

# Vertex @ GSI

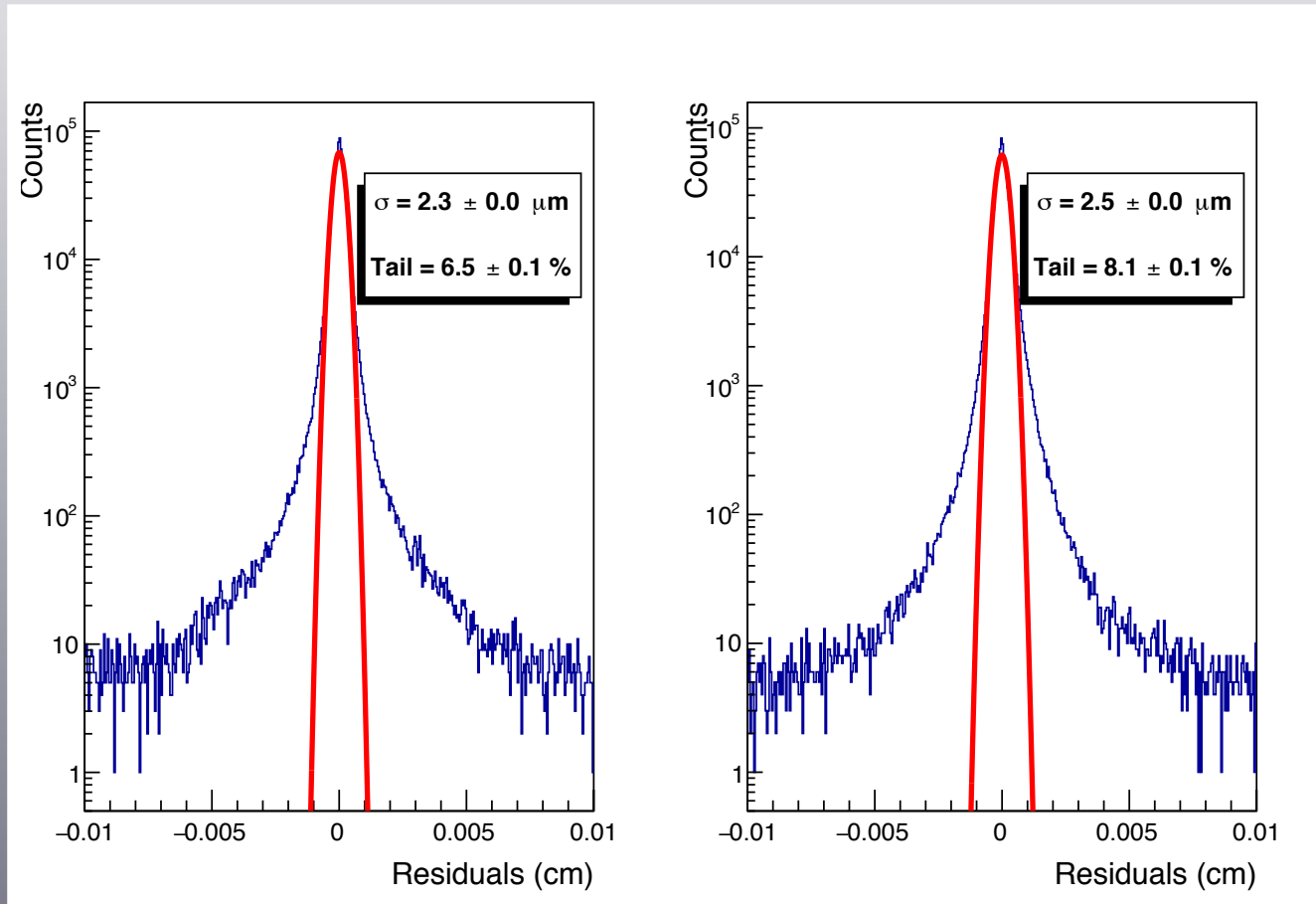
**Oxygen with target: Run 4303**

**Conclusions**

**New Features**

# Oxygen no target

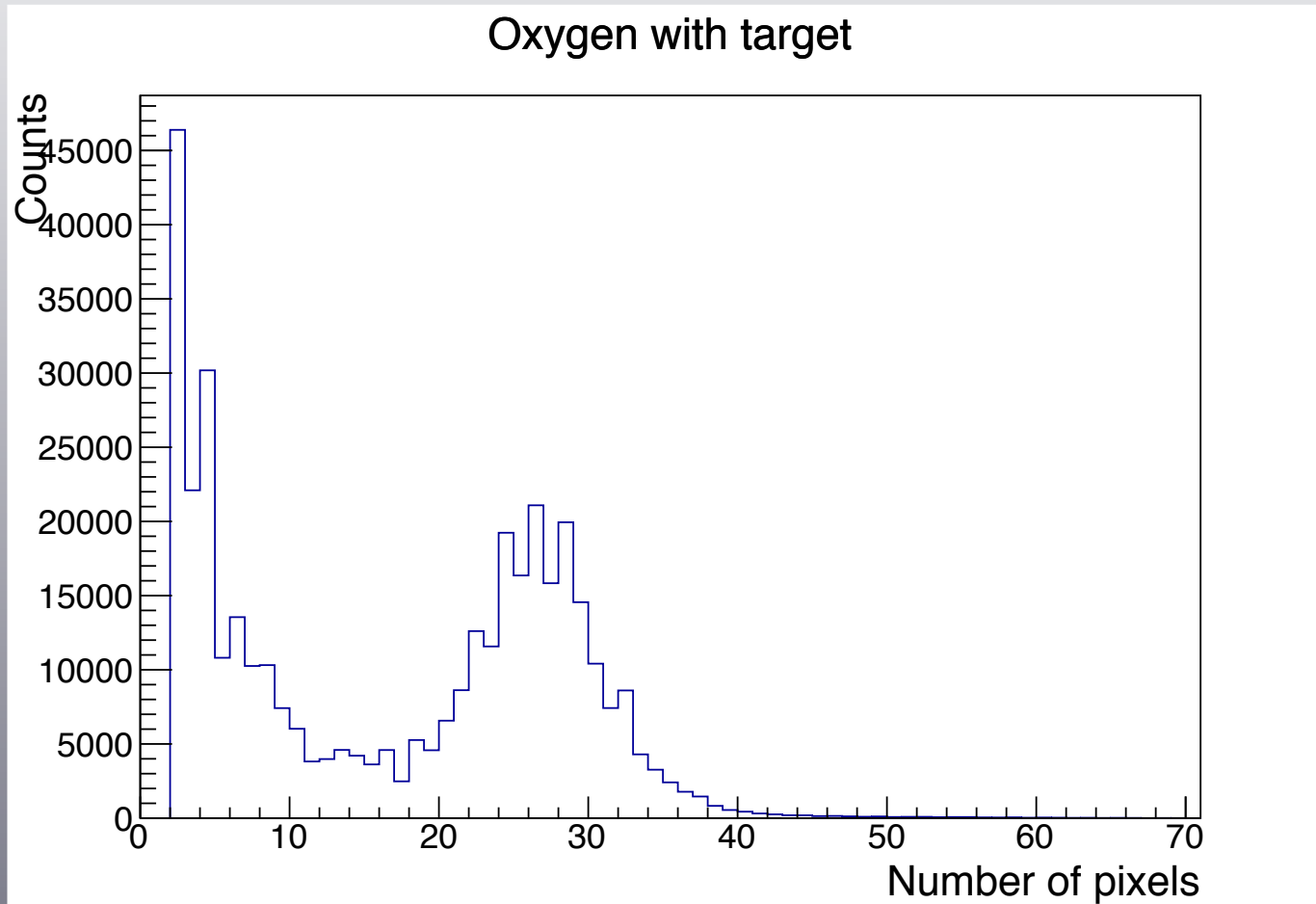
Alignment (cluster size > 20):



➡ Good alignment !

# Oxygen with target (i)

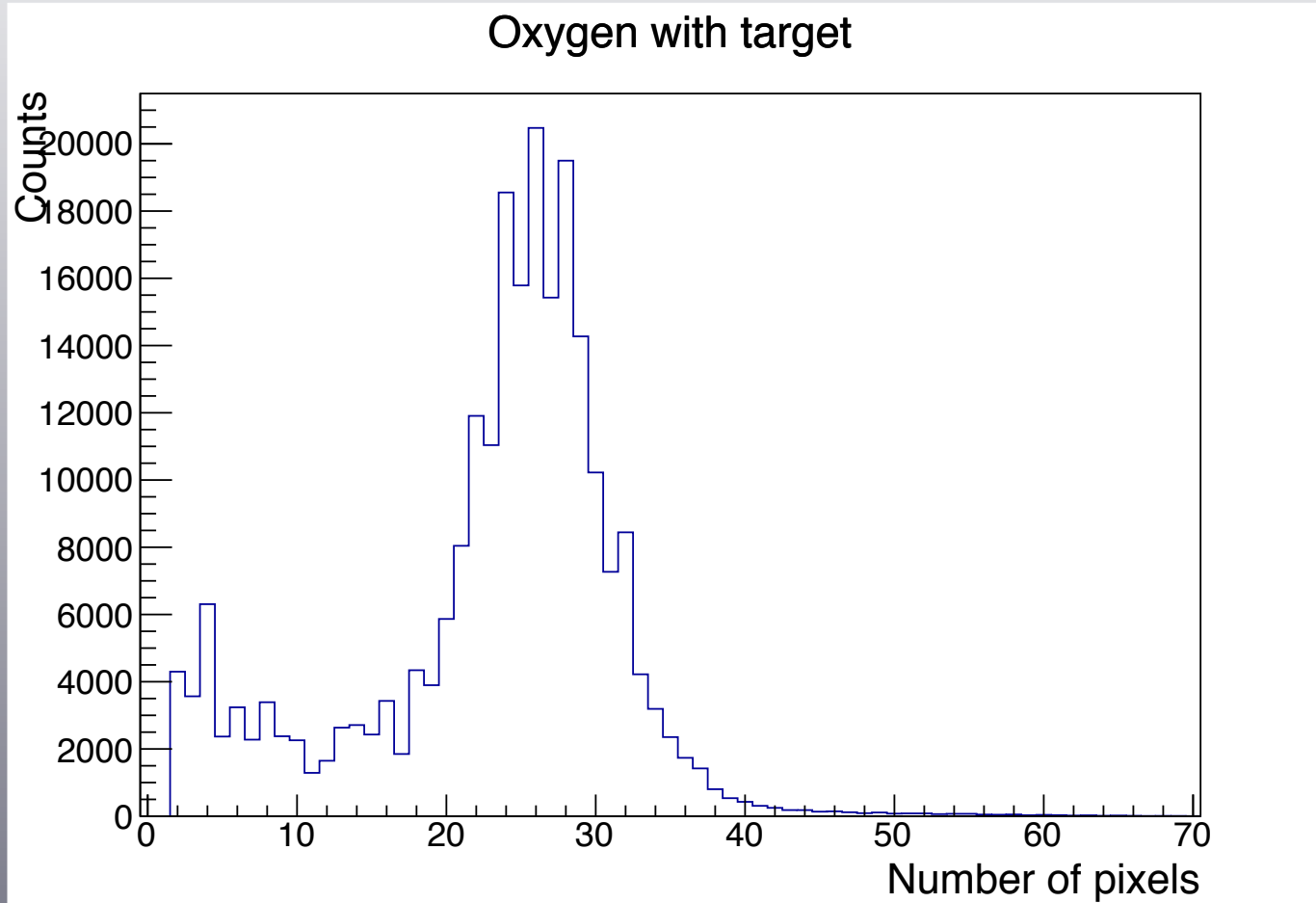
• Cluster size (total):



- Cut at 2 pixels
- See different cluster size due to noise

# Oxygen with target (ii)

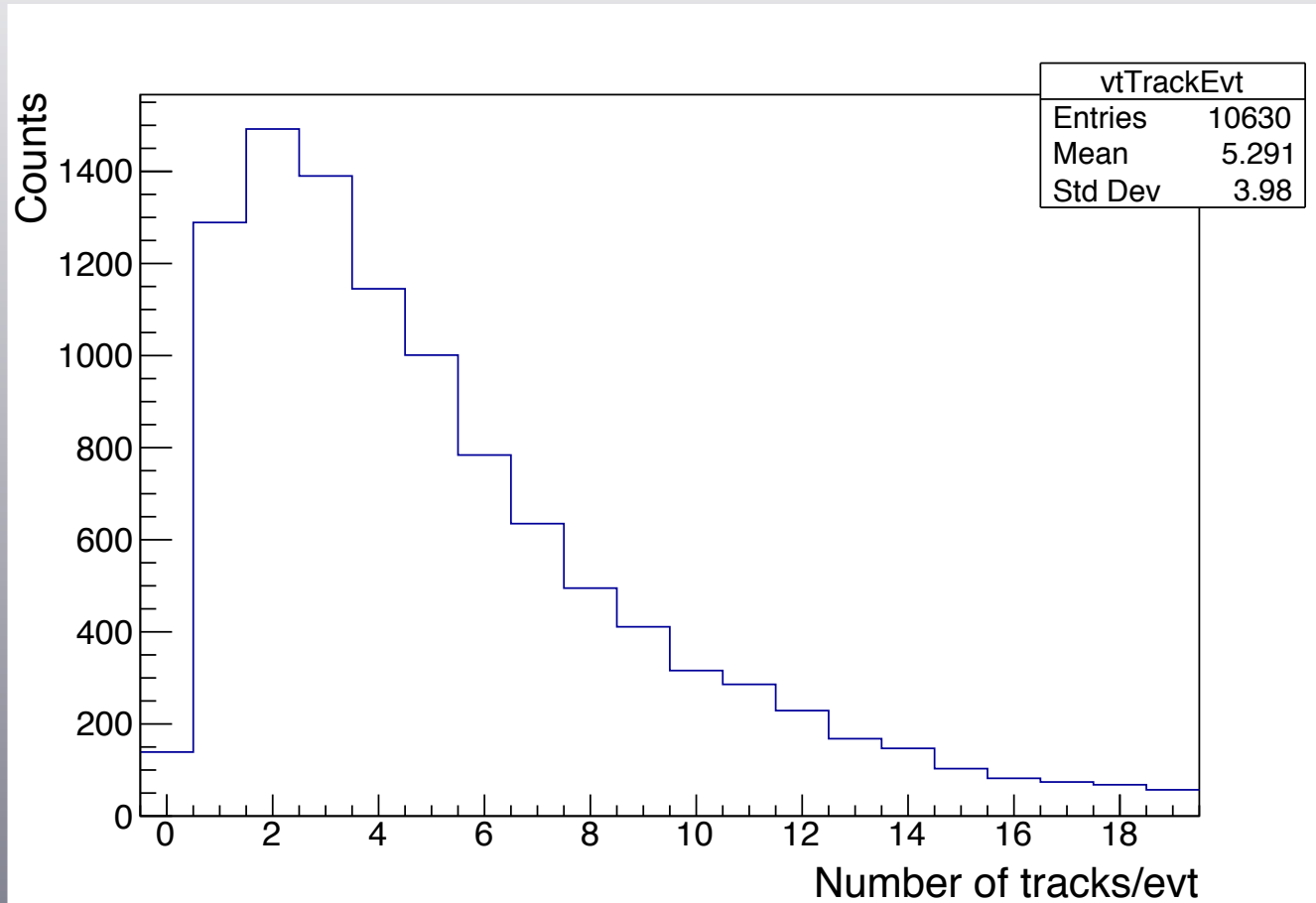
• Tracked cluster size (total):



- Cut at 2 pixels
- Mostly beam

# Oxygen with target (ii)

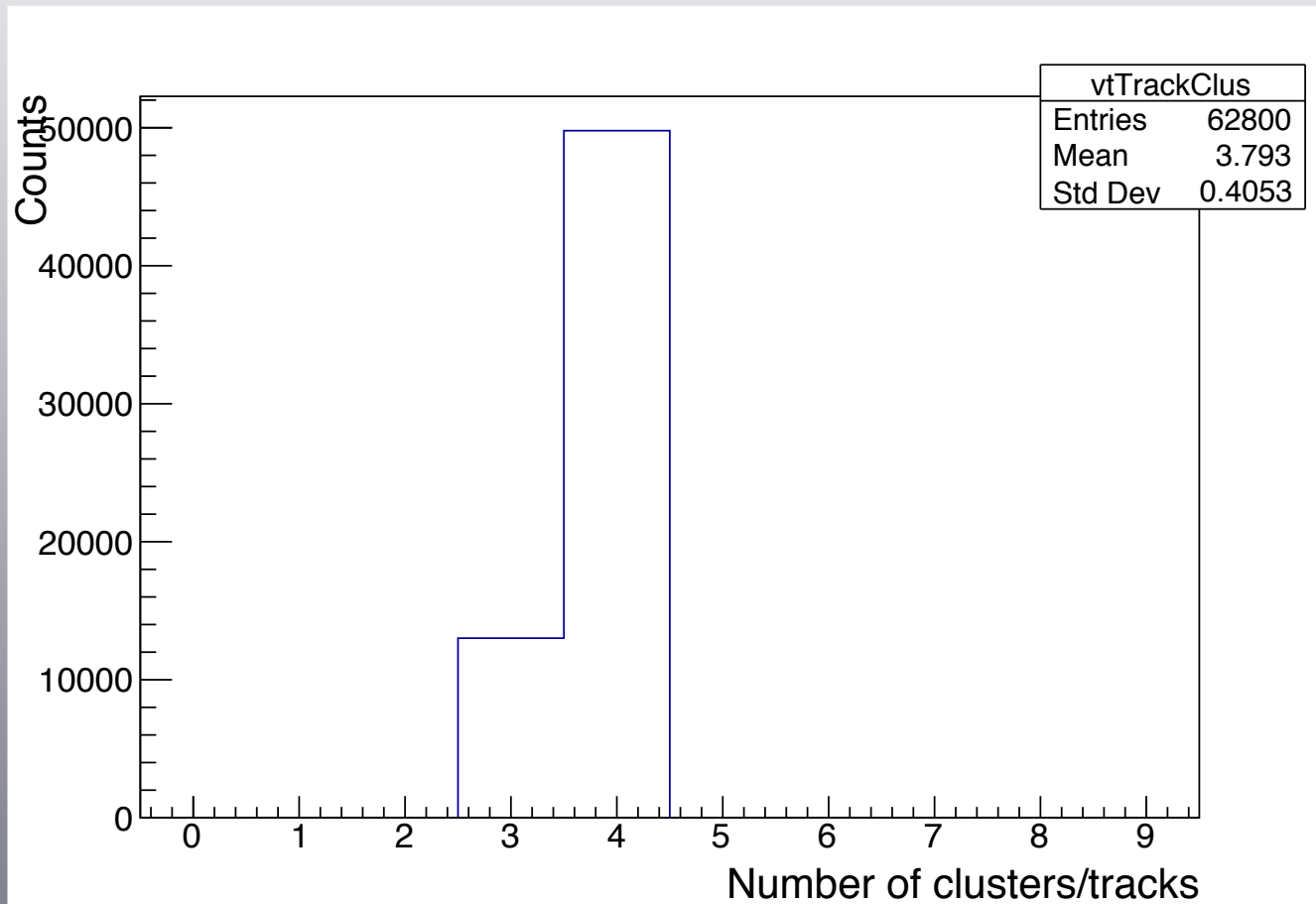
• Tracks per events:



- Tracks presence in 98.7% of cases,
- Important proportion of pileup (87.3%)
  - ➔ Will need BM tracks

# Oxygen with target (iii)

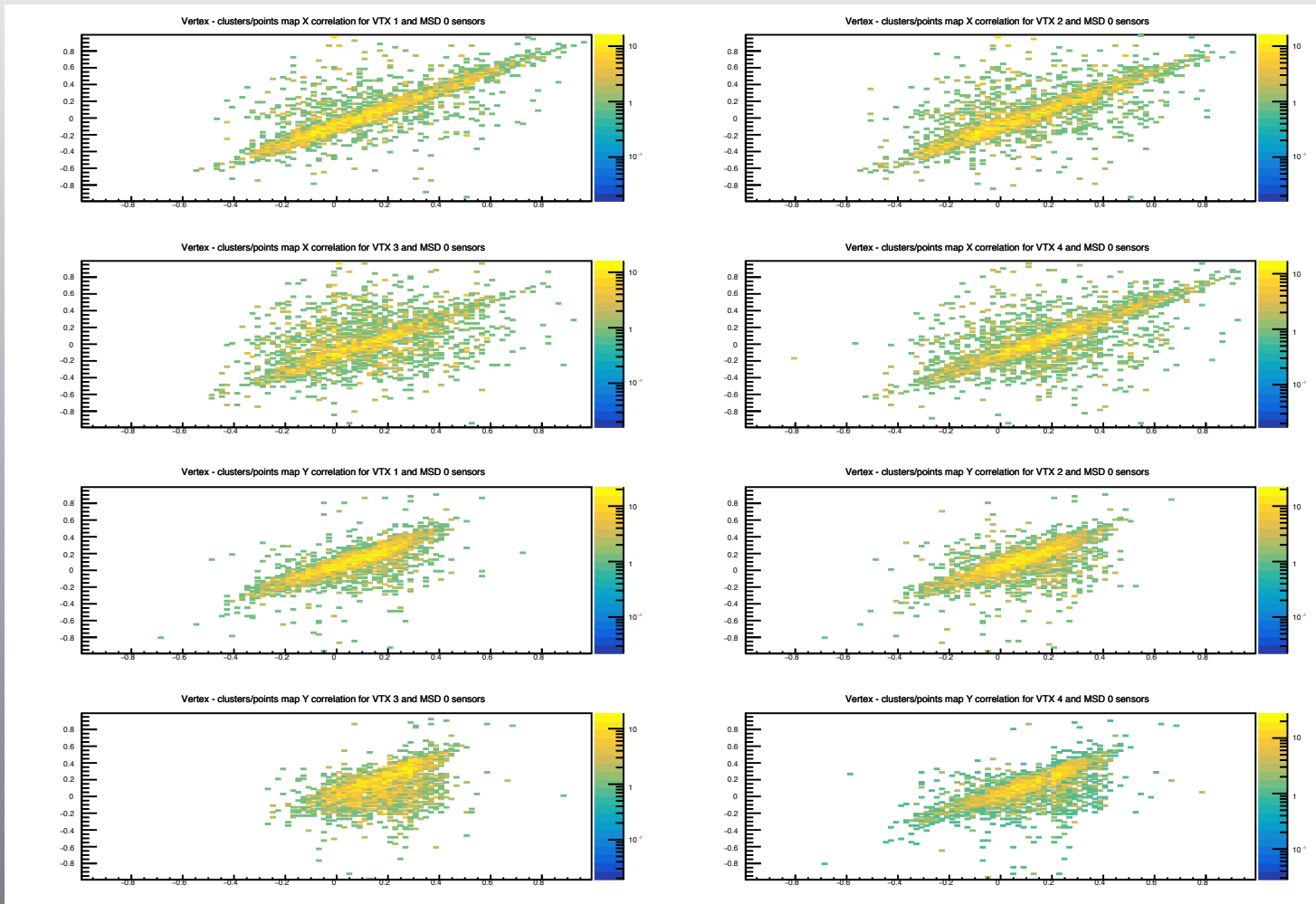
• Clusters per track:



- Mostly 4 planes fired  
➡ Alignment ok

# Correlations (i)

- Correlation with MSD (cluster size > 20 and 2 for VTX & MSD)

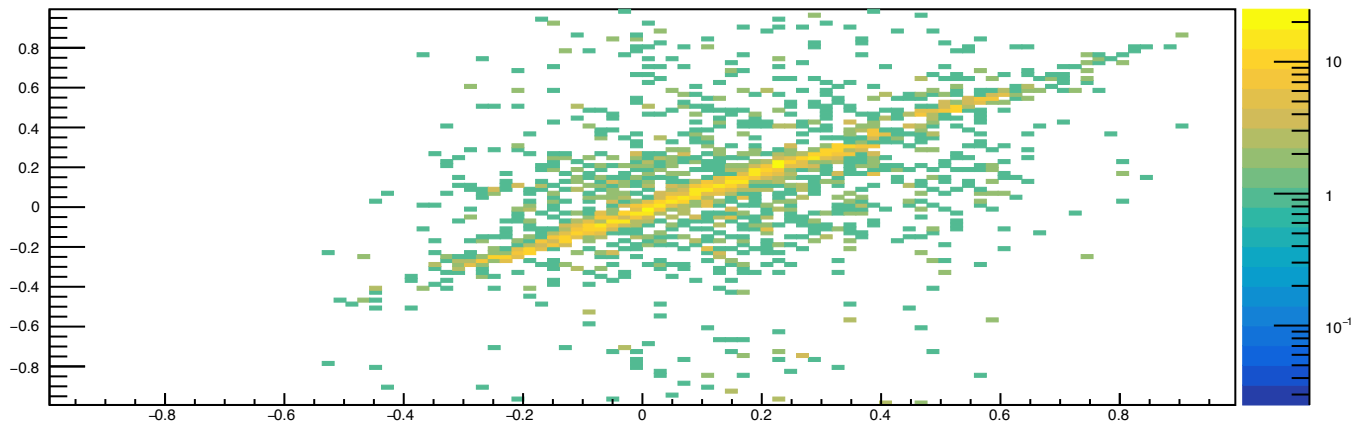


- Over 60 kEvents, 3 lost triggers but re-synchronised
- Correlation stayed btw MSD station 1 and the 4 VTX plane in X and Y
  - ➡ Corrected anti-correlation with MSD

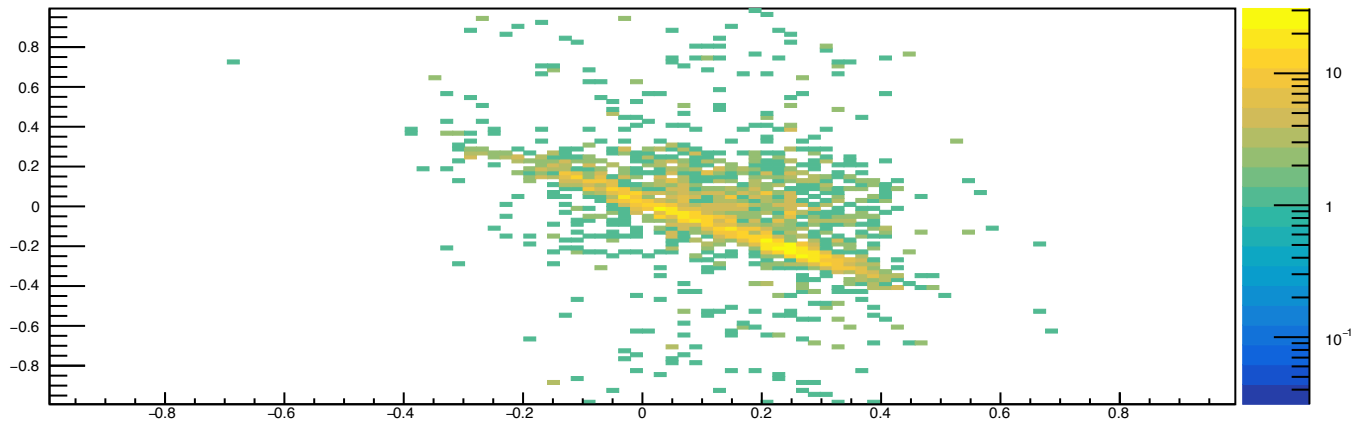
# Correlations (ii)

## Correlation with BM

Vertex - clusters/points map X correlation for VTX tracks and BM tracks



Vertex - clusters/points map Y correlation for VTX track and BM track



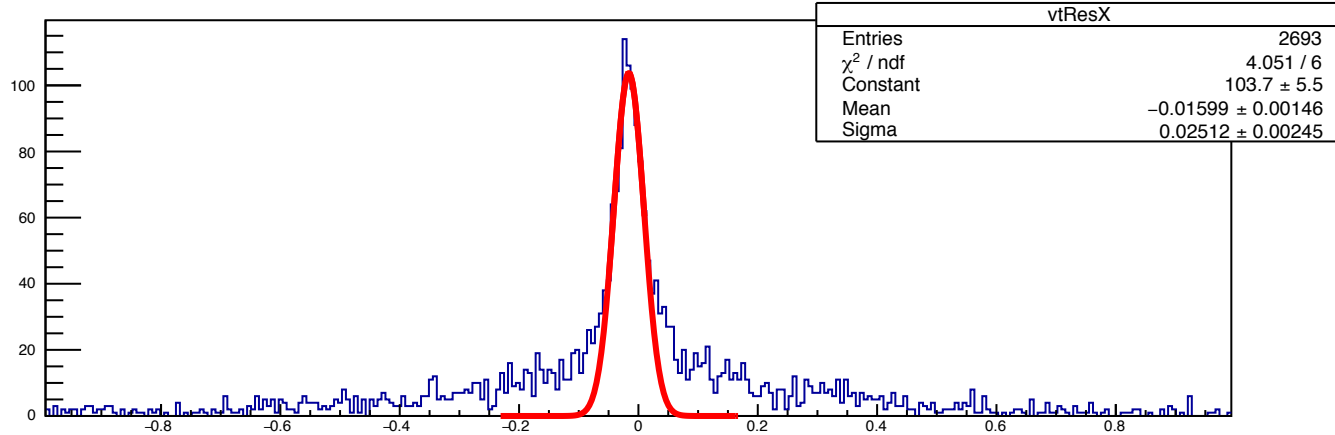
- Correlation btw tracks of BM and VTX (Y-Axis anti-correlated)



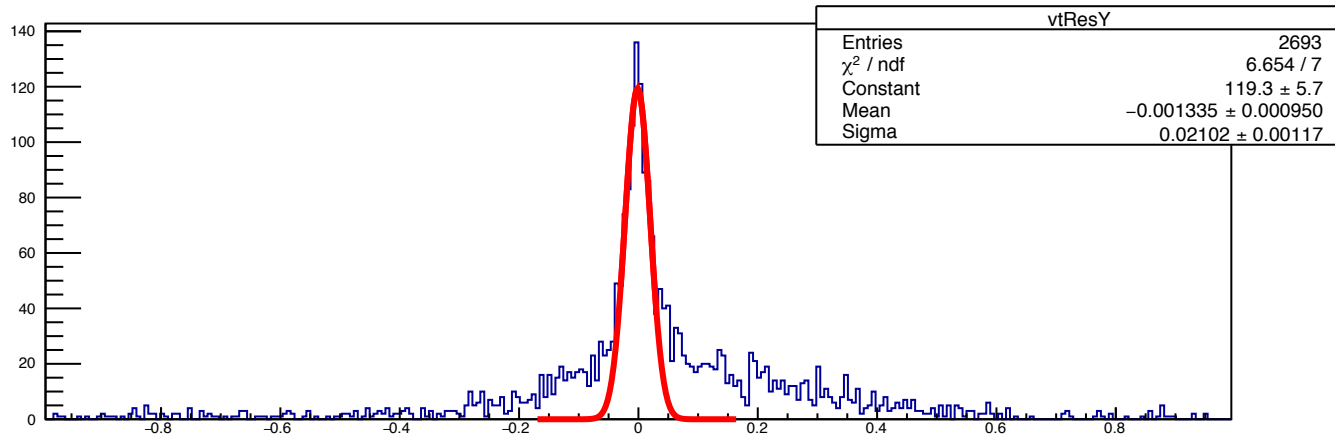
# Correlations (iii)

## Residuals with BM

Residuals X for VTX tracks and BM tracks



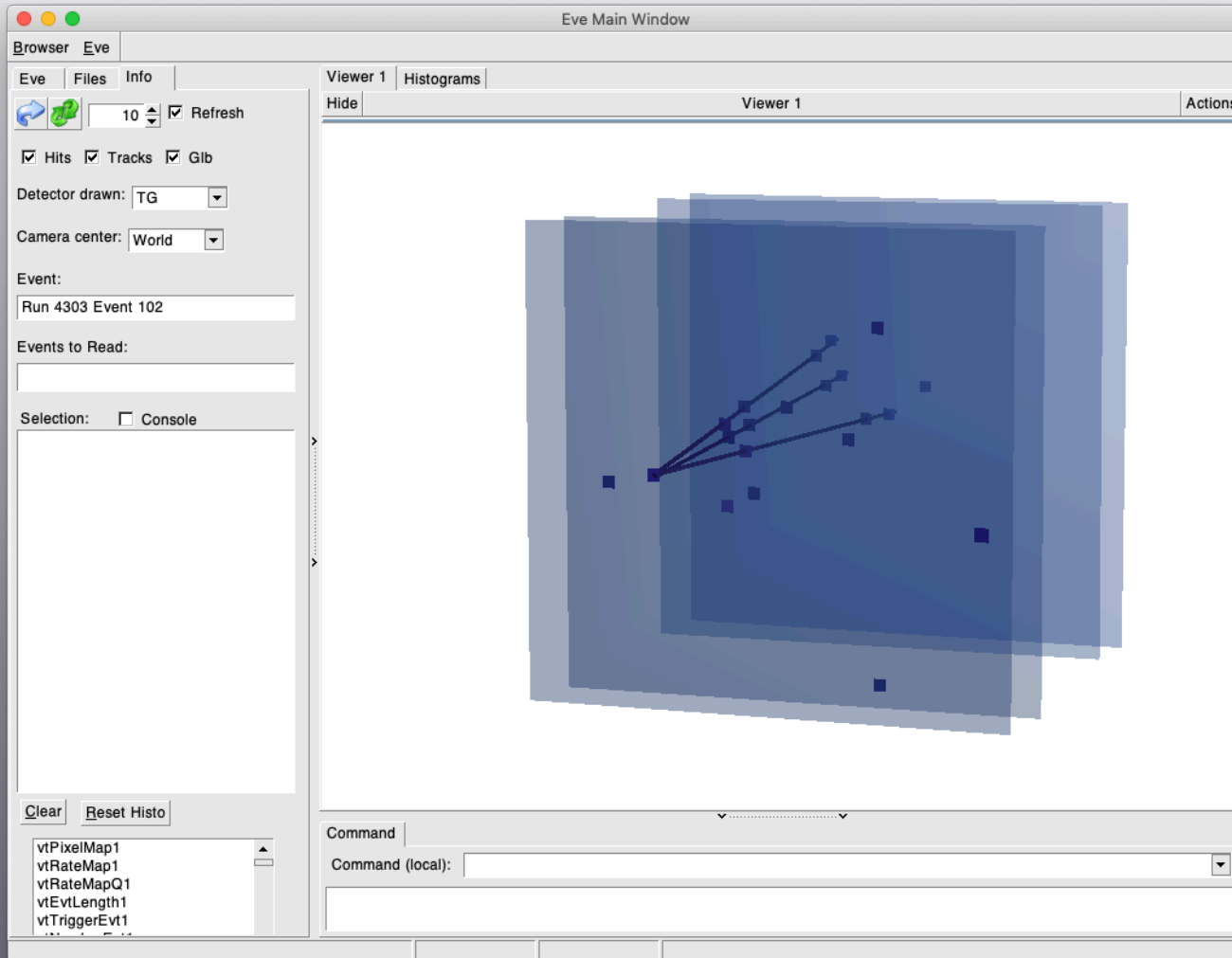
Residuals Y for VTX tracks and BM tracks



- Residuals around 210 - 250  $\mu\text{m}$
- Taking into account the anti-correlation in Y-Axis

# Event display (i)

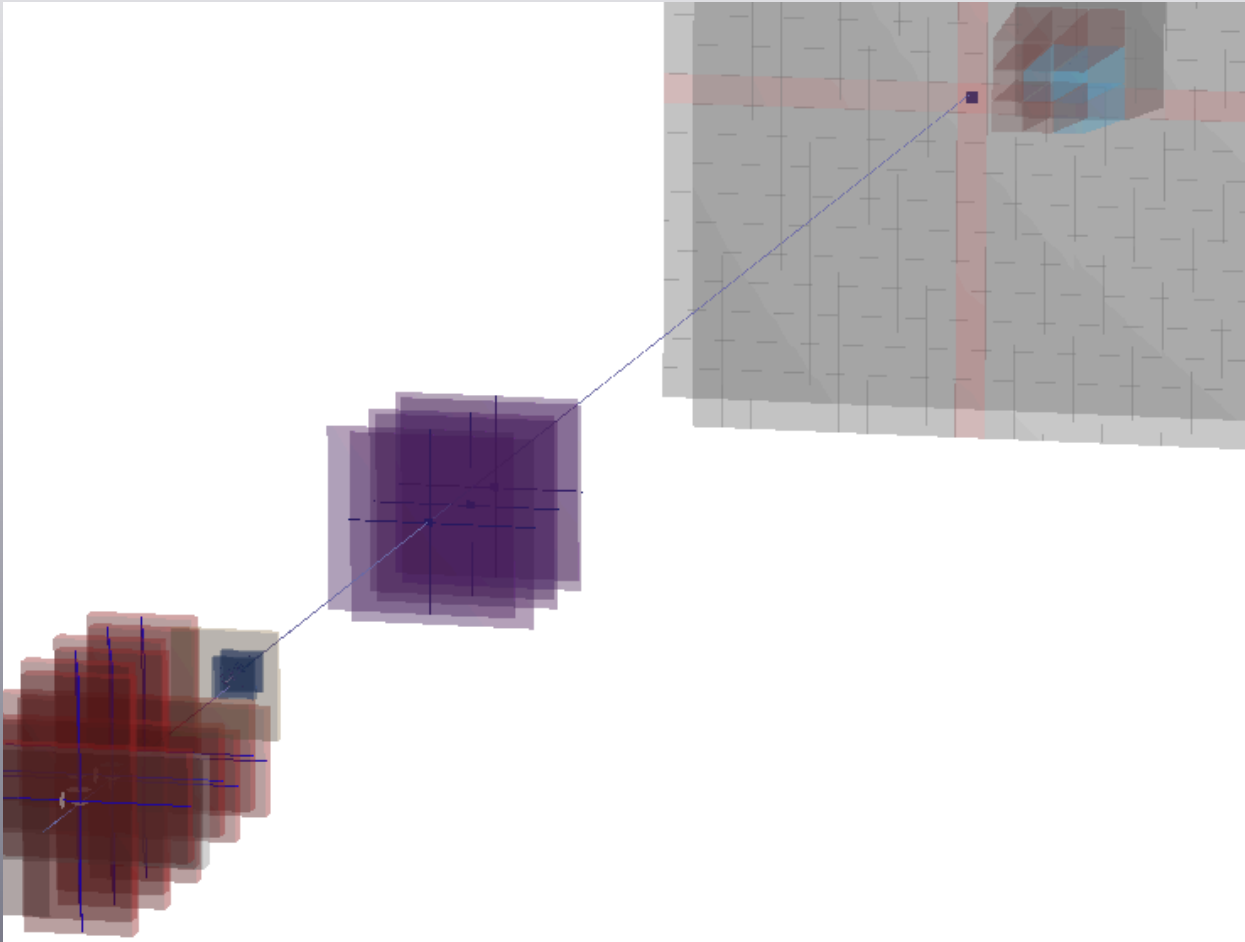
• VTX display:



- Fragmented event

# Event display (ii)

• Full display:



- Track in BM+VTX+MSD+TW, detectors not aligned !

# Conclusions

- VTX re-synchronised with DAQ
  - ➔ Global reconstruction can be used
  - ➔ Needed global alignment esp. BM+VTX+MSD
  - ➔ Fix reference frame btw BM+VTX+MSD

# New features (i)

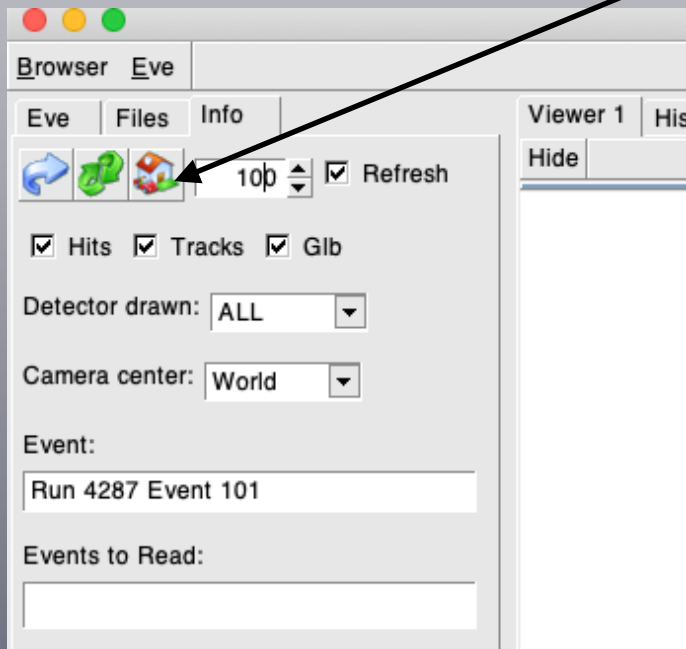
- Option to skip events:

DecodeRaw -in data\_test.00004303.physics\_foot.daq.RAW.\_lb0000.\_FOOT-

RCD.\_0001.data -exp GSI2021 -run 4303 -out reco4303.root -nev 5000 -nsk 1000

➔ will skip 1000 first events and then will read the next 5000 events

Button to skip event in Event Display



# New features (ii)

- Loop over subfiles:

```
DecodeRaw -in data_test.00004303.physics_foot.daq.RAW._lb0000._FOOT-  
RCD._0001.data -exp GSI2021 -run 4303 -out reco4303.root -nev 60000
```

➔ will read the first file and then will opened next file (if present):

data\_test.00004303.physics\_foot.daq.RAW.\_lb0000.\_FOOT-RCD.\_0002.data  
and so on

```
...  
Loaded Event: 10000  
  
End of file  
Opening file data_test.00004303.physics_foot.daq.RAW._lb0000._FOOT-RCD._0002.data  
  
-----HEADER OF FILE-----  
Info Header WRITER=: FOOT-RCD  
Info Header FILENAME=: data_test.00004303.physics_foot.daq.RAW._lb0000._FOOT-RCD  
Info Header number of file=: 2  
...
```

Rem: works also for .data.moved extension (thanks to Yun)