



SAPIENZA
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VTX CNAO2025

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Fraction of vertexes (No B fields sep and nov)

RUN N (@CNAO2025)	% reco VTX (err +/- 0.05-0.1)
7908	2.75 %
7909	2.79 %
7910	2.78 %
7911	2.74 %
7922	2.78 %
7924	2.68 %
7927	2.65 %
7928	2.72 %
7930	2.77 %
7931	2.75 %

RUN N (@CNAO2025)	% reco VTX (err +/- 0.05 - 0.1)	Pile-up
7932	2.74 %	13% ((beam 24_01))
7933	2.69 %	-
7940	2.81 %	-
7941	2.72 %	-
7942	2.69 %	-
7943	2.8 %	-
8028	2.68 %	13% ((beam 24_01))
8038	2.87 %	27% (beam 24_03)
8039	2.79 %	26% (beam 24_03)
8040	2.68 %	22% (beam 24_03)
8042	2.71%	3.9% (400MeV/u)

Very good stability through all the runs with no magnetic field

Fraction of vertexes (B fields ON)

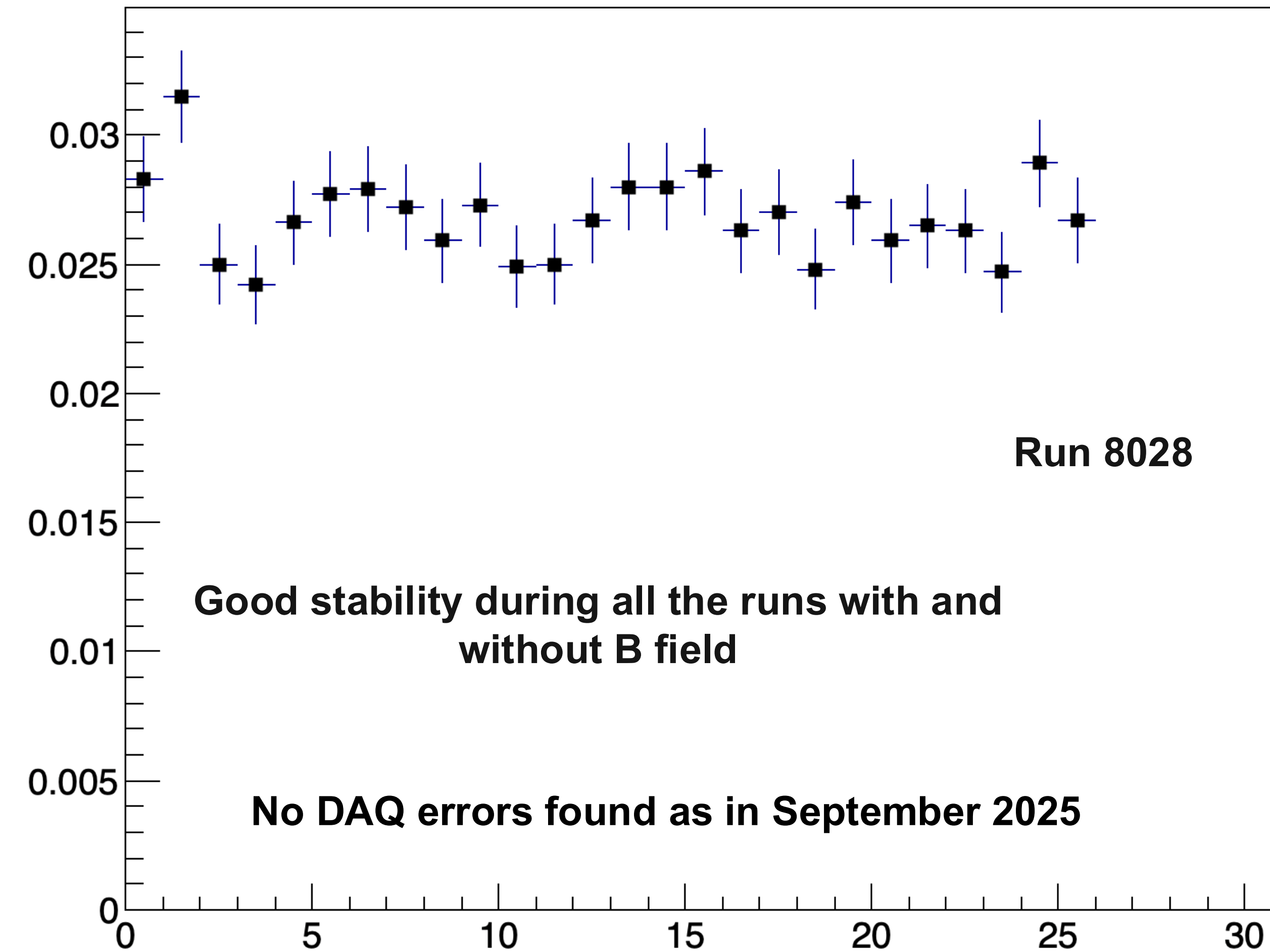
RUN N (@CNAO2025)	% reco VTX (err +/- 0.05)	Pile-up
8044	2.68 %	16% (beam 24_01)
8045	2.67 %	15% (beam 24_01)
8047	2.67 %	14% (beam 24_01)
8049	2.65 %	15% (beam 24_01)
8050	2.69 %	15% (beam 24_01)
8051	2.59 %	15% (beam 24_01)
8053	2.63 %	15% (beam 24_01)

MC type	% reco VTX
MC without beam	2.91%
MC with beam tuned from data	2.83%

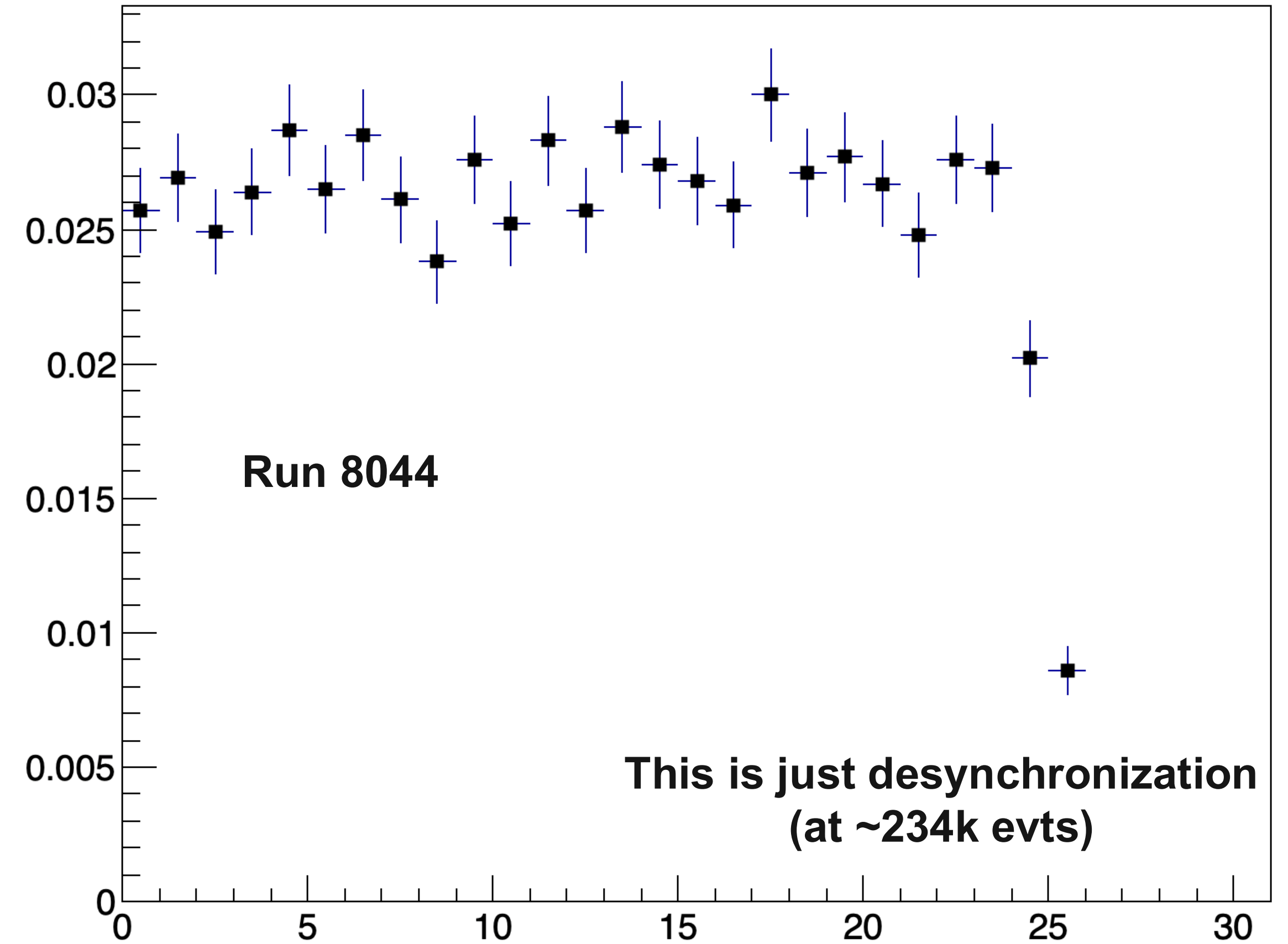
Very good stability through all the runs with no magnetic field
They look systematically lower than with no mag but within statistical error...to be checked
In MC vtx fraction still little more than data

Stability check during the run

Vertexes fraction each 10000 events

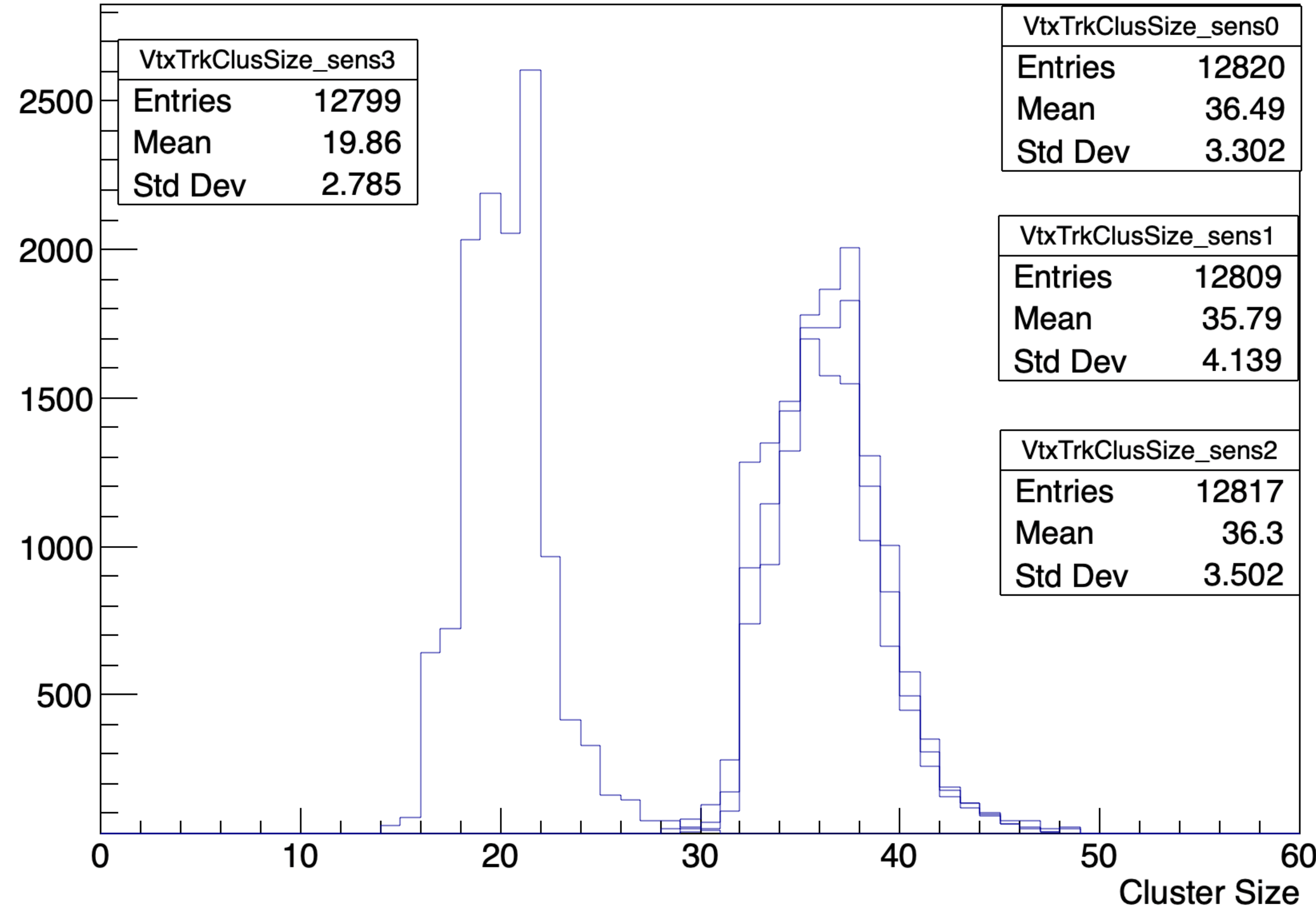


Vertexes fraction each 10000 events

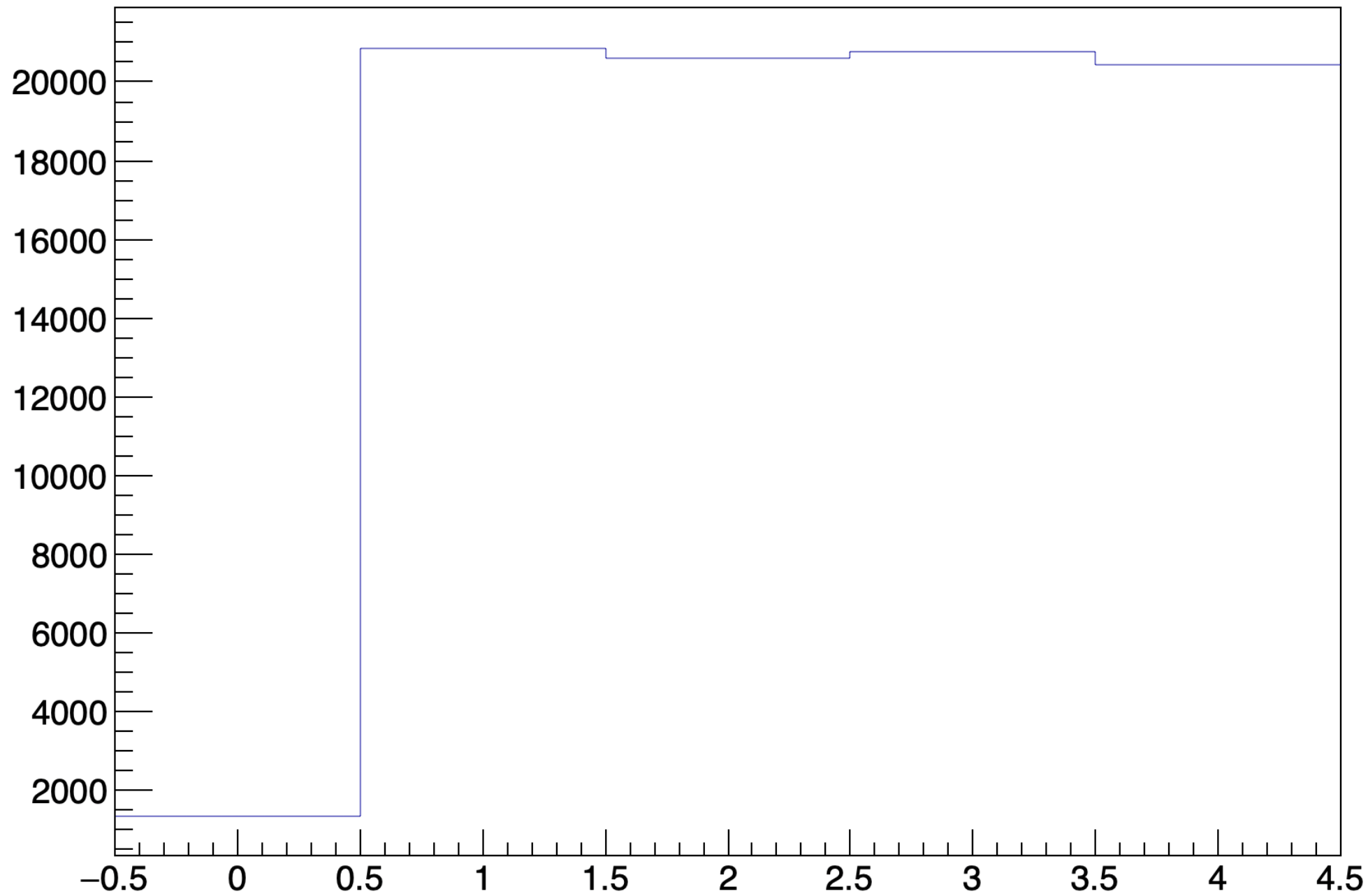


Cluster size carbon runs

VTX - Cluster Size of Tracked clusters



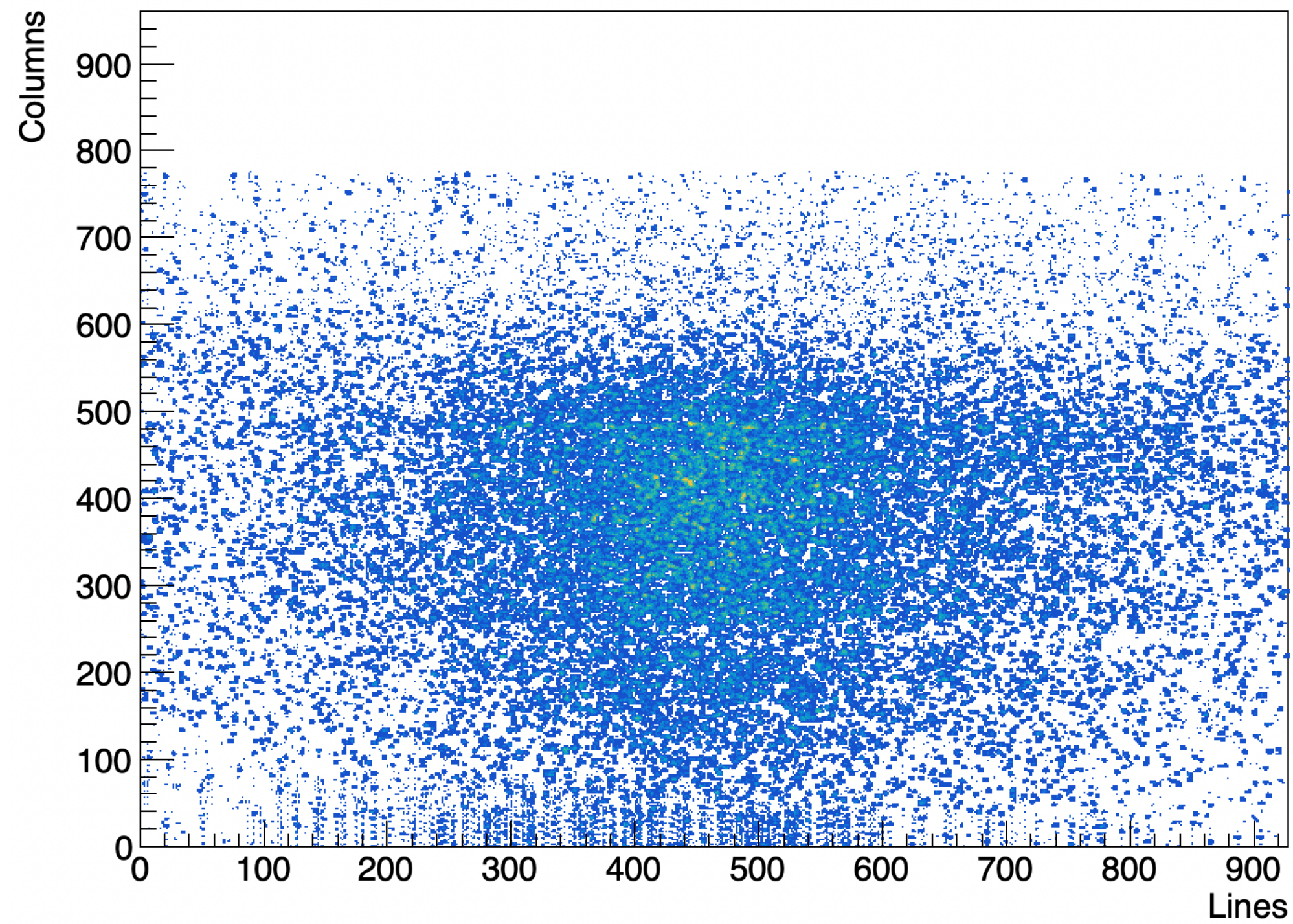
Vertex - Number of tracked clusters per sensor



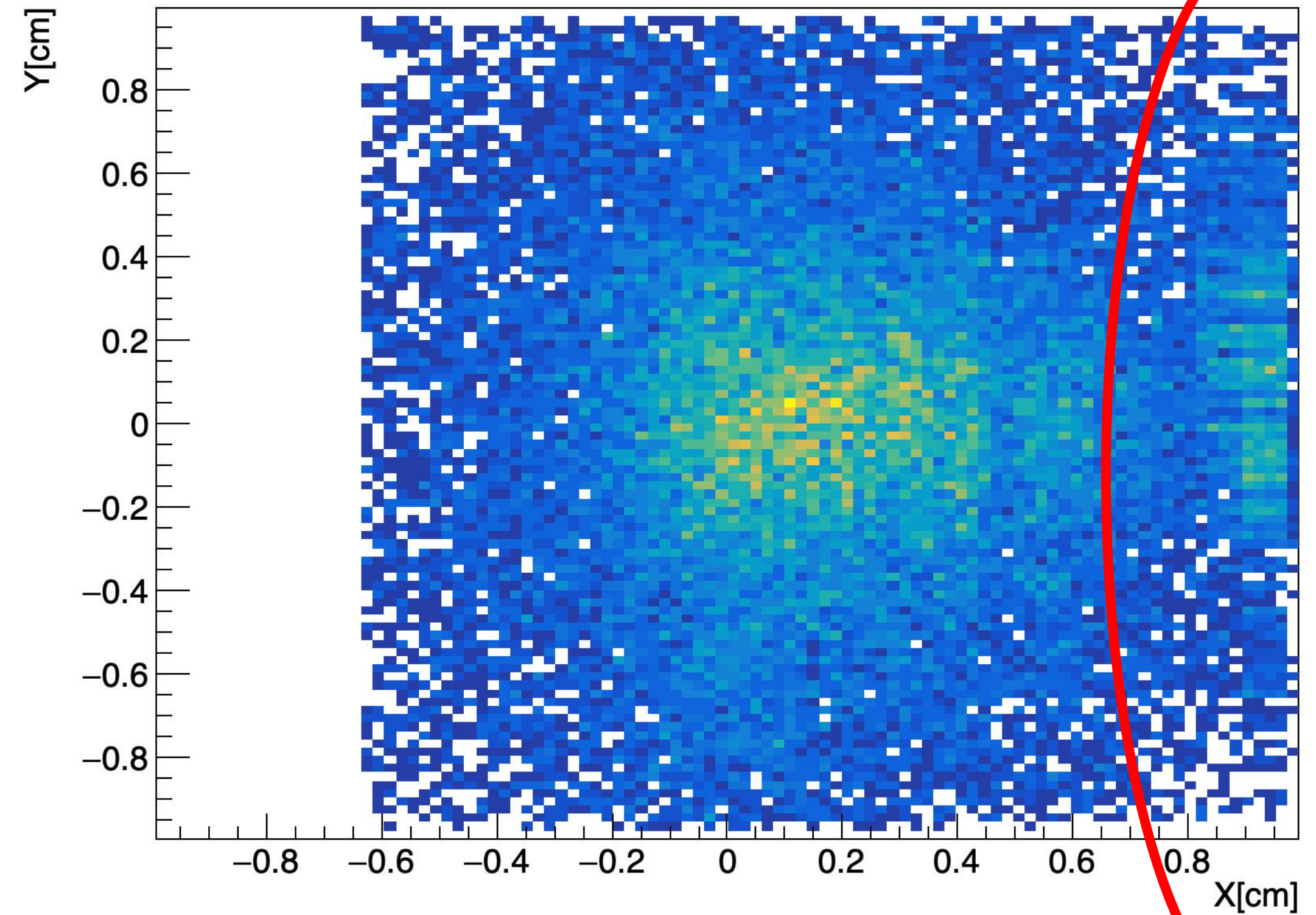
Problem for channel 0 (sens3): sigma half rt the start like last year in CNAO2024

Problems in channel 0

Vertex - pixel map for sensor 4

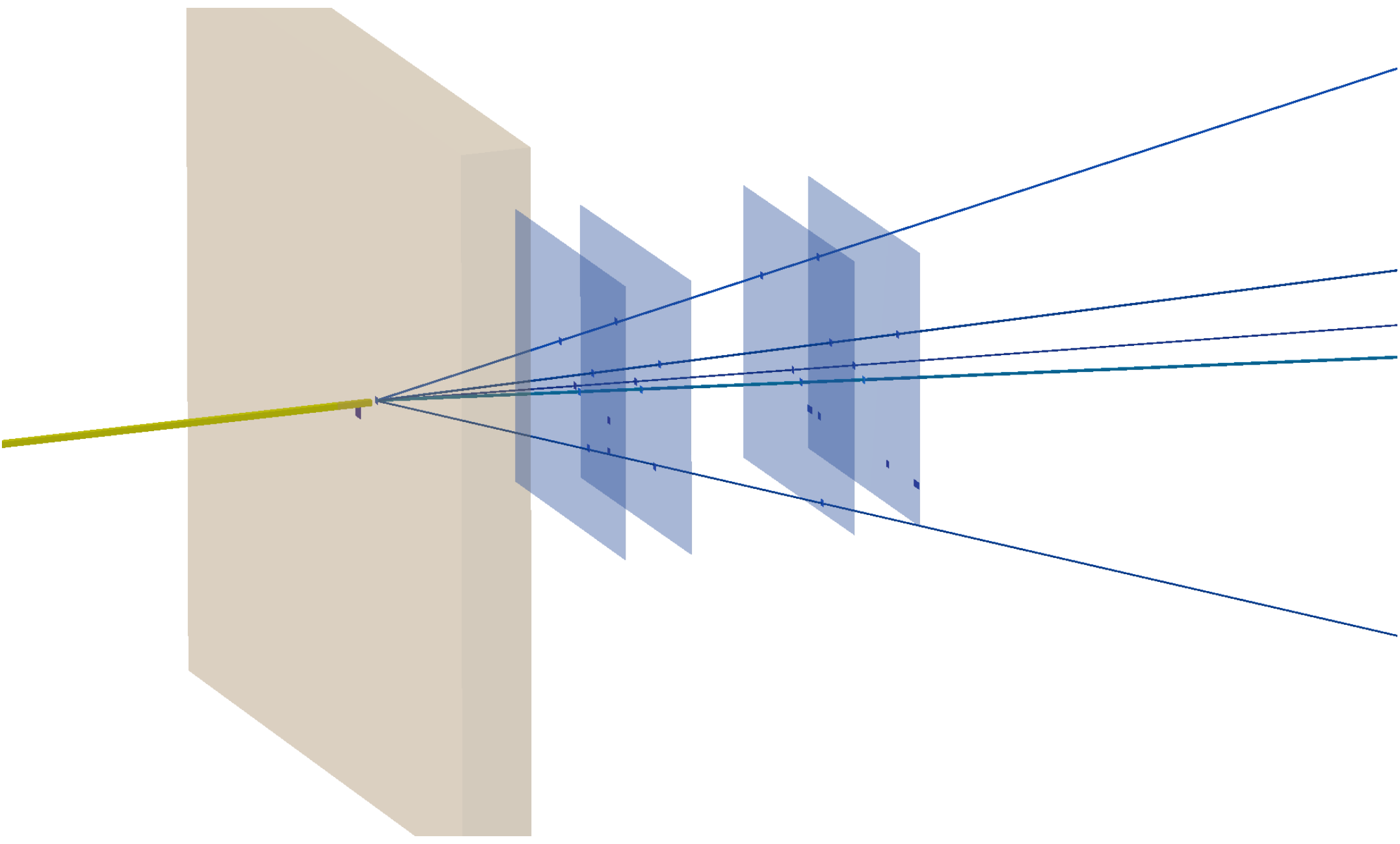
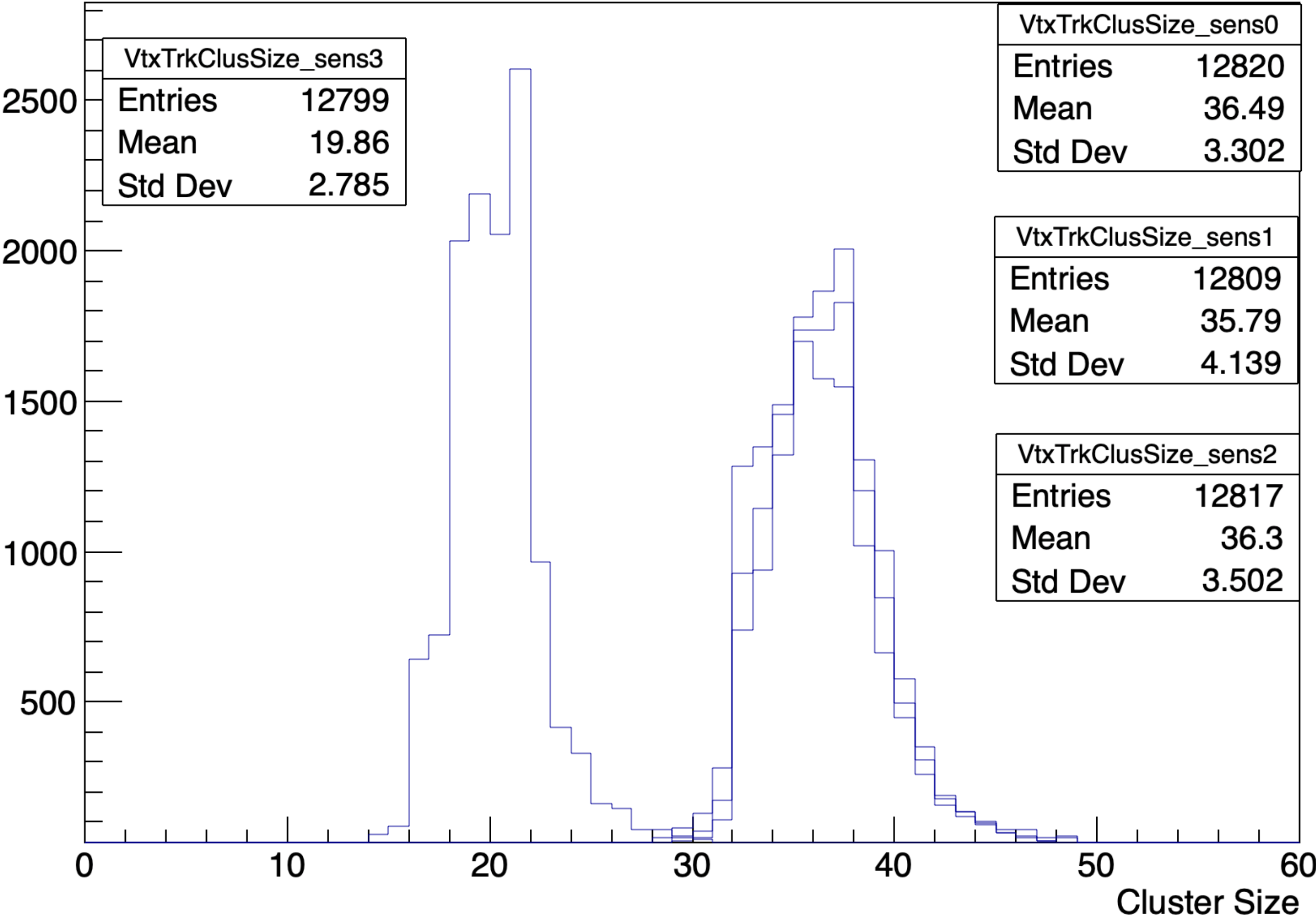


Vertex - clusters map for sensor 4 in detector RF



Cluster size carbon runs

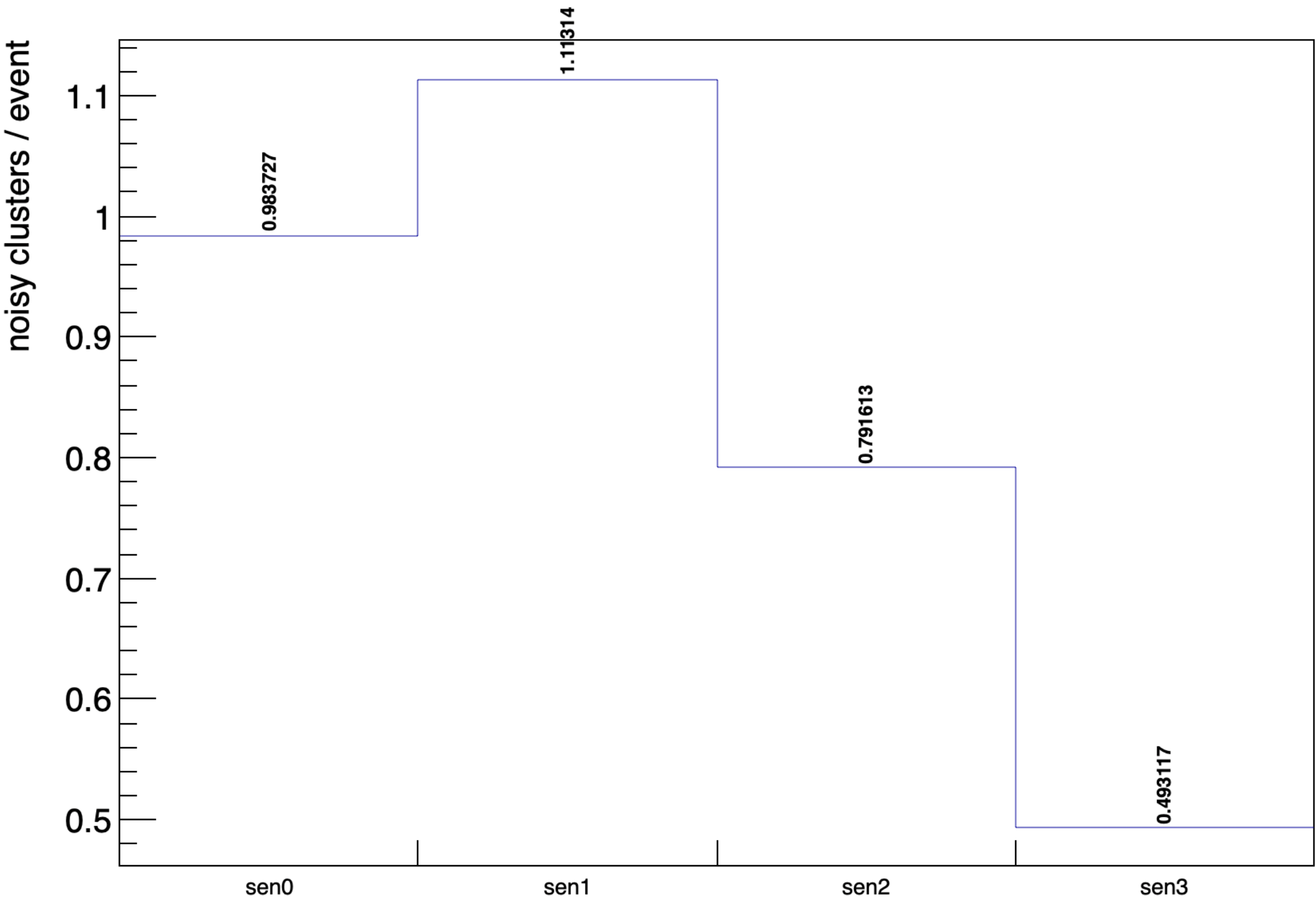
VTX - Cluster Size of Tracked clusters



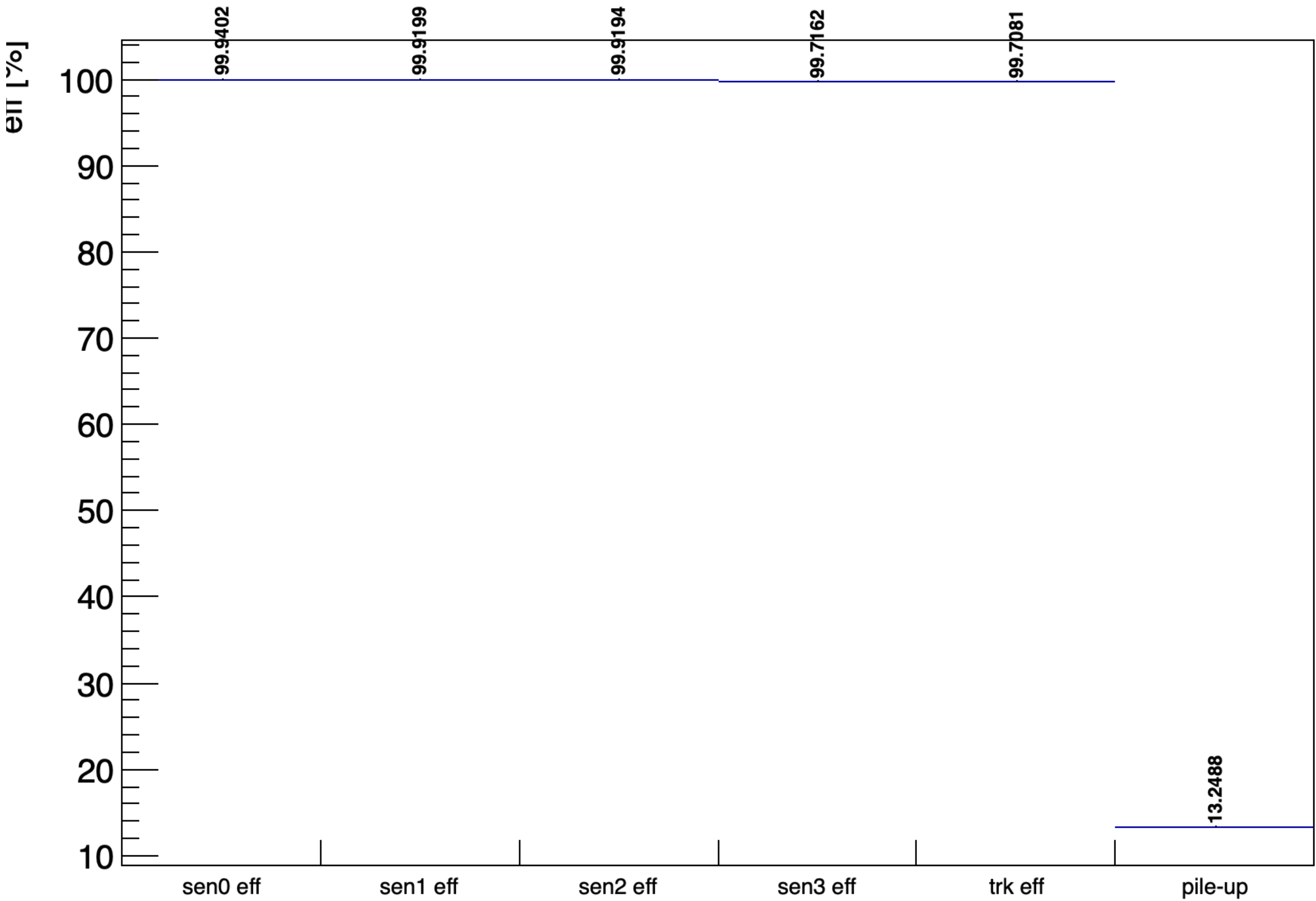
Problem for channel 0 (sens3): sigma half rt the start like last year in CNAO2024

Noise/Efficiency for carbon runs

VTX Noise - Not tracked Custers per event

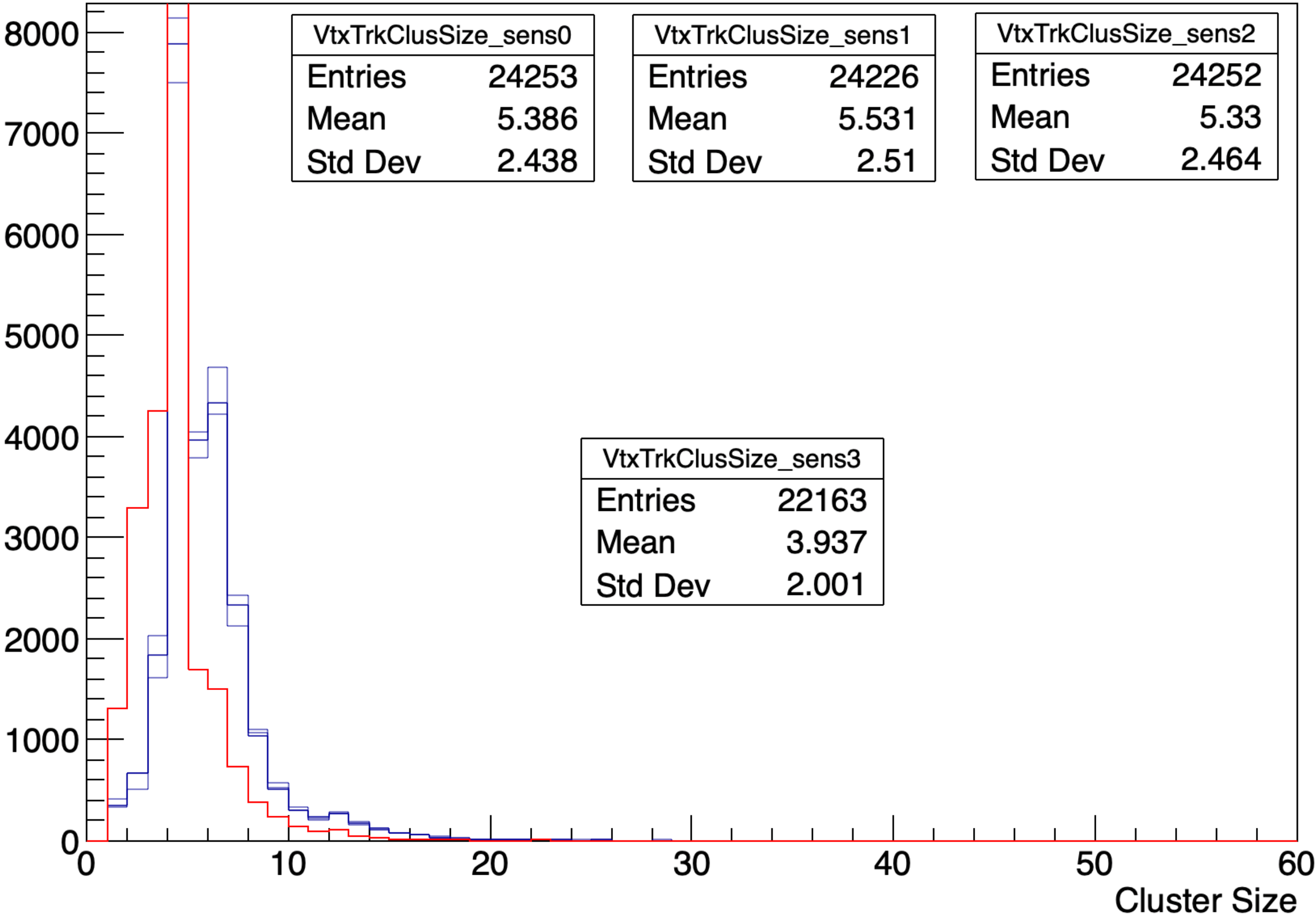


Vertex efficiency



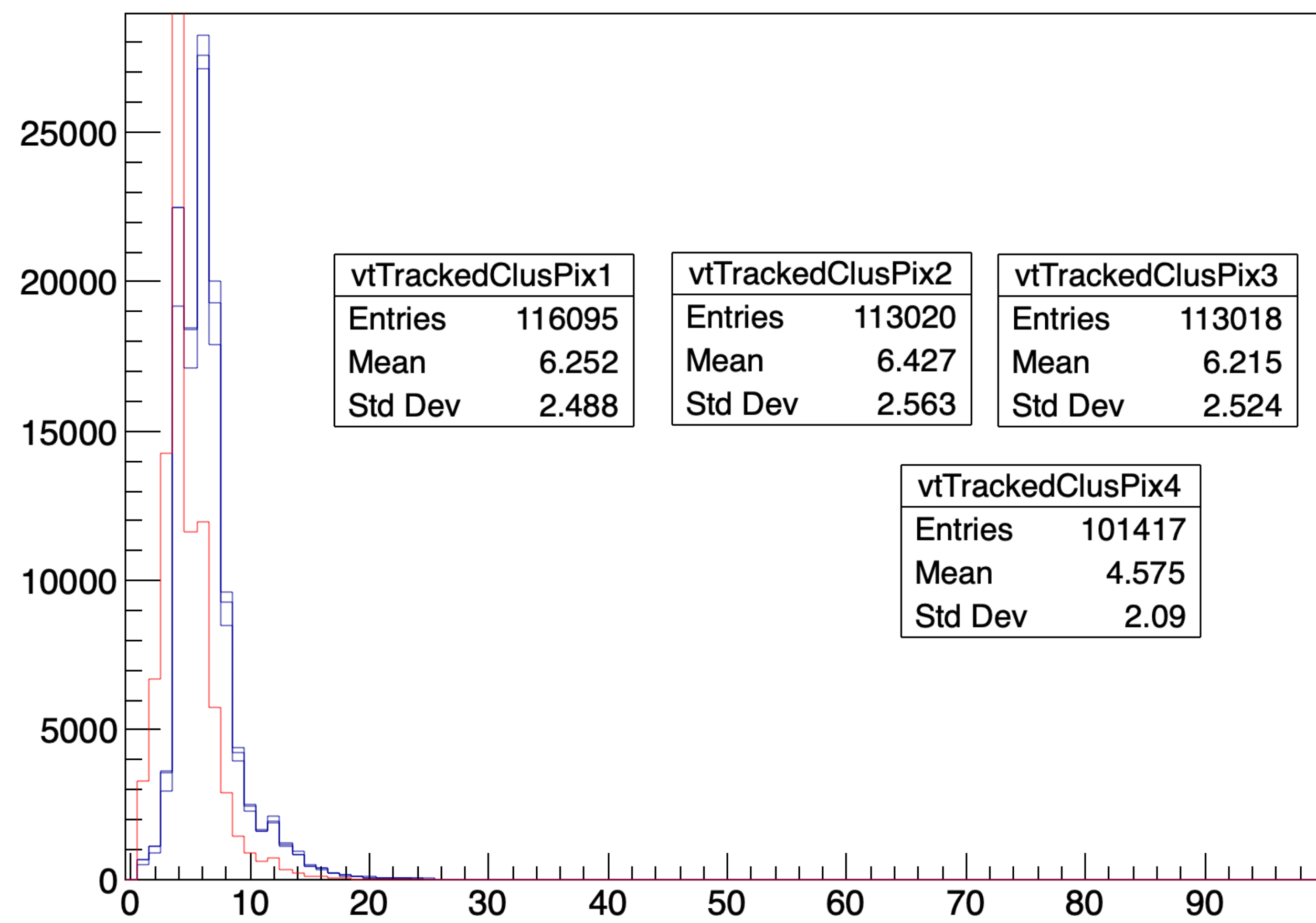
Cluster size protons (run 8000 - 200 MeV)

VTX - Cluster Size of Tracked clusters



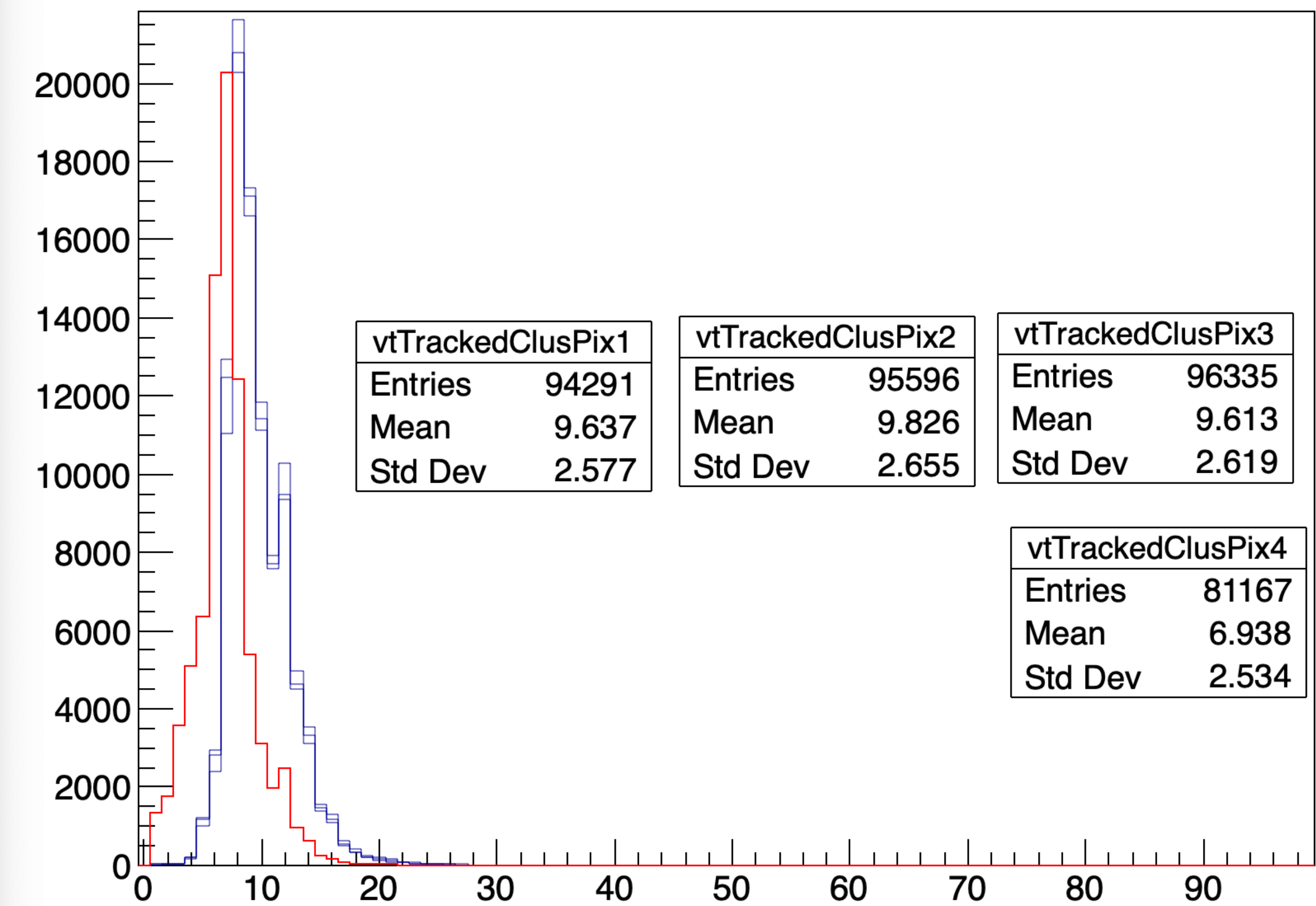
Cluster size protons (run 8005 - 150 MeV)

Vertex - # pixels per tracked clusters of sensor 1



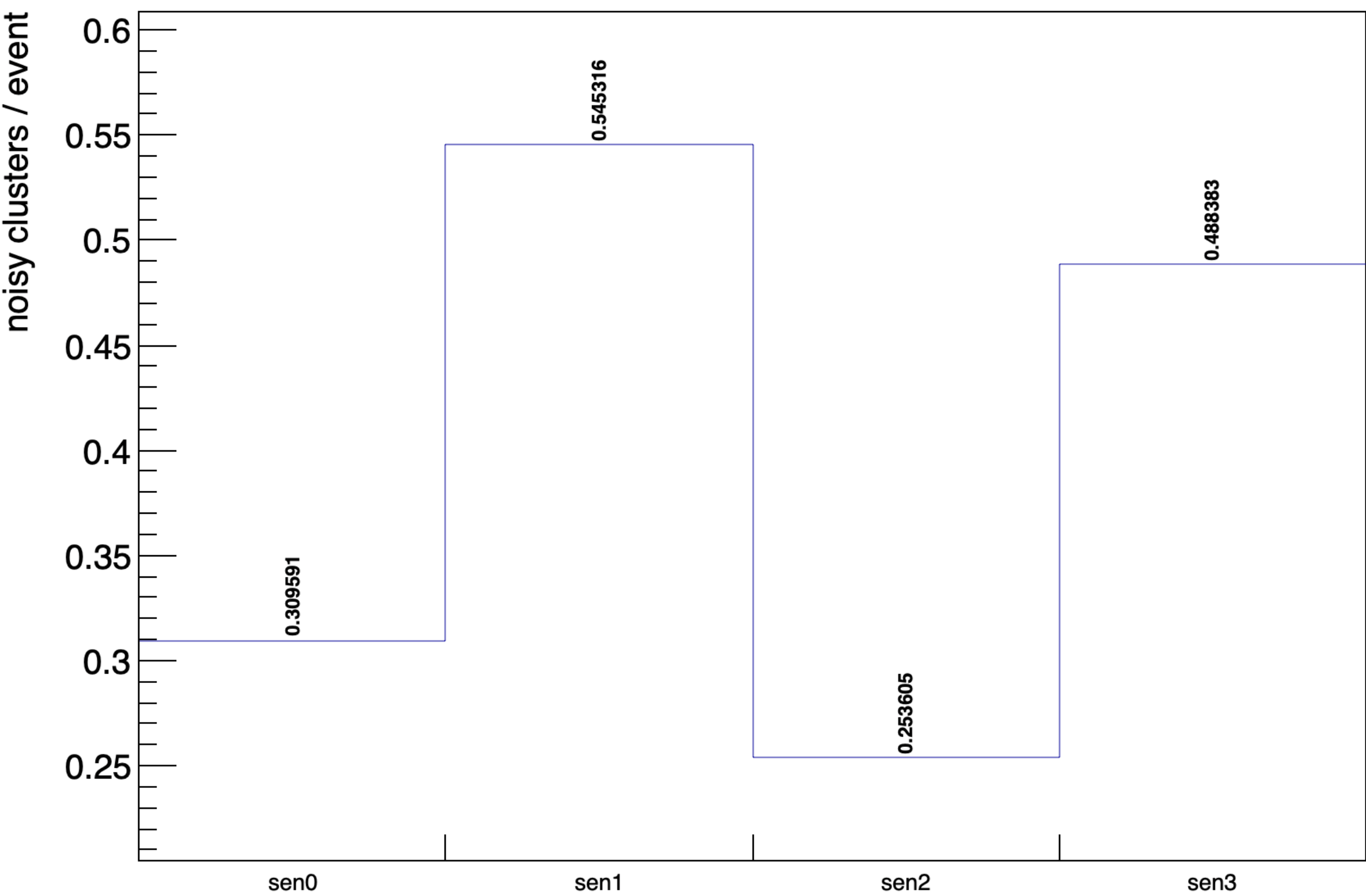
Cluster size protons (run 8003 - 70 MeV)

Vertex - # pixels per tracked clusters of sensor 1

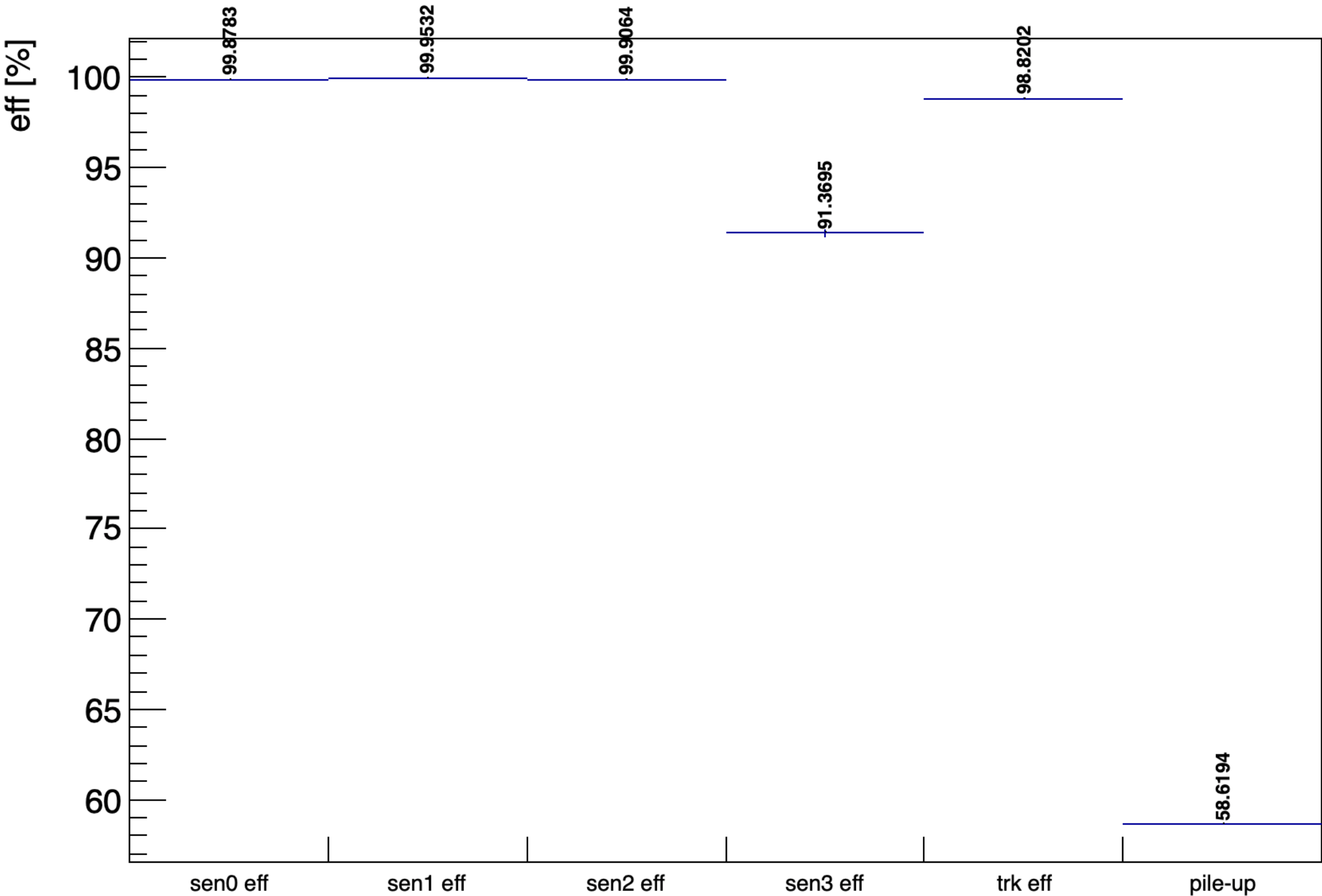


Noise/efficiency during proton runs

VTX Noise - Not tracked Custers per event

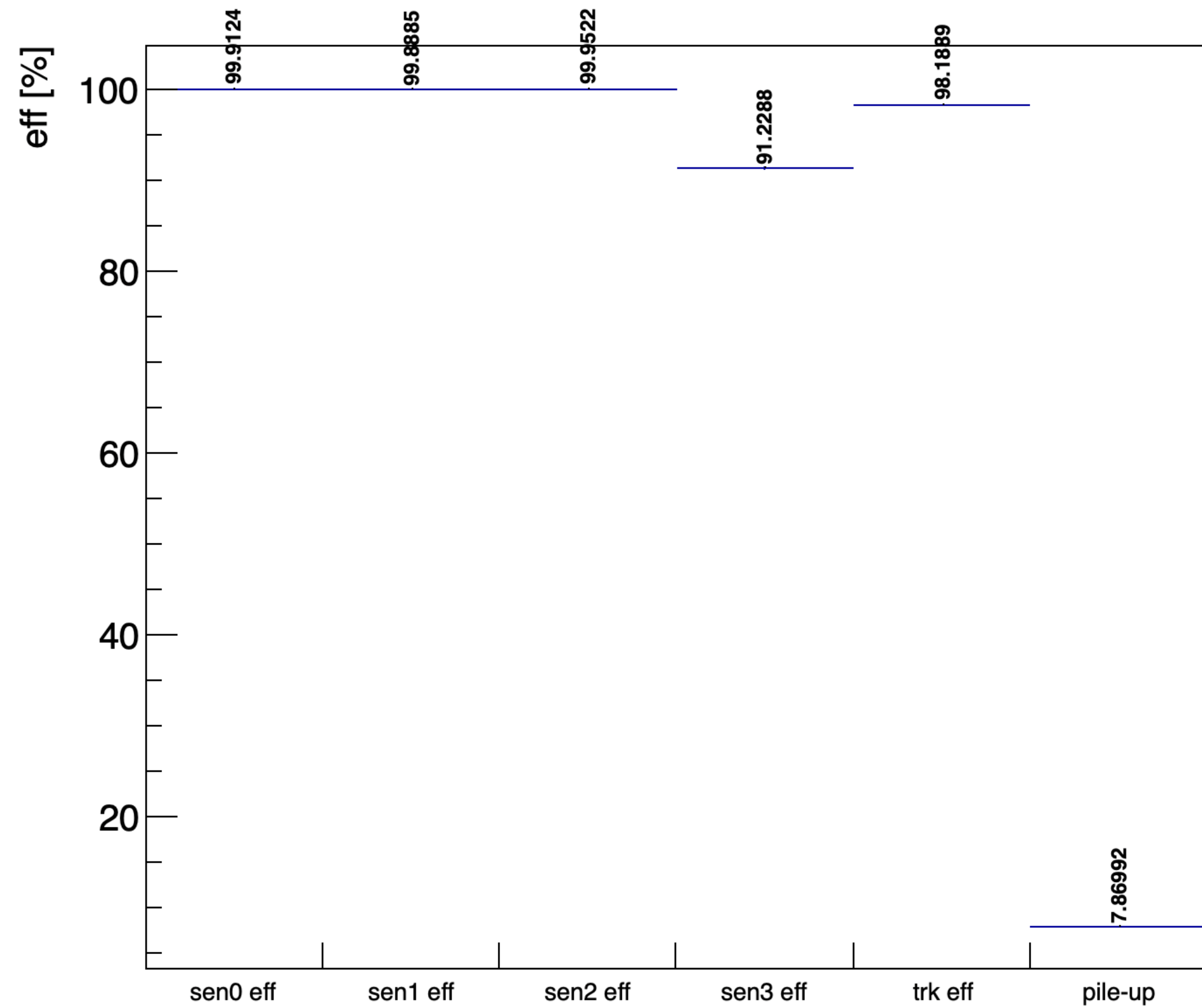


Vertex efficiency



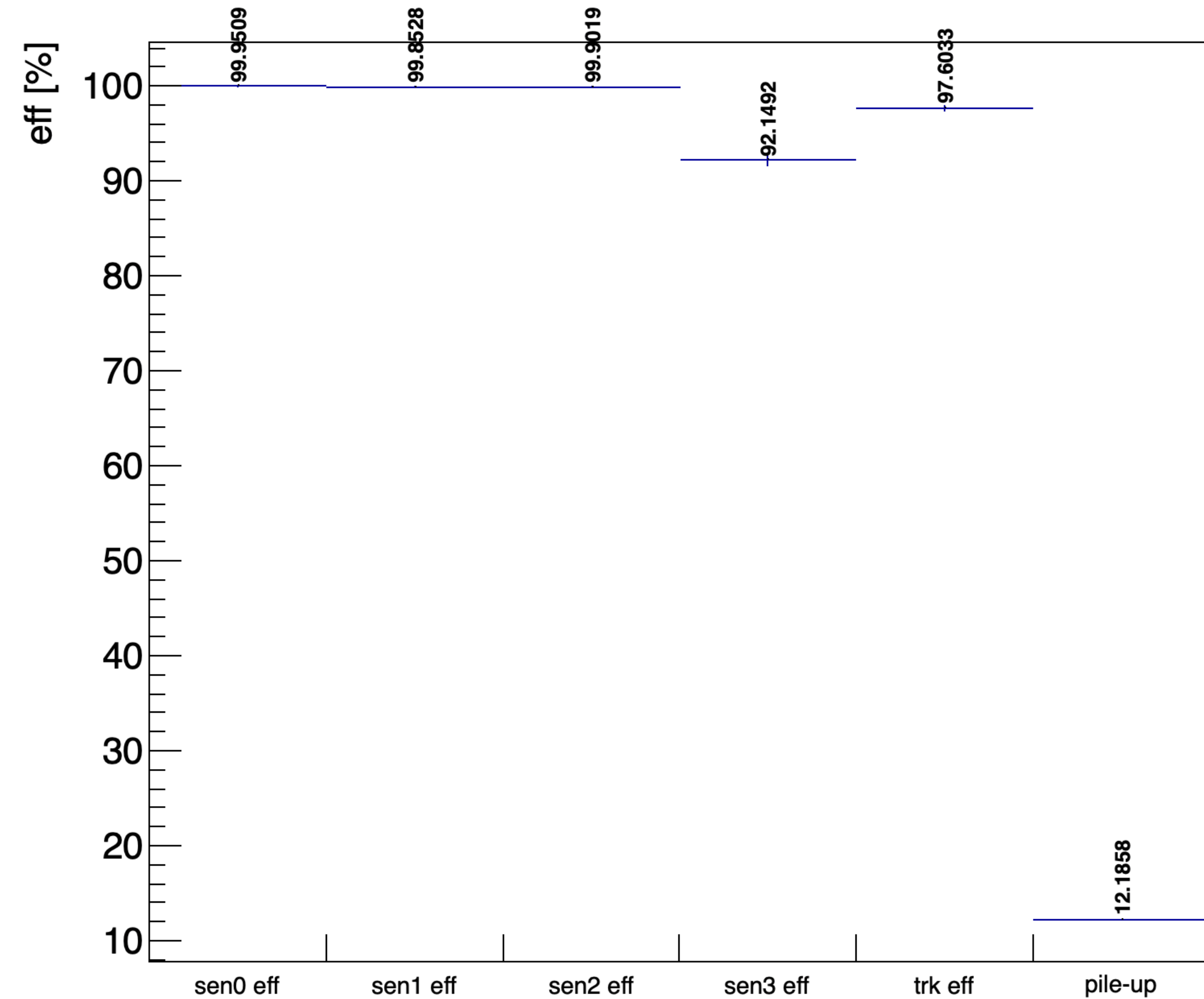
Proton efficiency

Vertex efficiency



Runs: 7886 7887 -> protons @ 230 MeV

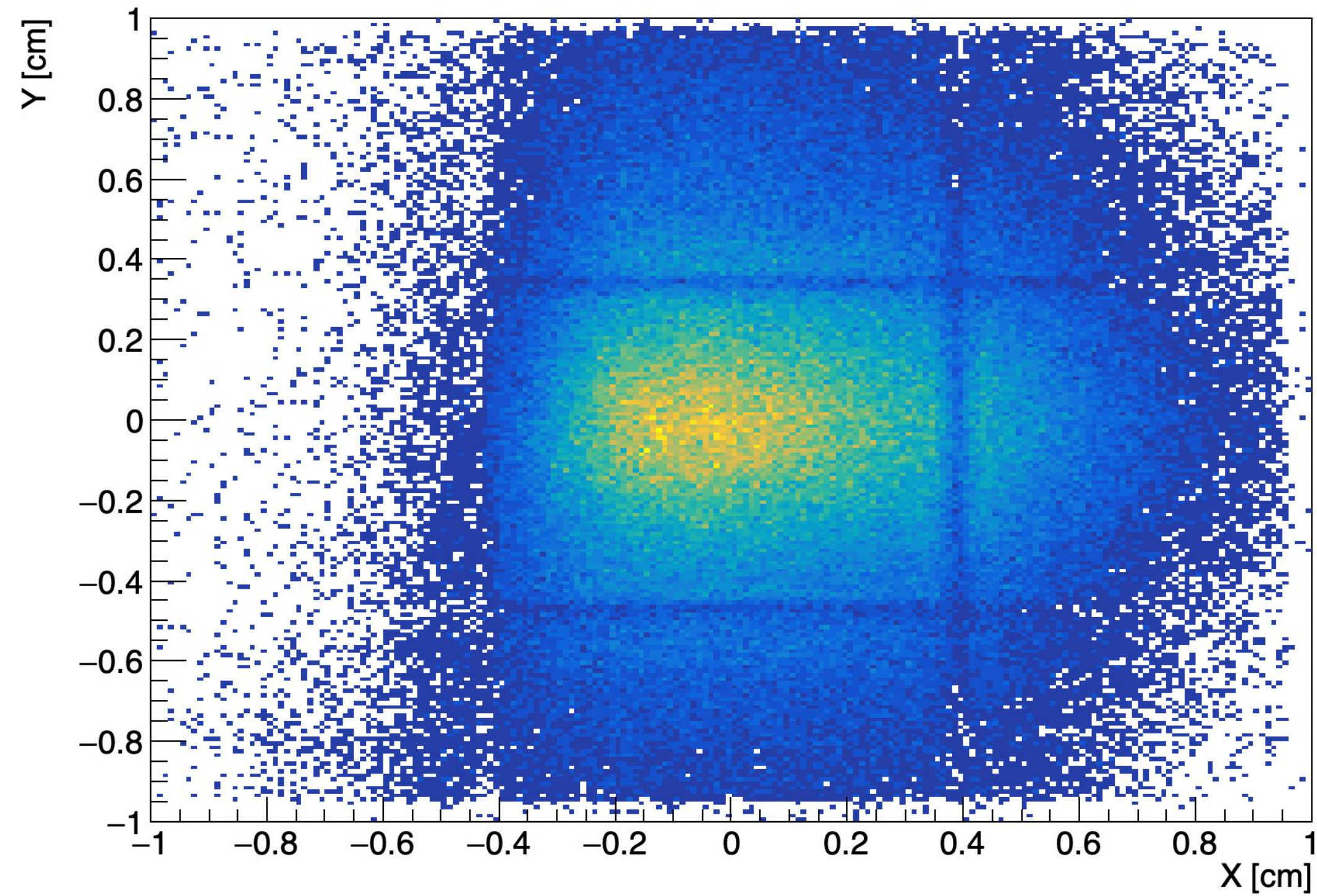
Vertex efficiency



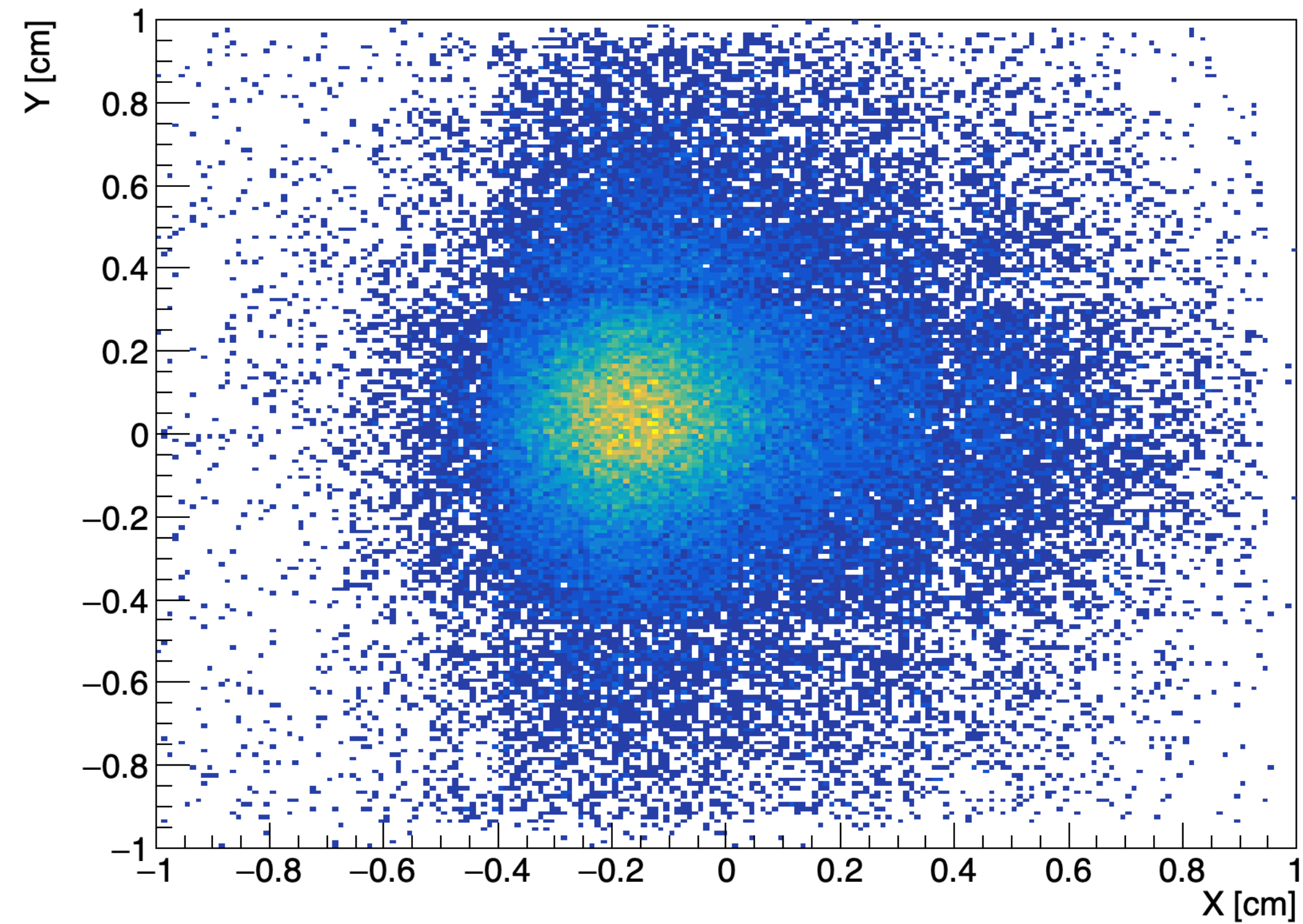
Runs: 7888, 7905 -> protons @ 150 MeV

Beam runs 8028 and 8038 (no magnet)

TAVTactBaseNtuVertex Beam reconstruction using vtx coordinates

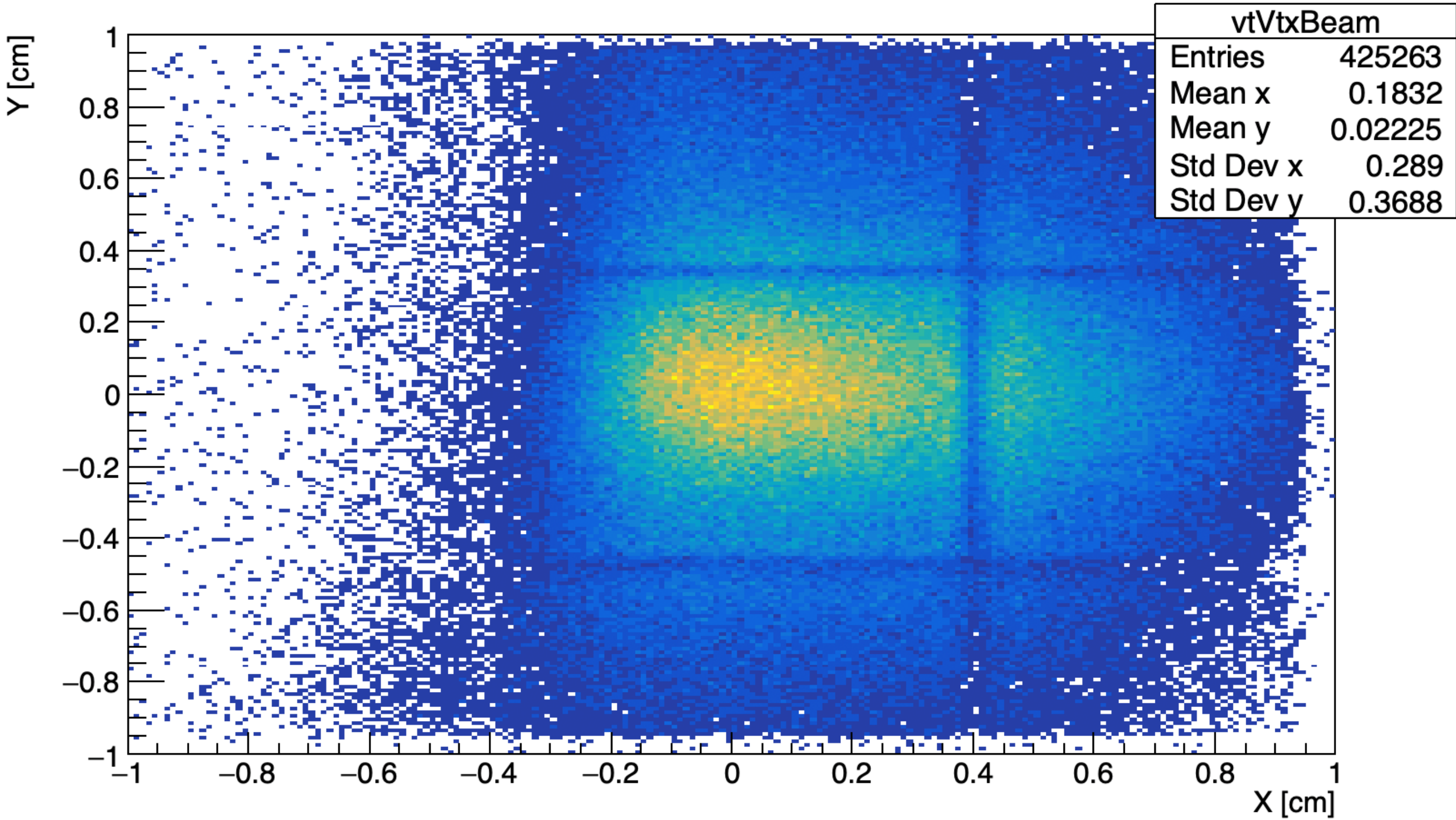


TAVTactBaseNtuVertex Beam reconstruction using vtx coordinates

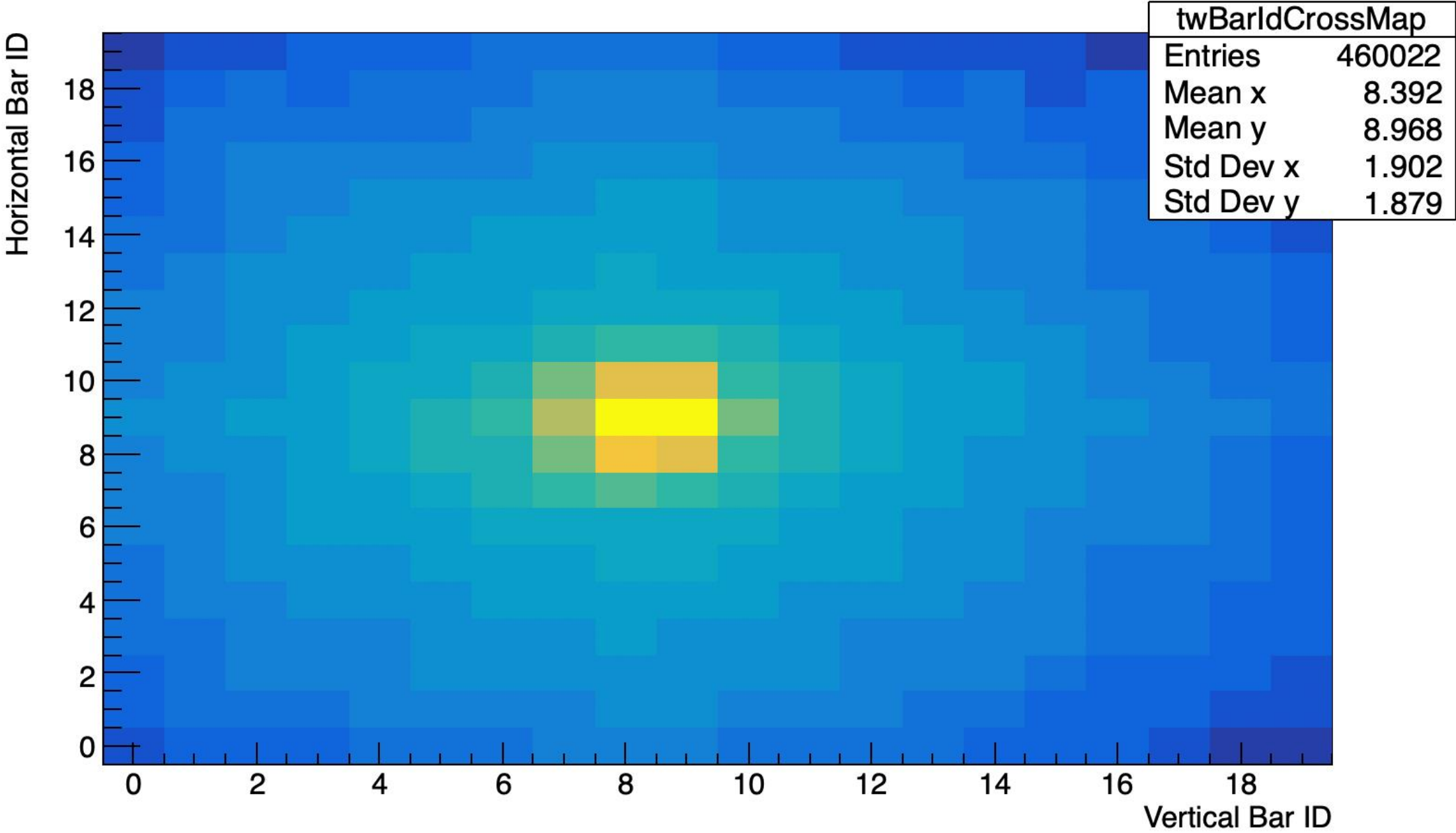


Beam runs 8050 (magnet ON)

TAVTactBaseNtuVertex Beam reconstruction using vtx coordinates



TW - barld crossed map



Conclusions

- Really unhappy for the sensor 0 that in september was working well (but same as in CNAO2024)
- For this sensor thresholds not optimized but still 97% eff for protons at 200 MeV
- Maybe we need to mask the first columns
- Let's hope this will be enough with magnetic field ON where the full efficiency of VTX is fundamental for our physics
- During next block let's try to better center the beam on VTX and on TW (with the TG)