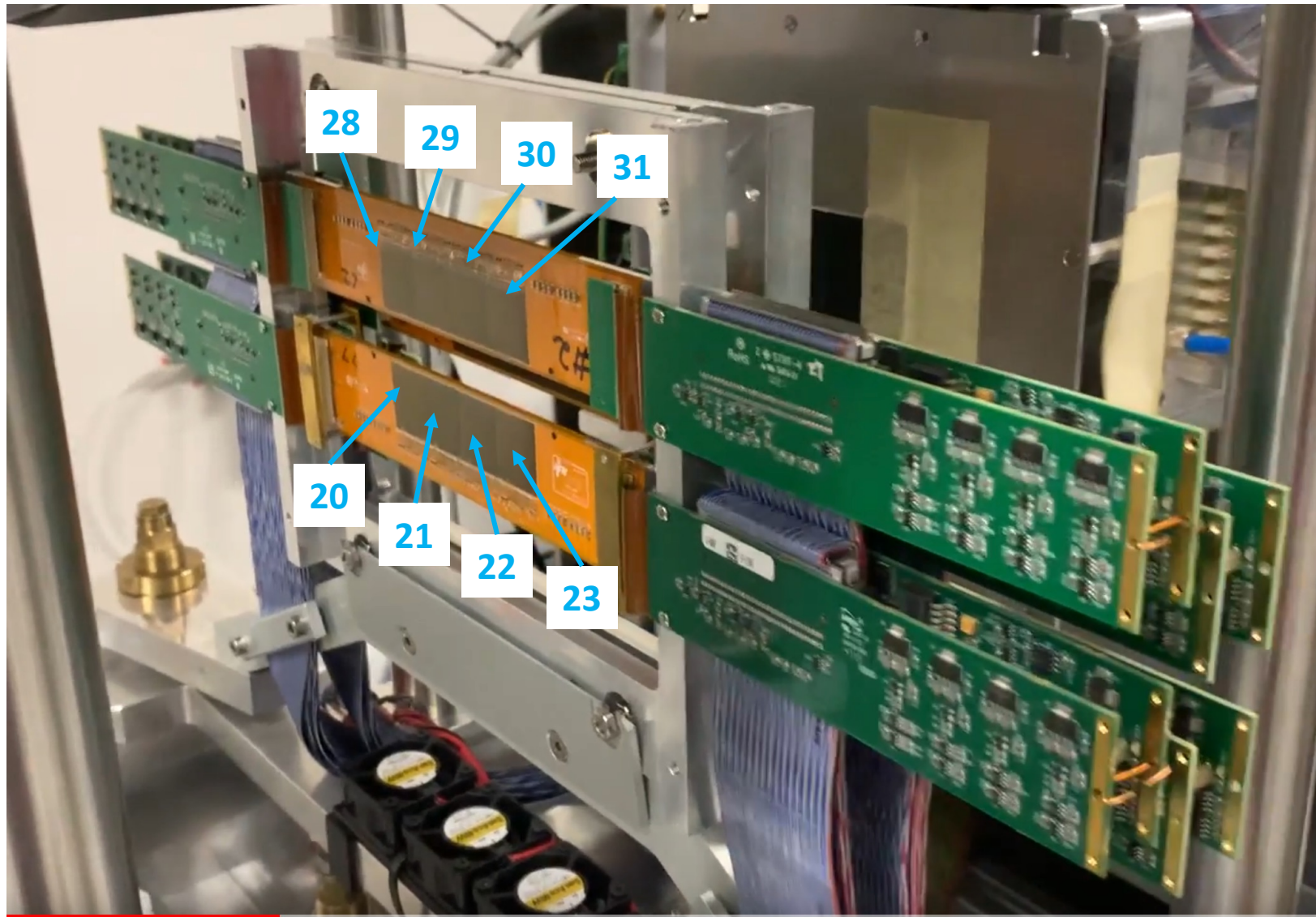


CNAO2024

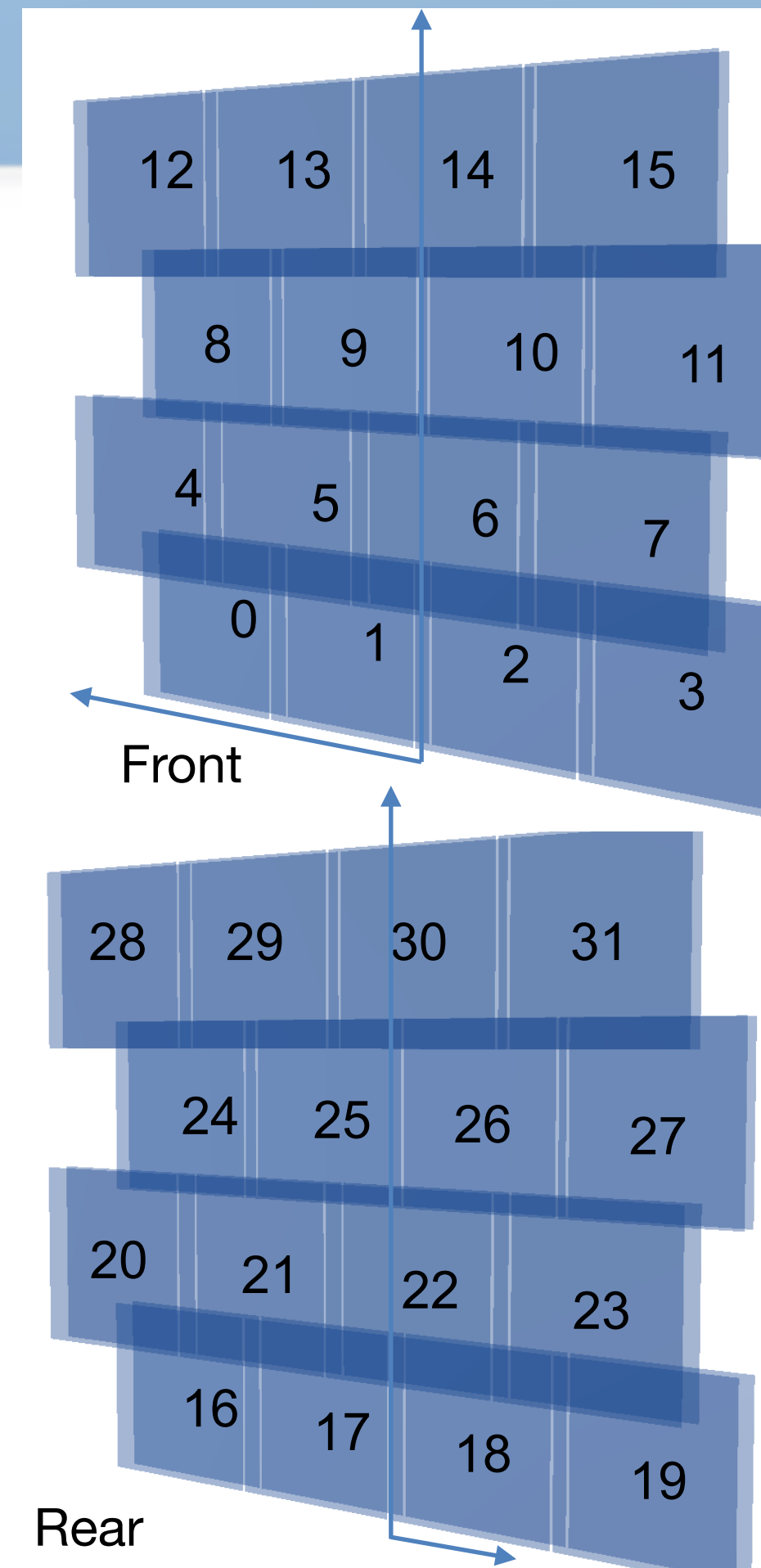
Updates (bis)

Numbering

- Numbering from MC simulation (Giuseppe)

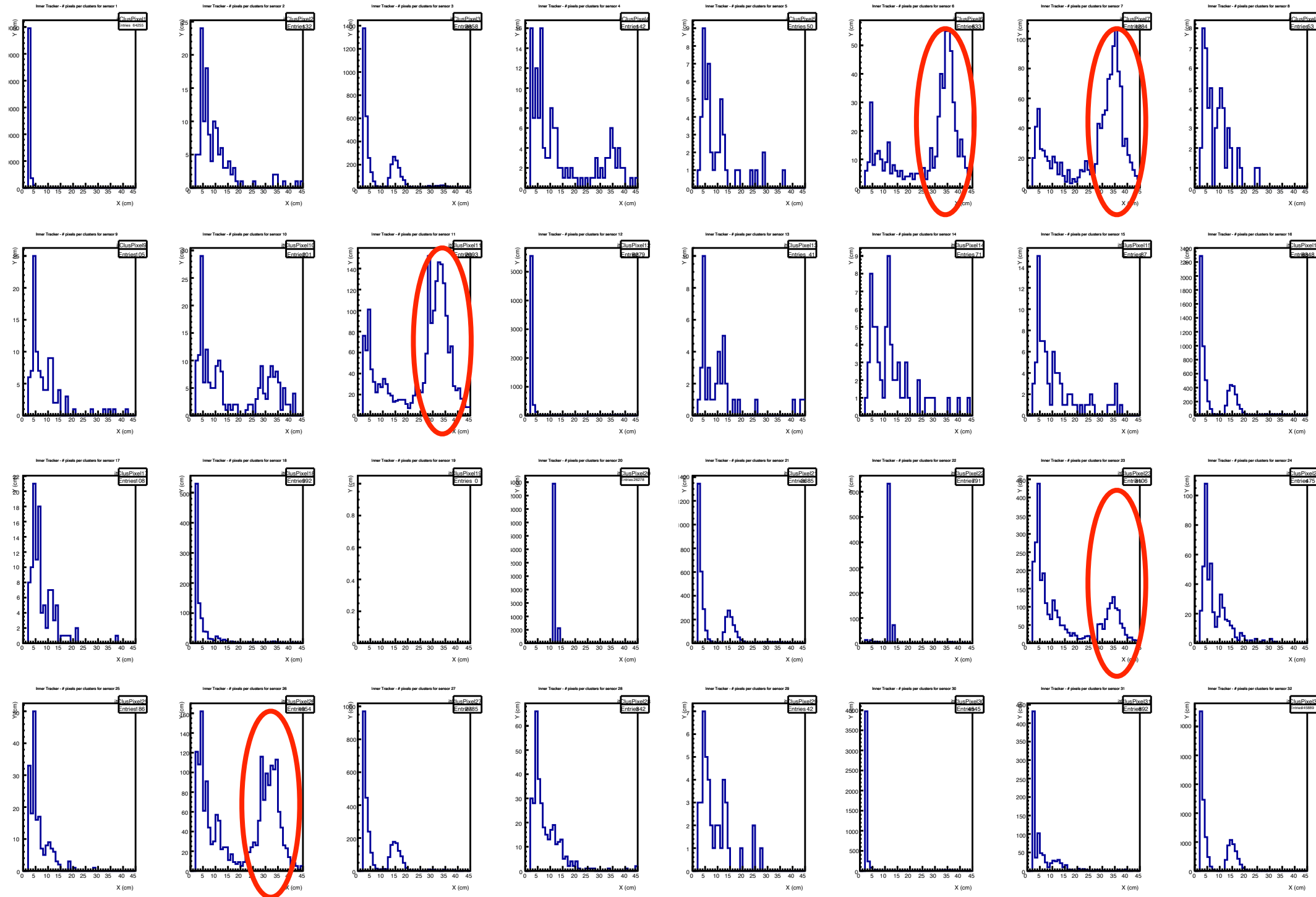


➡ Seems now coherent



Cluster size

■ CNAO2024: run 7074 (threshold: $10 \times \sigma$)

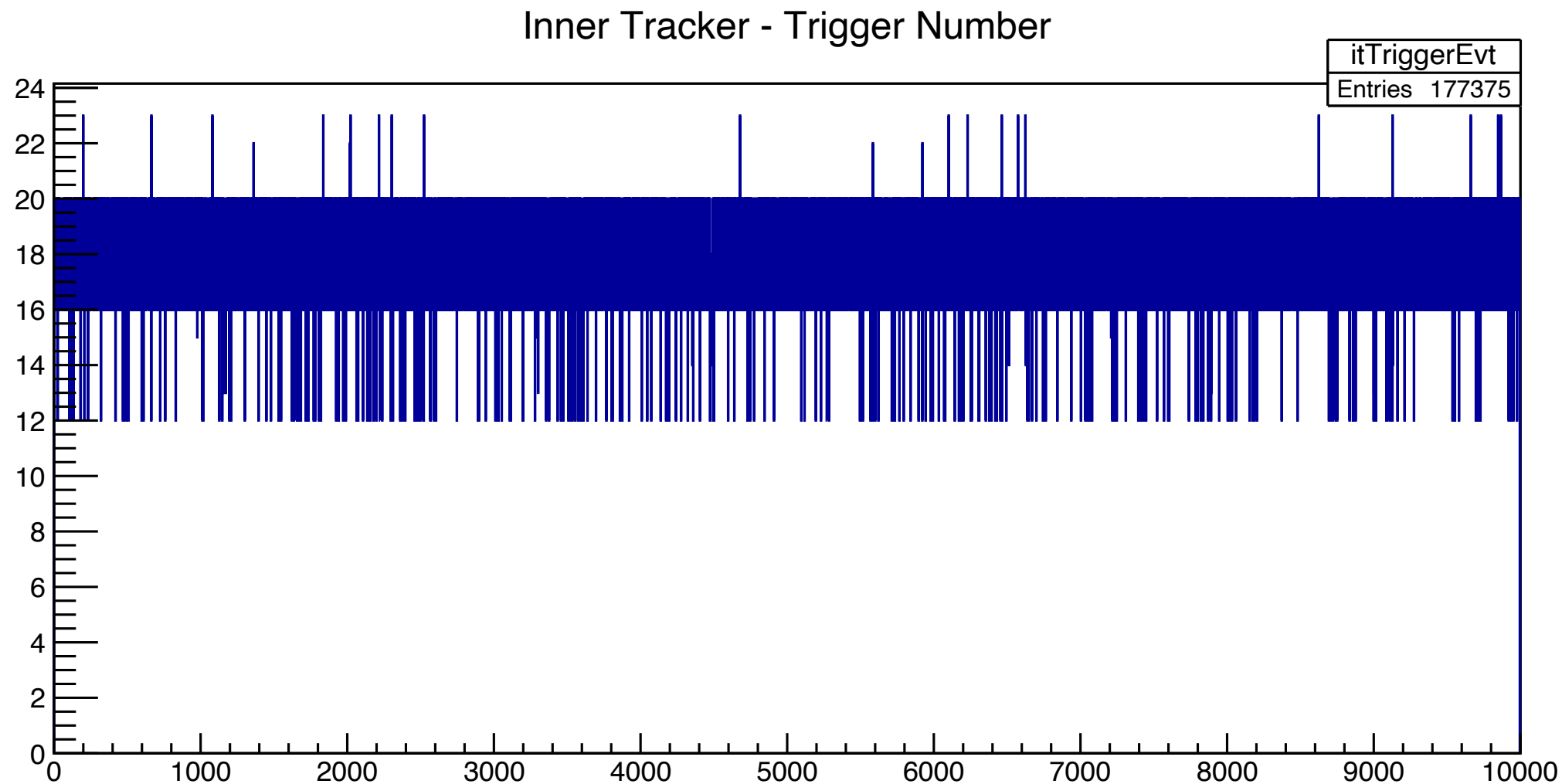


Beam: (start @ 1)
6, 7 & 11
23 & 26

Beam:
~25 pixels/cluster

Trigger number

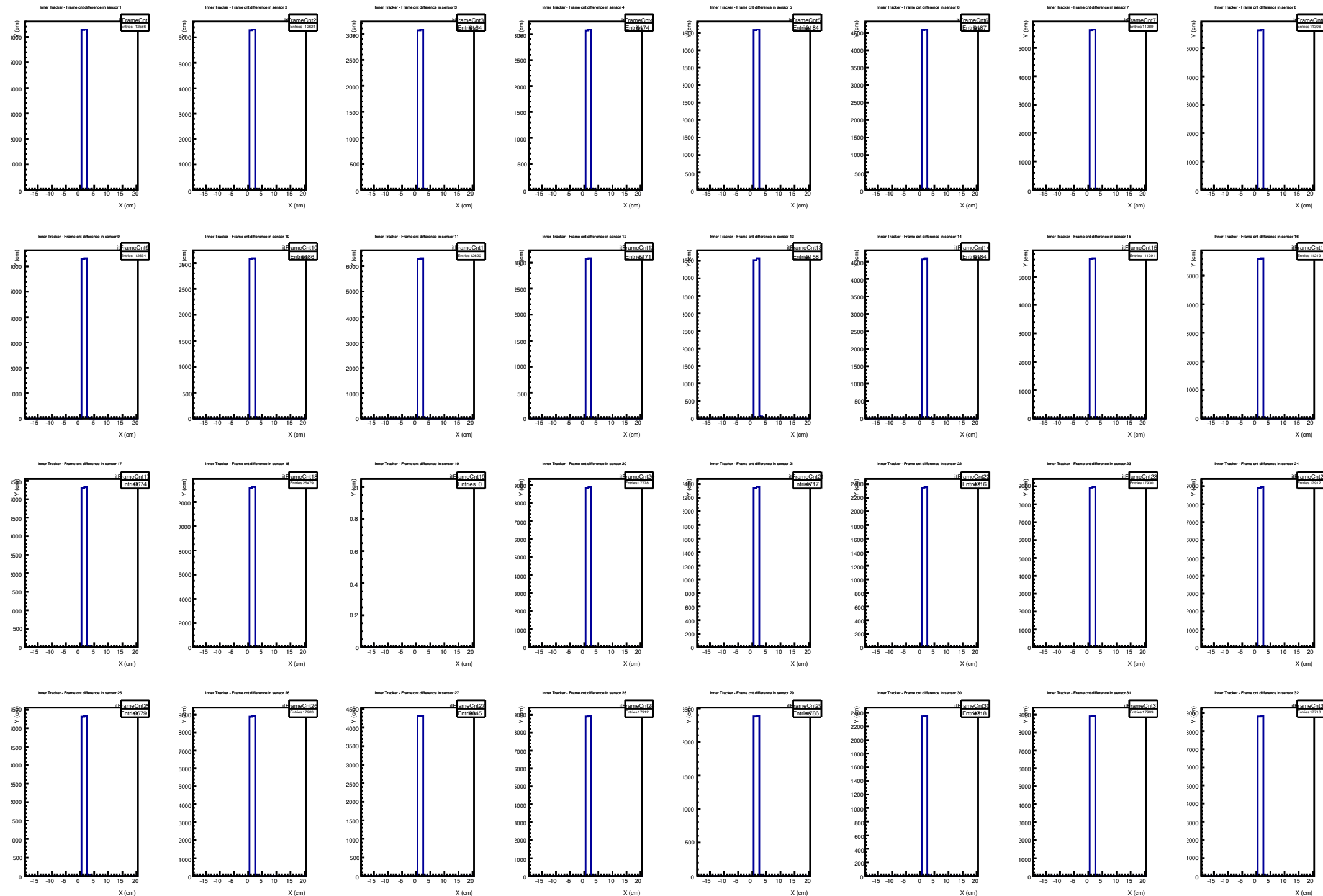
□ CNAO2024: run 7074: over 10kEvs



➡ Seems to be ok, do not loose any trigger

Frame counter difference per sensor

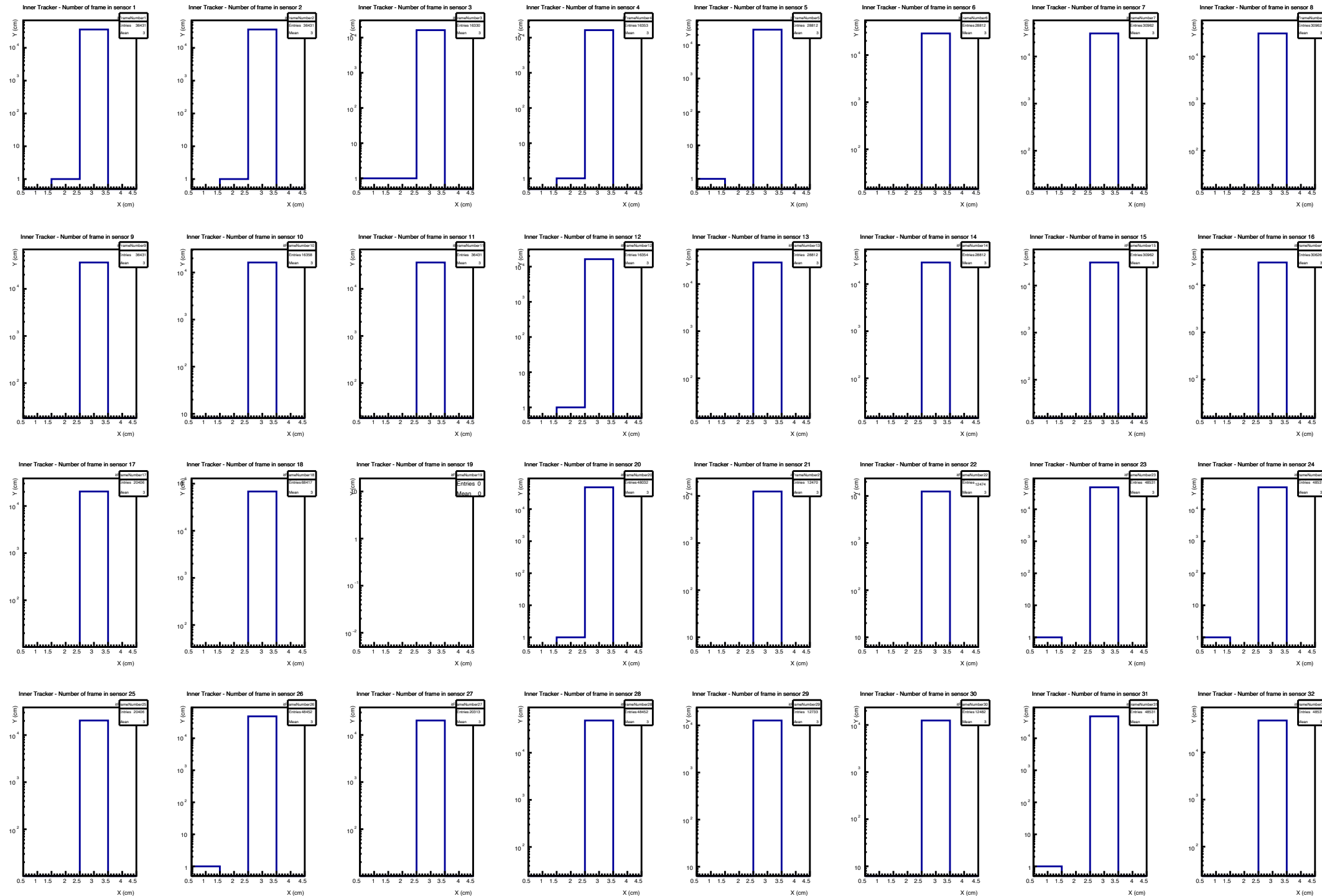
□ CNAO2024: run 7074 (threshold: $10 \times \sigma$)



<= 2 as expected

Frame number per sensor

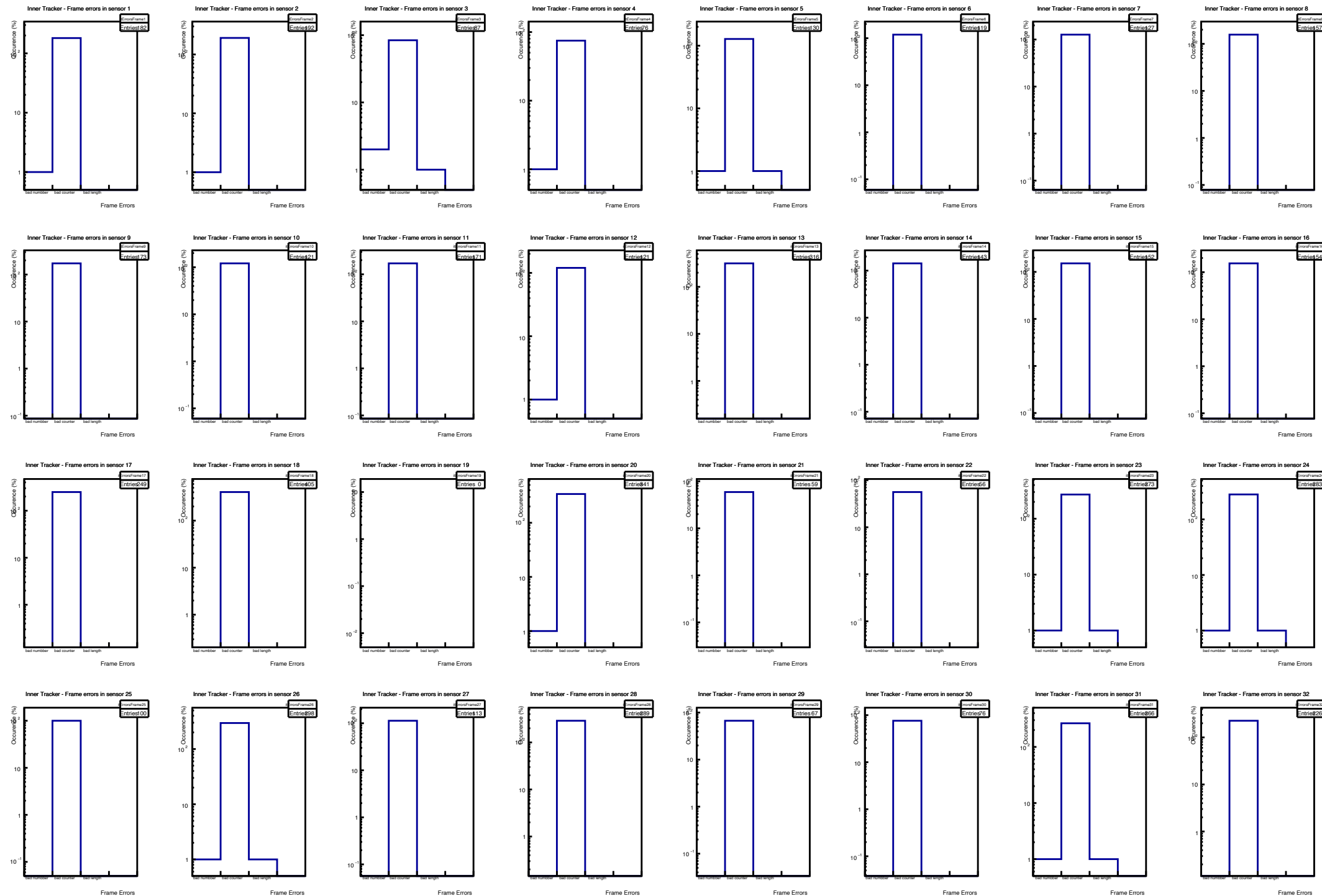
□ CNAO2024: run 7074 (threshold: $10 \times \sigma$)



3 frames
(< 3 , in 0.01%)

Frame errors per sensor

■ CNAO2024: run 7074 (threshold: $10 \times \sigma$)



1: bad frame number

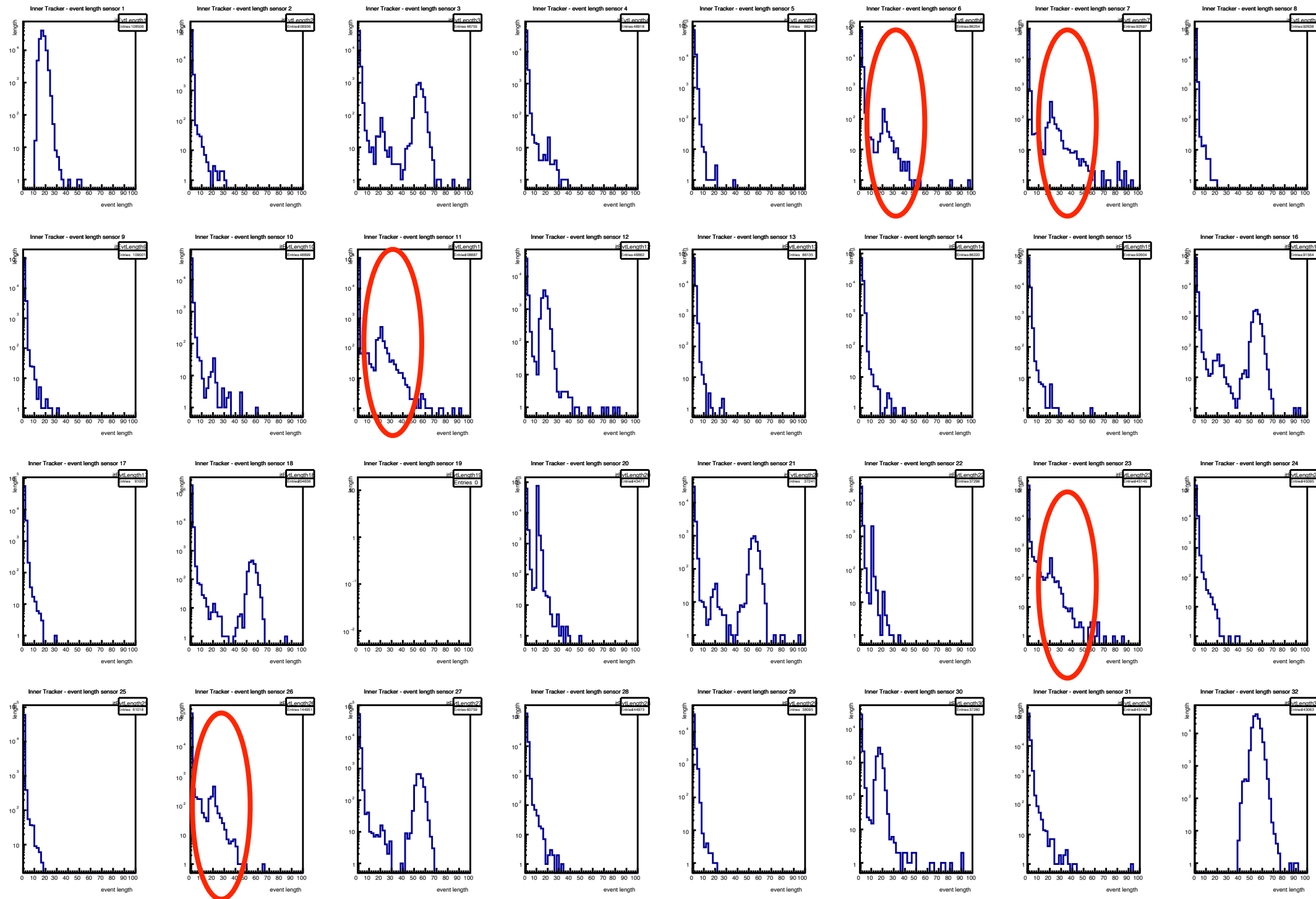
2: bad frame counter

3: bad frame length

< 0.2 %

Frame data length per sensor

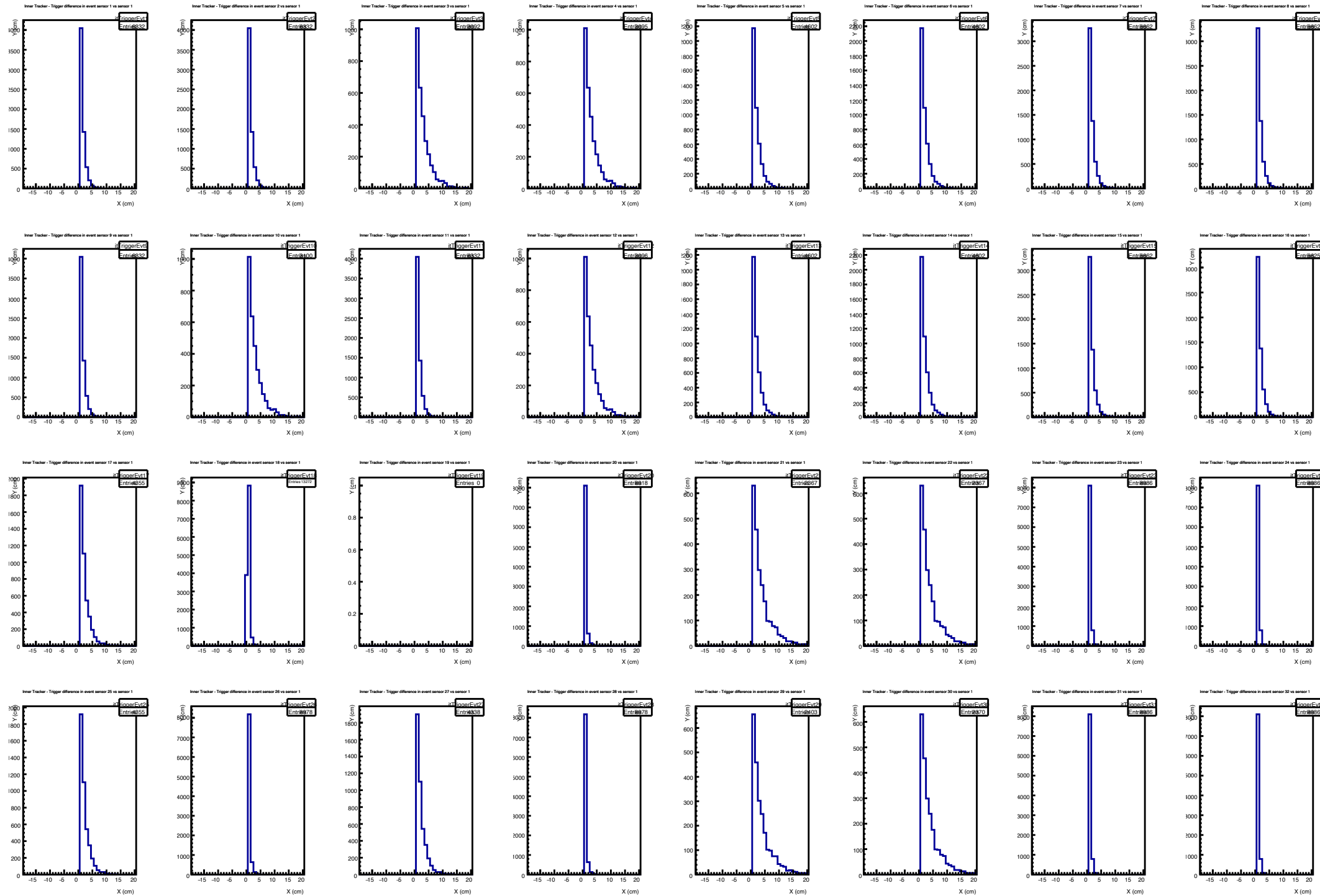
□ CNAO2024: run 7074 (threshold: $10 \times \sigma$)



For many events
Length = 0

Trigger number difference per sensor

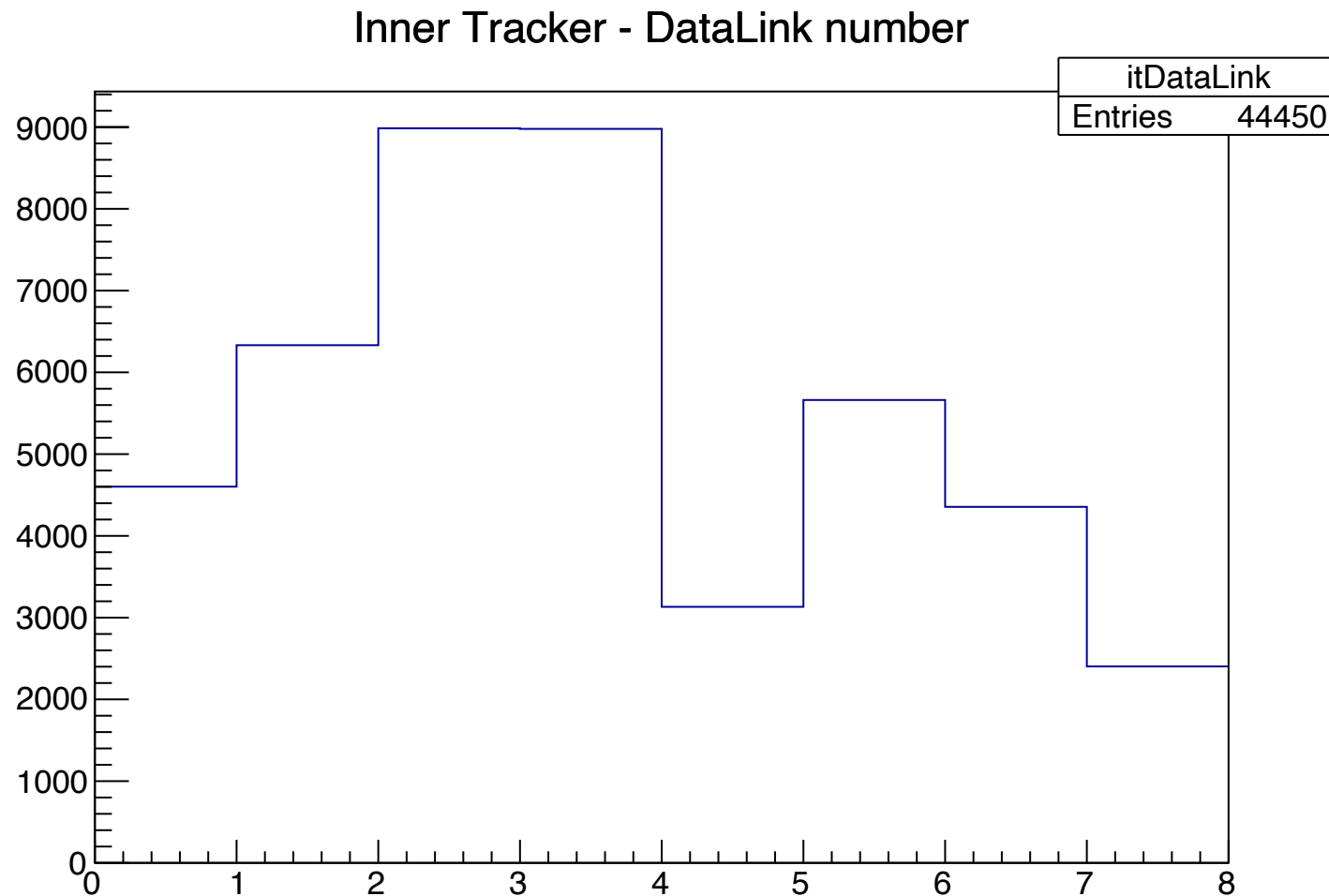
■ CNAO2024: run 7074 (threshold: $10 \times \sigma$)



Triggers not
consecutive

Data link number

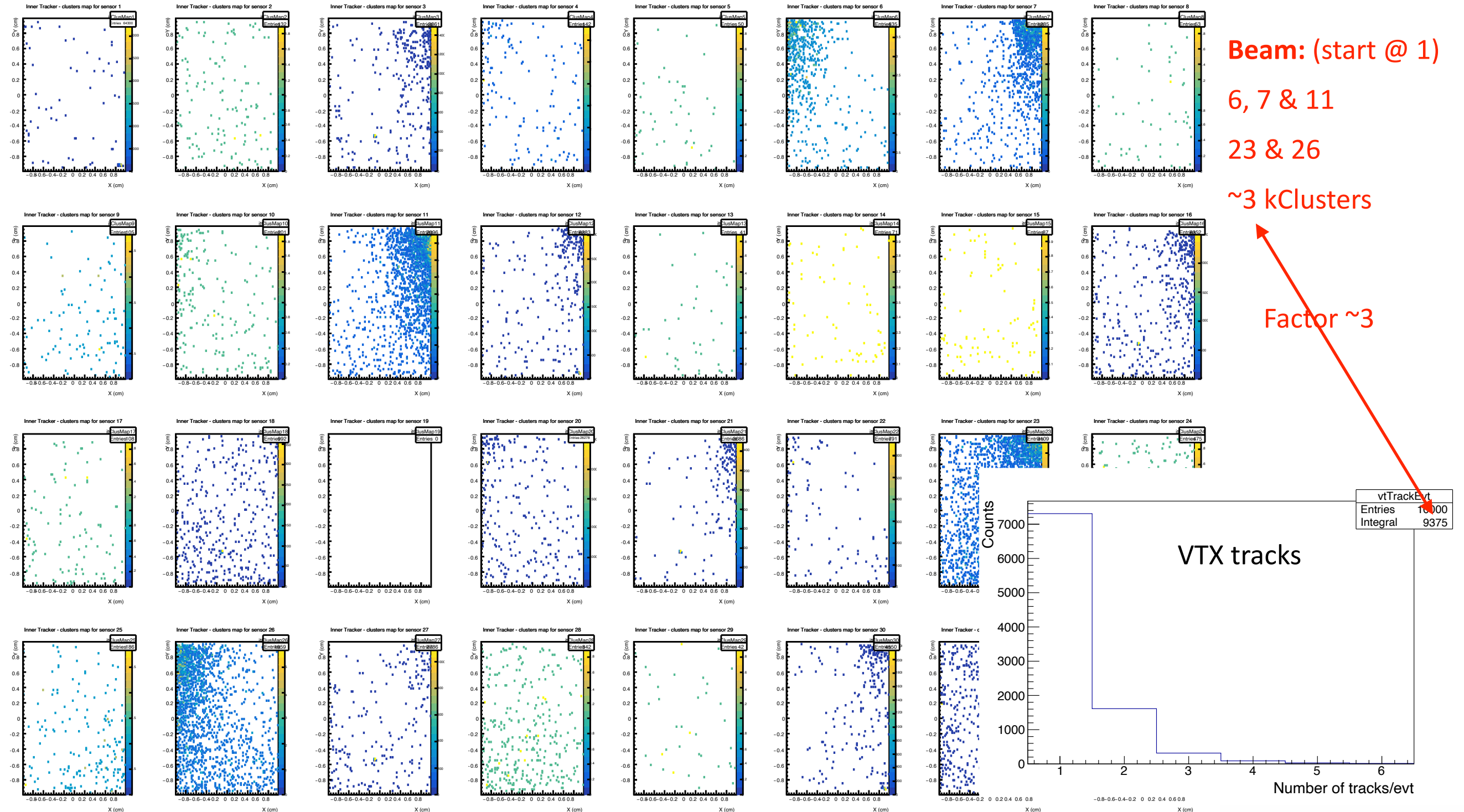
□ CNAO2024: run 7074 (threshold: $10 \times \sigma$)



- ➡ Not all data links present in each event
- ➡ Explain the jump in trigger number respect to previous one

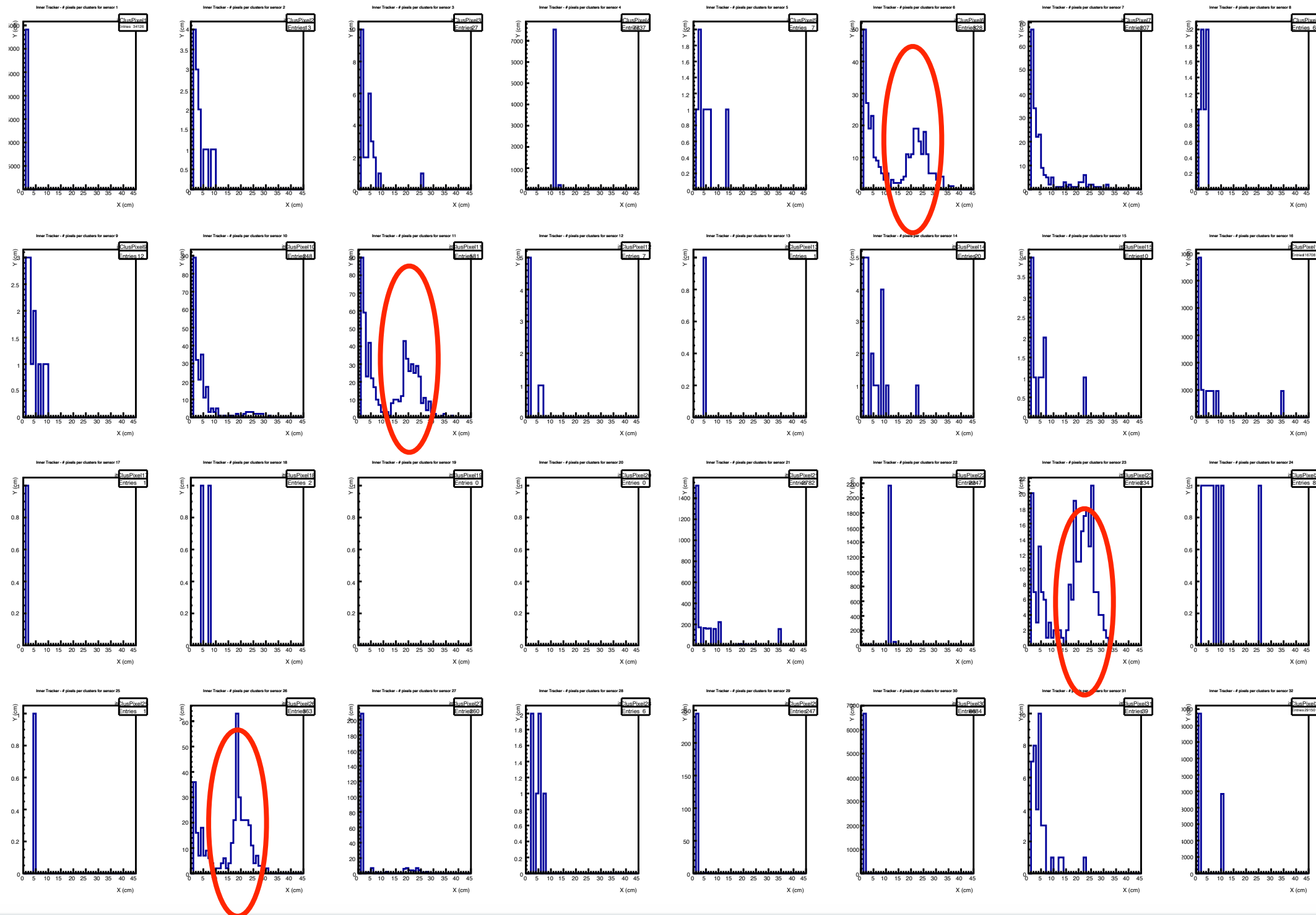
Cluster map

□ CNAO2024: run 7074 (10 kEvs, threshold: $10 \times \sigma$)



Cluster size

■ CNAO2024: run 6962 (10 kEvs, BTF config)



Beam: (start @ 1)

6 & 11

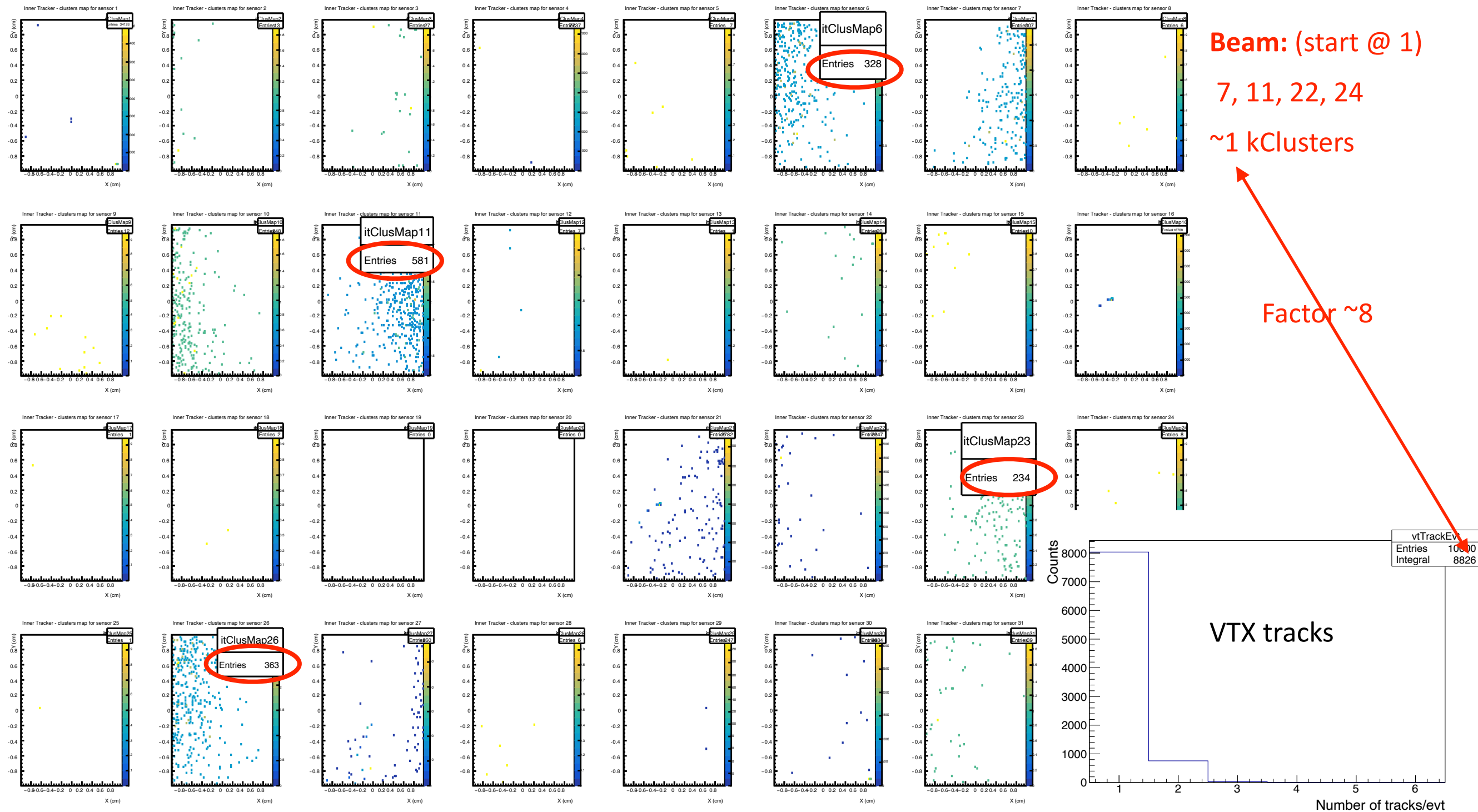
23 & 26

Beam:

~25 pixels/cluster

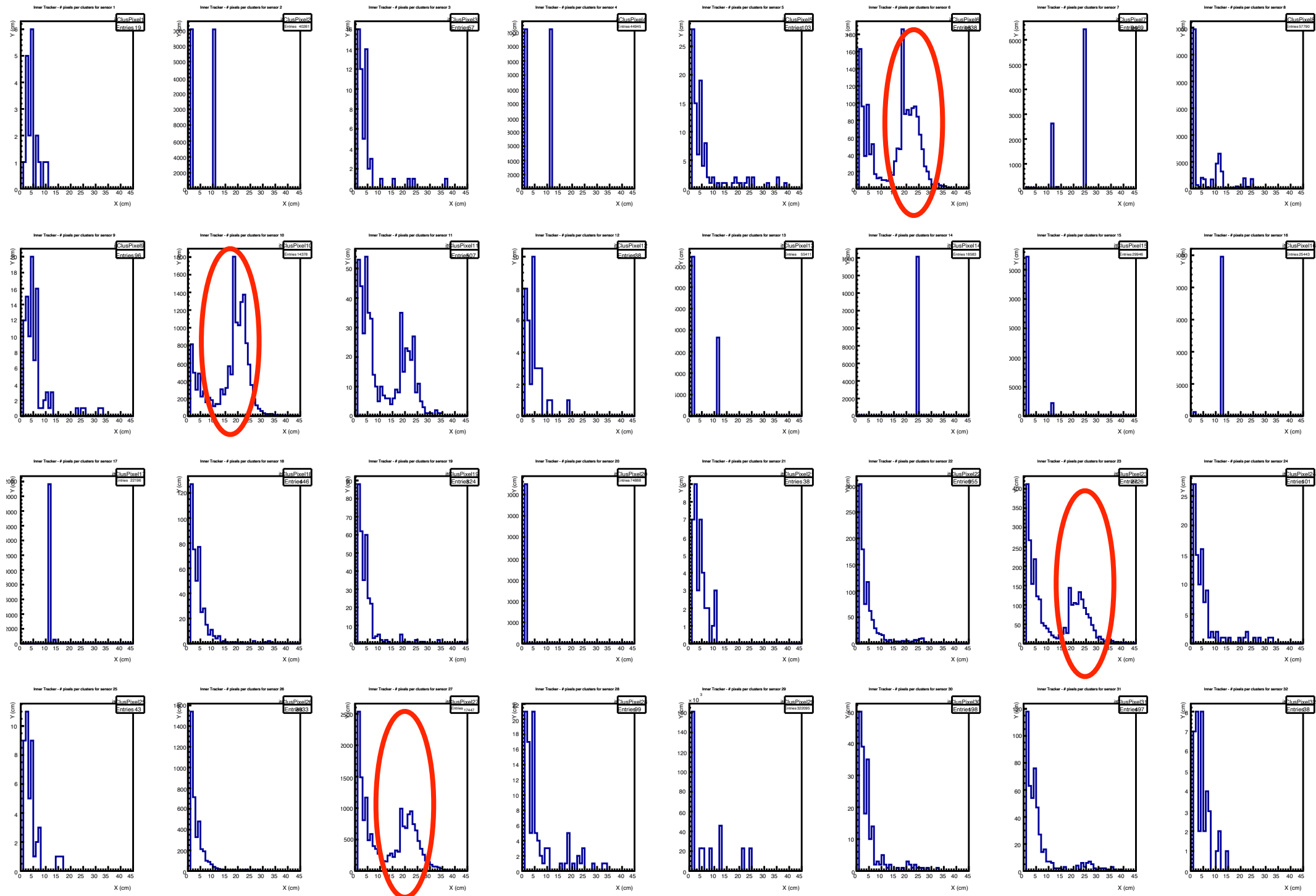
Cluster map

☐ CNAO2024: run 6962 (10 kEvs, BTF config)



Cluster size

■ CNAO2023: run 6144 (25 kEvs, config threshold max ?)



Beam: (start @ 1)

6 & 10

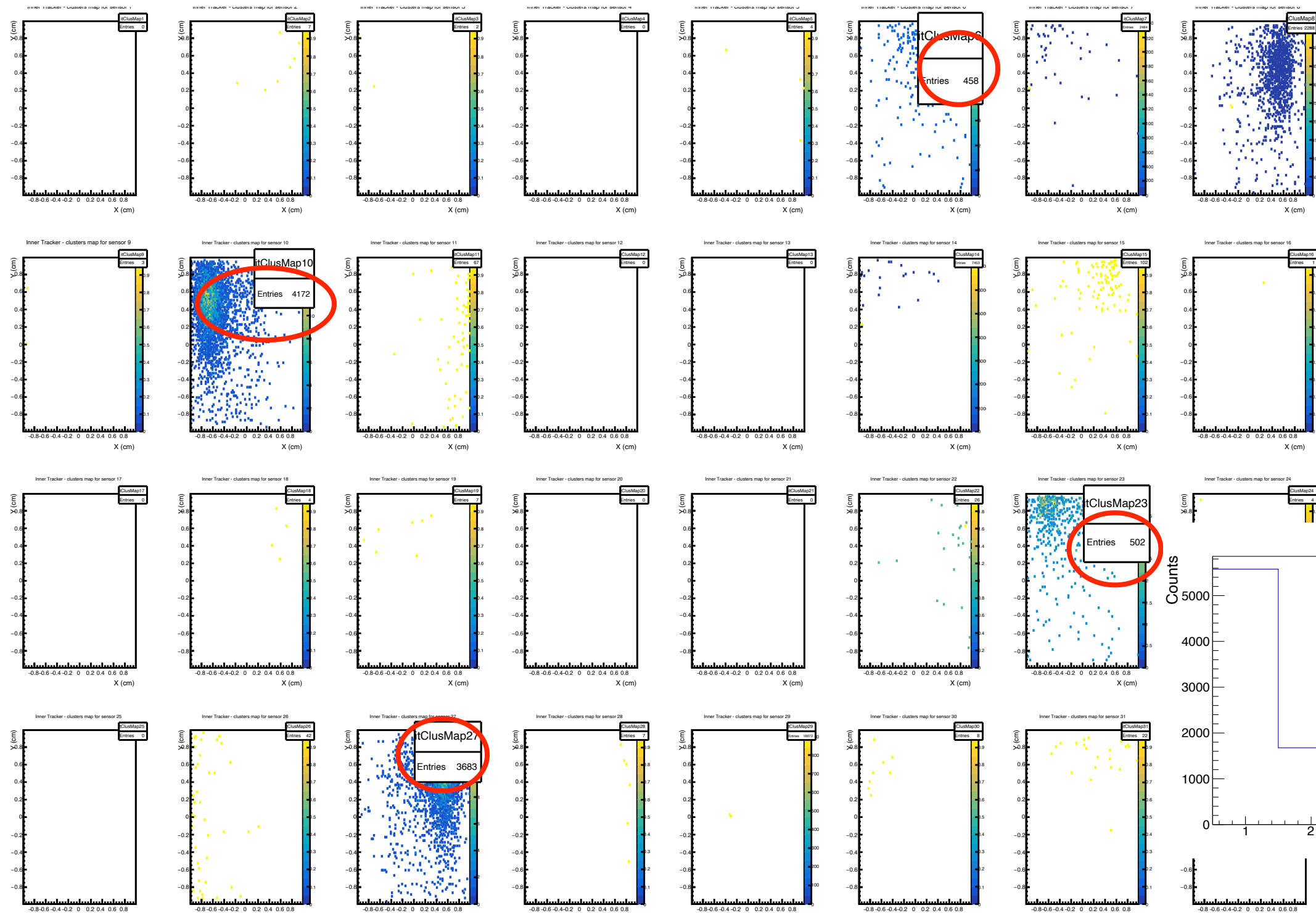
23 & 27

Beam:

~25 pixels/cluster

Cluster map

❑ **CNAO2023:** run 6144 (25 kEvts, cluster size > 10, config threshold max ?)



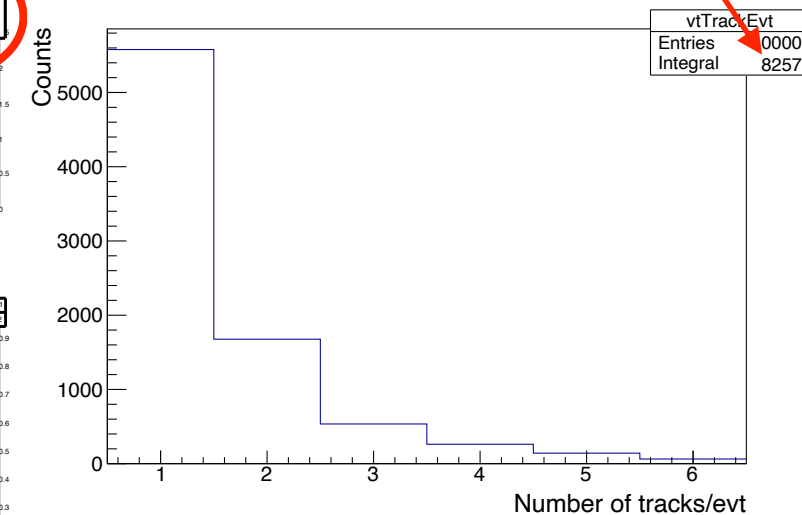
Beam: (start @ 1)

6 & 10

23 & 27

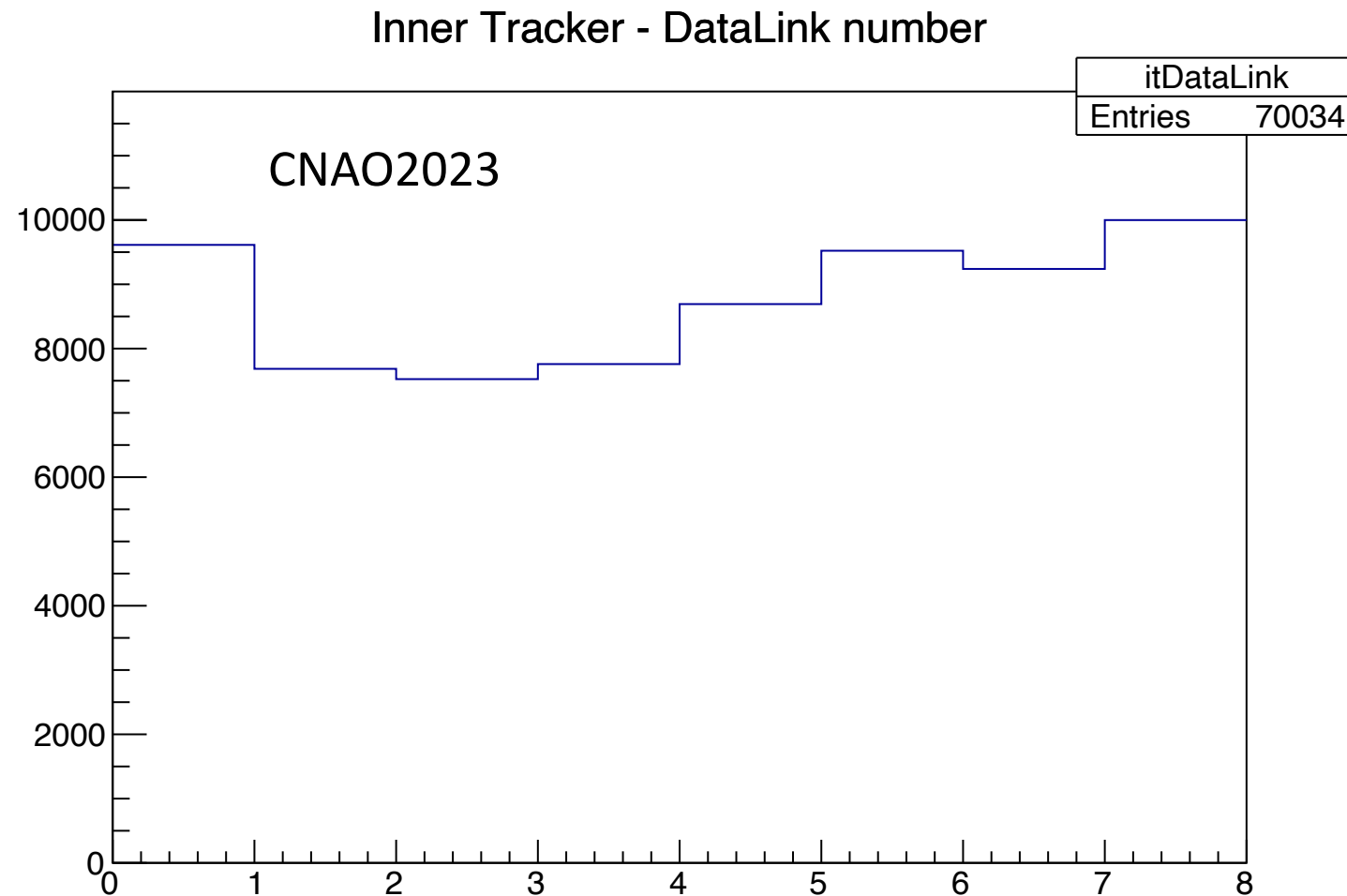
~8 kClusters

~ same number

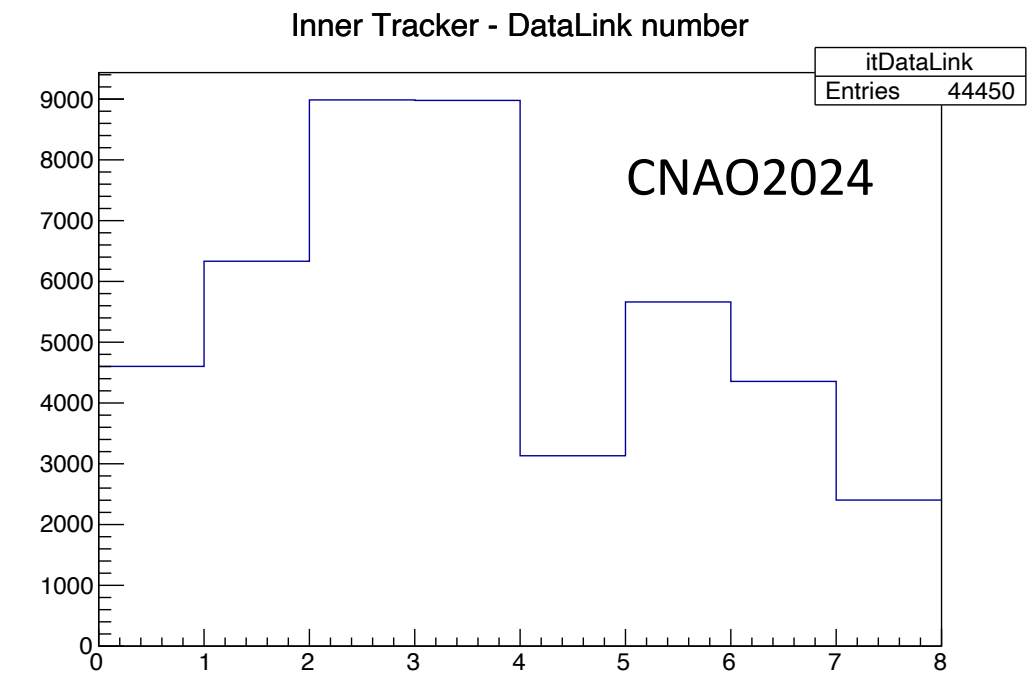


Data link number

■ **CNAO2023**: run 6144 (10 kEvts, config threshold max ?)



■ **CNAO2024**: run 7074 (threshold: $10 \times \sigma$)



- ➡ Not all data links present in each event (as for CNAO2024)
- ➡ But much less dispersion

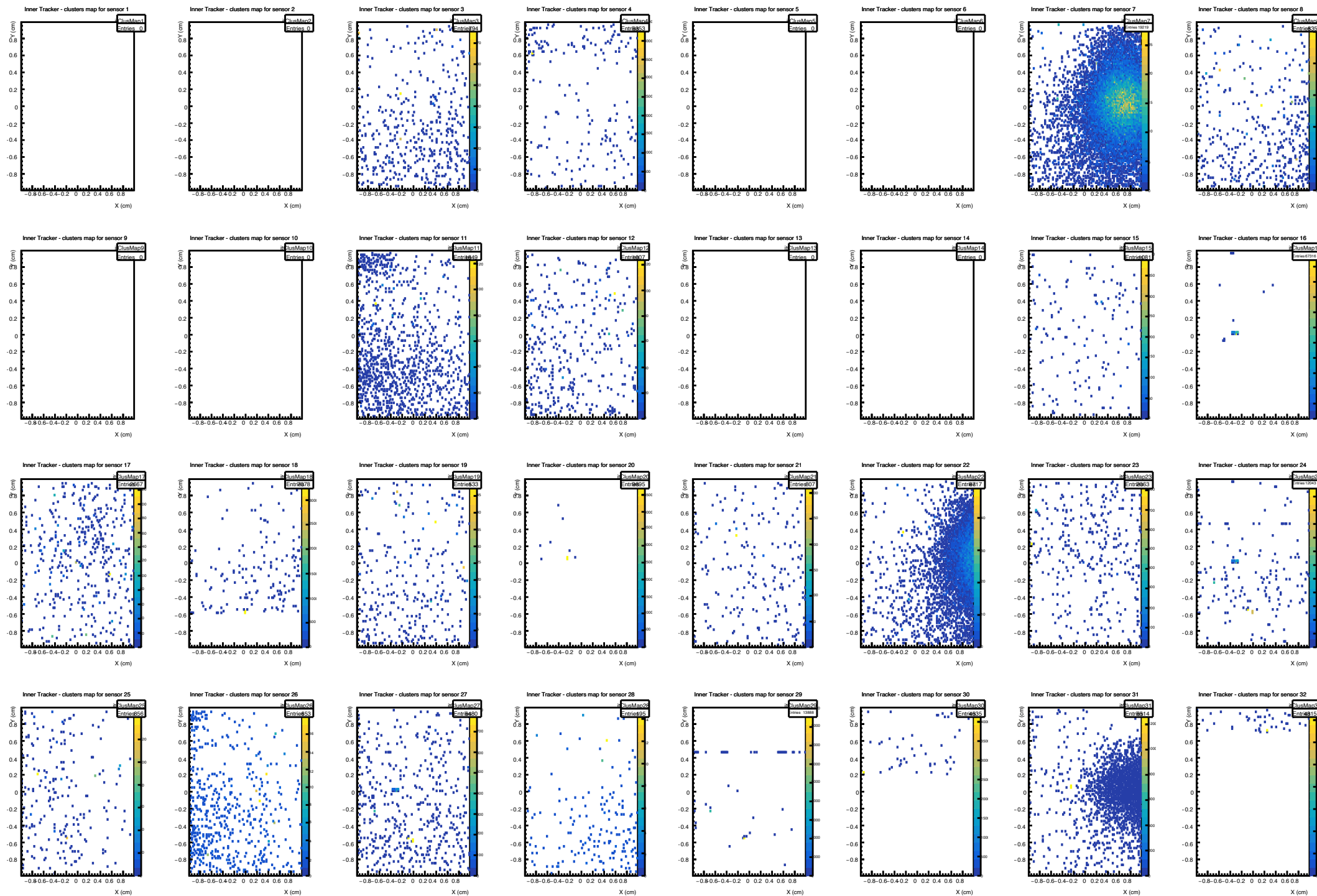
Cluster map

Frascati (e-beam): run 5786 (6kEvs)

Beam: (start @ 1)

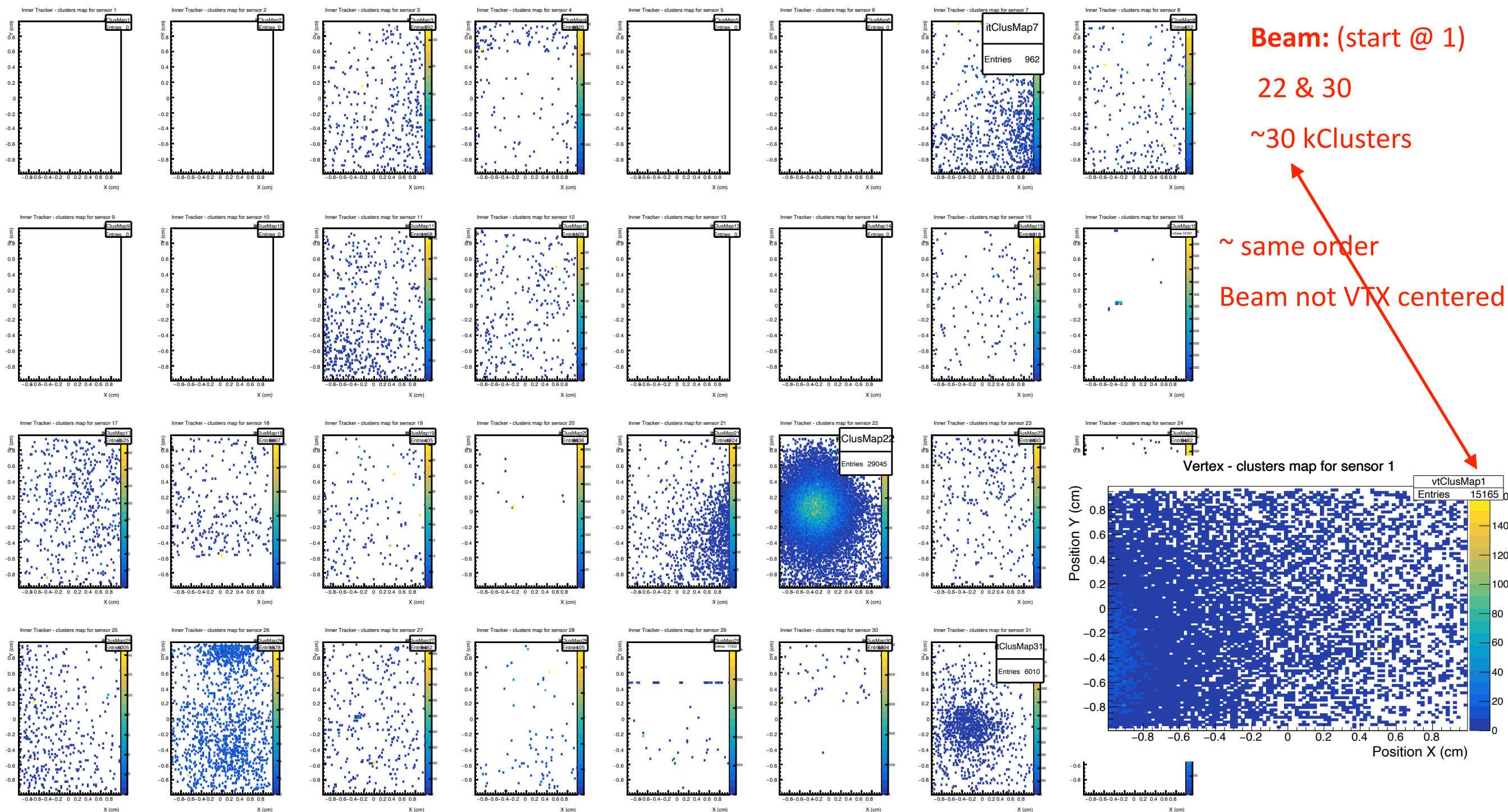
7, 22, 31

~40 kClusters



Cluster map

Frascati (e-beam): run 5783 (6.5kEvts)



Conclusions

❑ Decoding

- Trigger number ✓
- Frame number ✓
- Frame errors < 0.2 %
- Many events with frame data length at zero

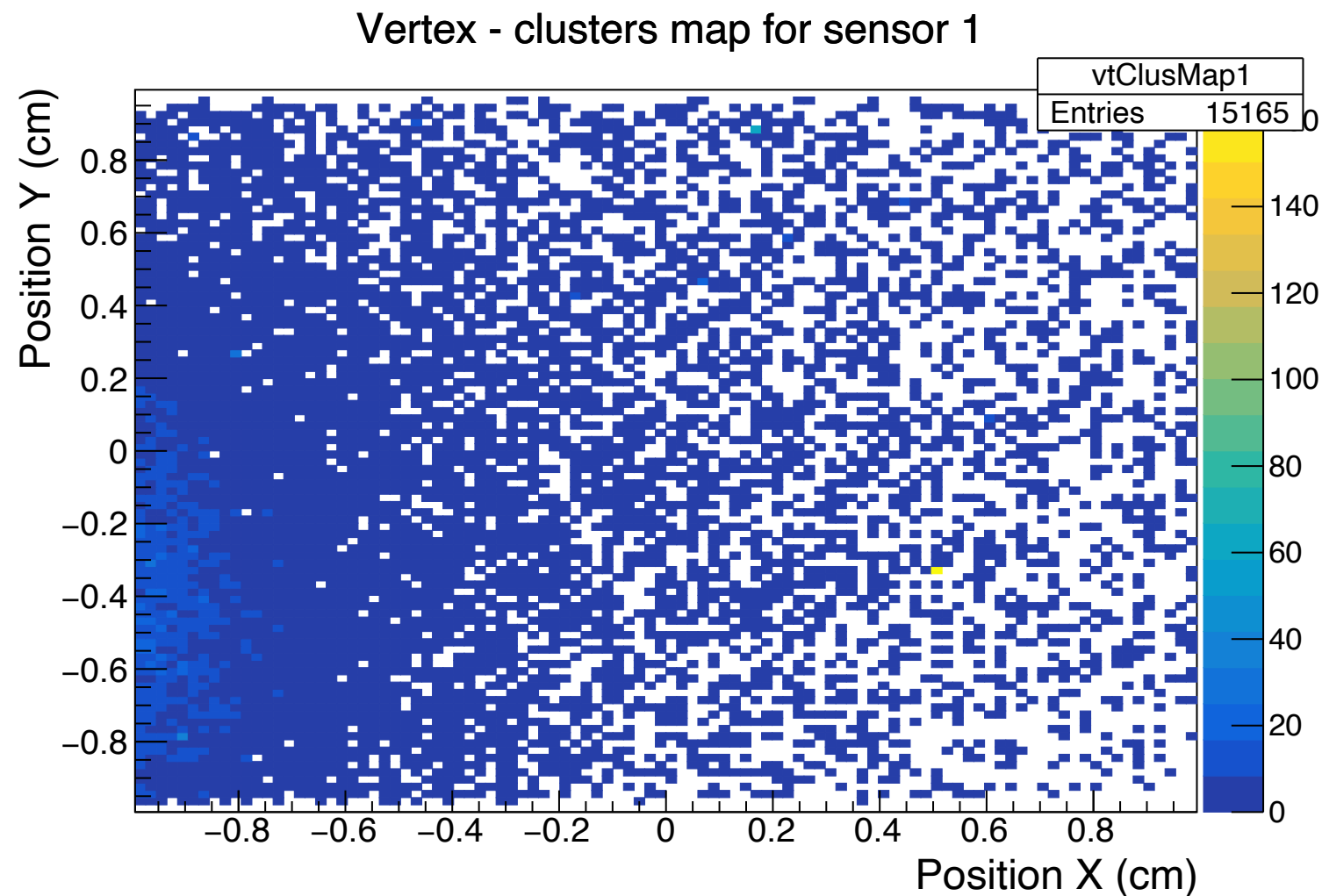
❑ Efficiency

- Frascati/CNAO2023 beam: number of hits coherent with VTX
 - Clearly not the case for CNAO2024 data
-
- ➡ Efficiency pb not related to sensors
 - ➡ Something has changed since 2023 (firmware, decoding no change) ??
 - ➡ Need dedicated beam time for ITR with experts of VTX/ITR/DAQ

Backup

Cluster map

■ **Frascati** (e-beam): run 5783 (6.5kEvts)



Beam: (start @ 1)

~15 kClusters

- ➡ Unfortunately beam not centred on VTX
- ➡ But the number of entries same order of magnitude than ITR