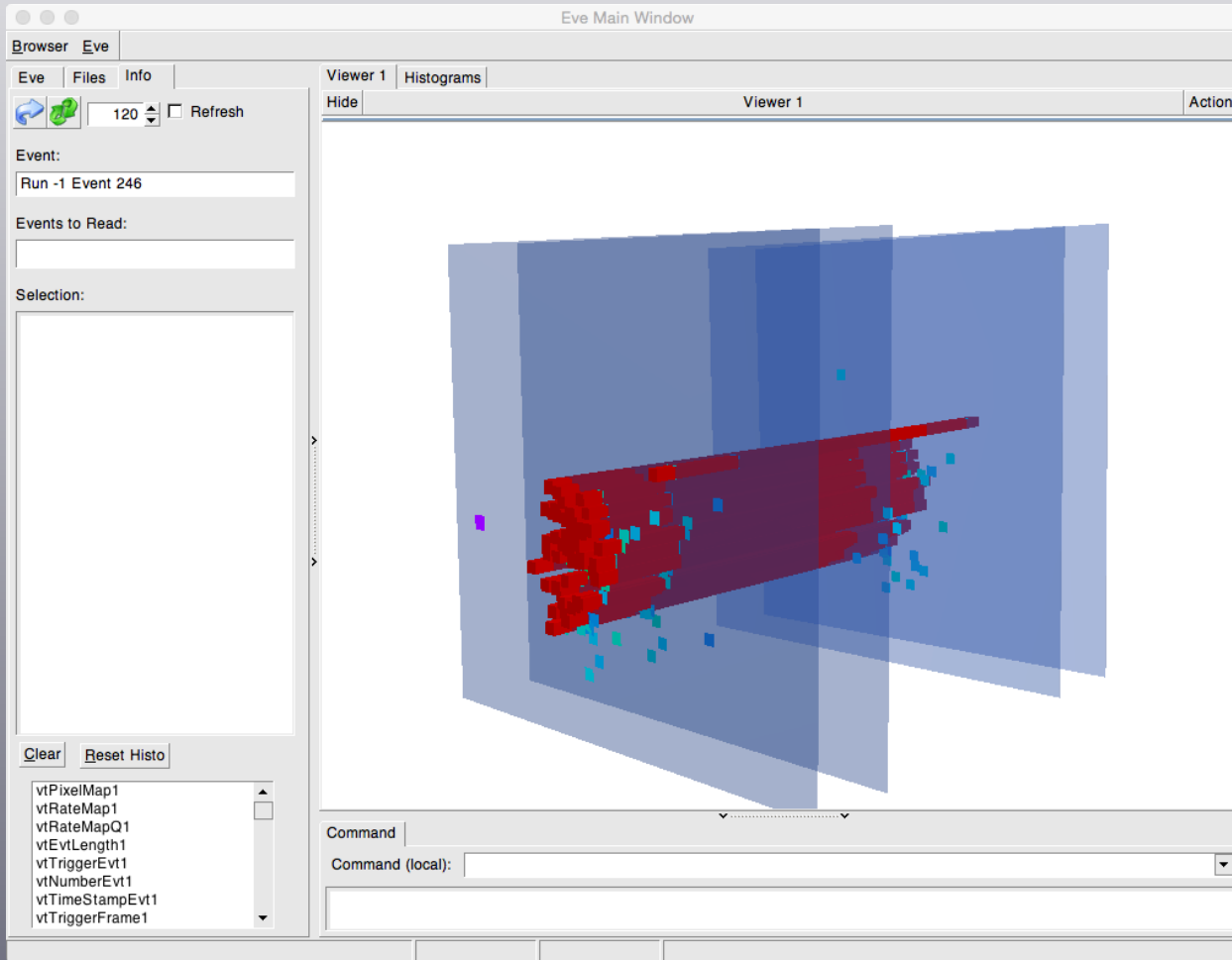


- Seems to have trigger with no beam ??

Vertex DAQ file

• Event display (cluster size > 25):

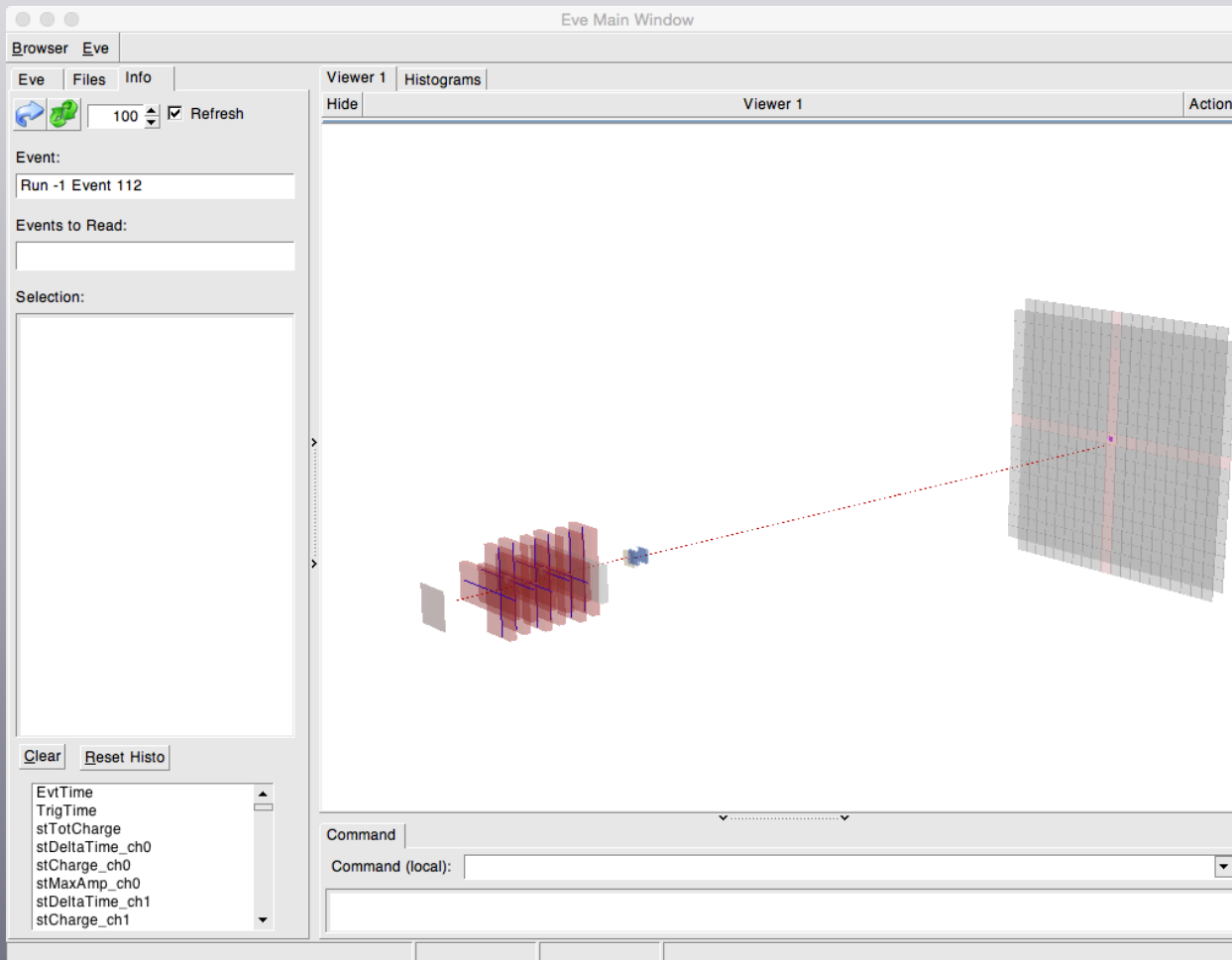
- file: data_built.2212.physics_foot.daq.VTX.3.dat



- Tracks until ~ 200, no more data ?

GSI DAQ file (i)

- Event display (cluster size > 30):
 - file: data_built.2212.physics_foot.daq.VTX.3.dat



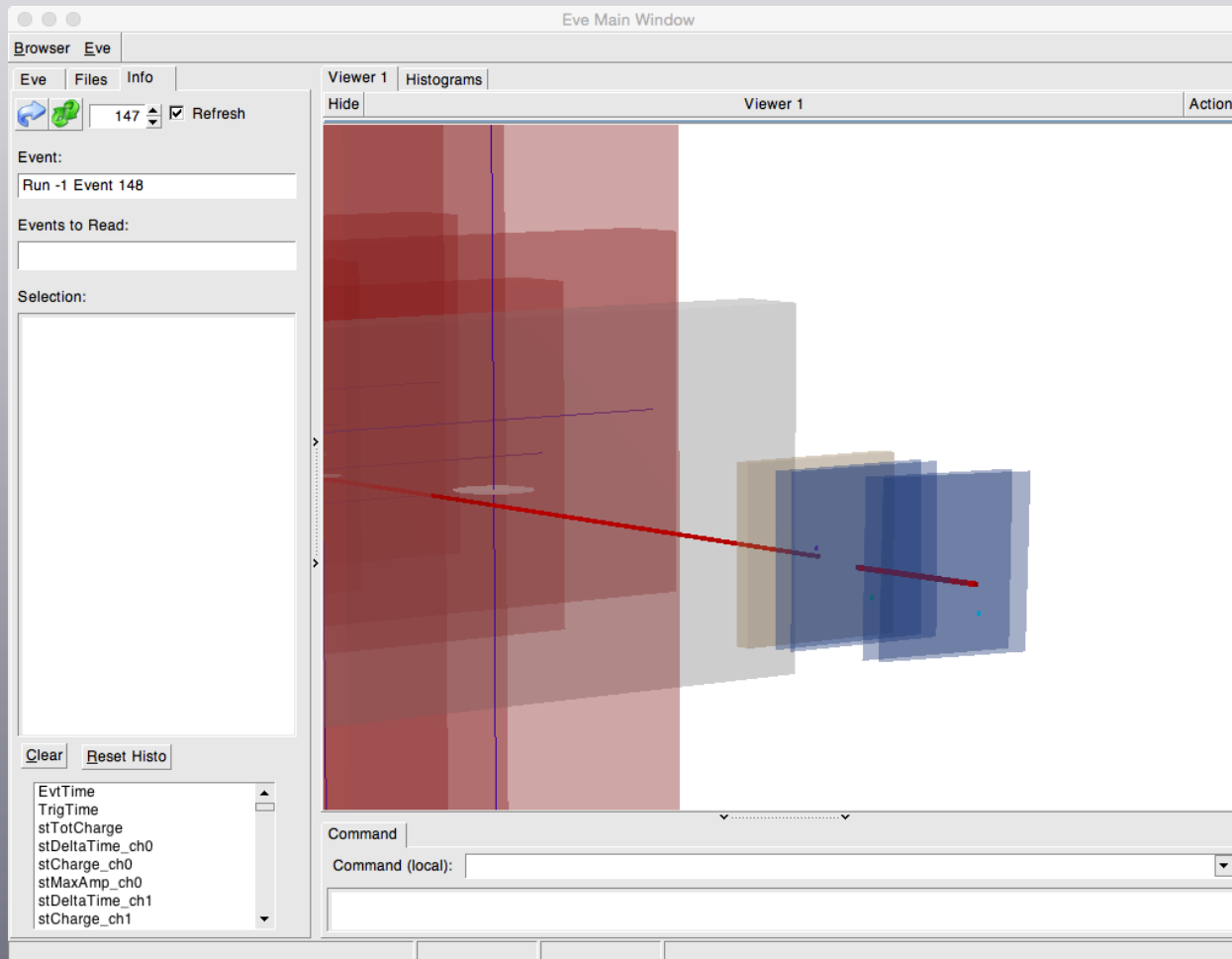
➡ Extremely slow (4 evts/s) !
(for ST or BM)

- Track in BM+VTX+TW

GSI DAQ file (ii)

• Event display (BM+VTX):

- file: data_built.2212.physics_foot.daq.VTX.3.dat



- Seems that BM + VTX are not too badly aligned

Conclusions

• Interface with DAQ

- First implementation for all detectors present at GSI
- Vertex working also with standalone files
- For DAQ files from event builder ?
 - ➡ Hard to debug, several files for each run, not documented in eLog

• Vertex

- Cluster for Oxygen and fragments (?)
- Noisy environment
- Pb of corrupted frame structure maybe related to noise
- Alignment better than $< 5 \mu\text{m}$
- Parameter in TAVTdetector_GSI.map(.cfg)

➡ Beam at Frascati testing the VTX setup