



SAPIENZA
UNIVERSITÀ DI ROMA



CENTRO RICERCHE
ENRICO FERMI

VTX CNAO2025

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Physics Meeting 05/10/2025

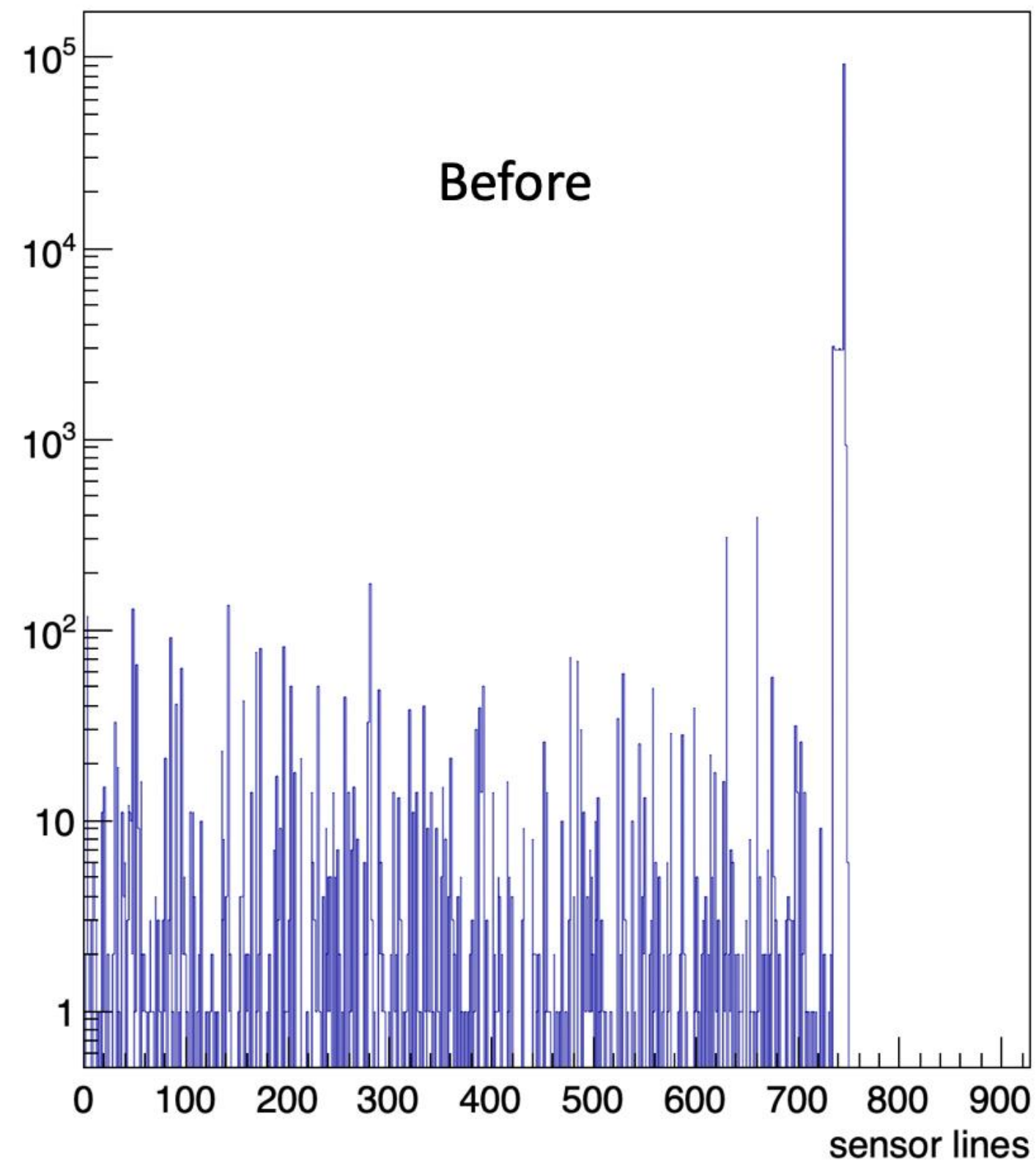
Fix of M28 decode (VTX/IT) by Giacomo

RUN N (@CNAO2025)	% reco VTX (Old Deco)	% reco VTX (New Deco)
7908	2.4 %	2.8 %
7909	2.8 %	3.1 %
7910	2.6 %	3 %
7911	2.8 %	3.1 %
7922	2.9 %	3.1 %
7924	2.8 %	3.2 %
7927	2.5 %	2.9 %
7928	2.86 %	3.2 %
7930	2.4 %	2.7 %
7940	2.8 %	3.1 %

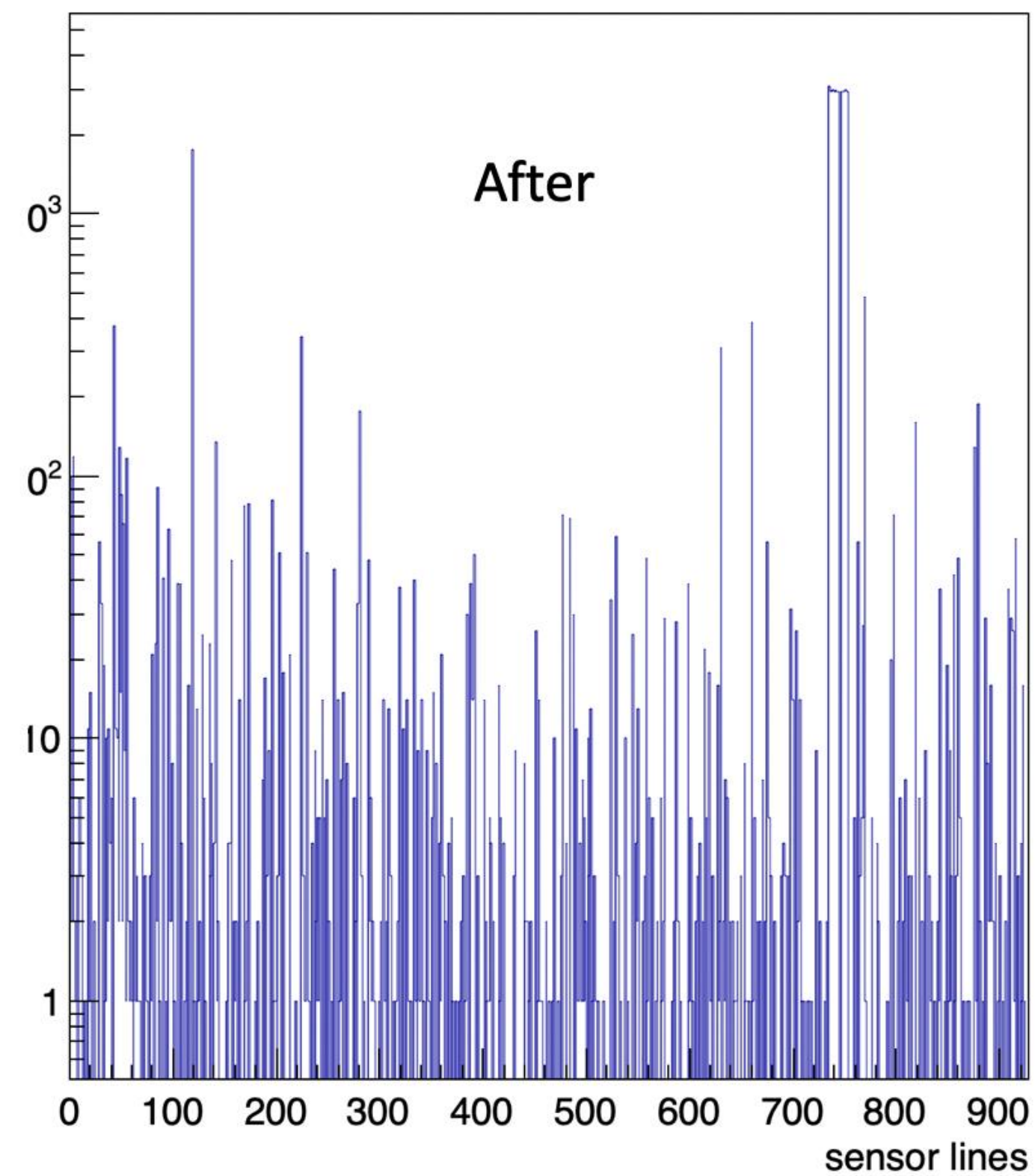
We moved from ~1.4% of reco VTX before Thr tuning @ CNAO2024/25 to ~2.6 % and to 3 % after deco fix

Before and after the fix in IT sensor 2

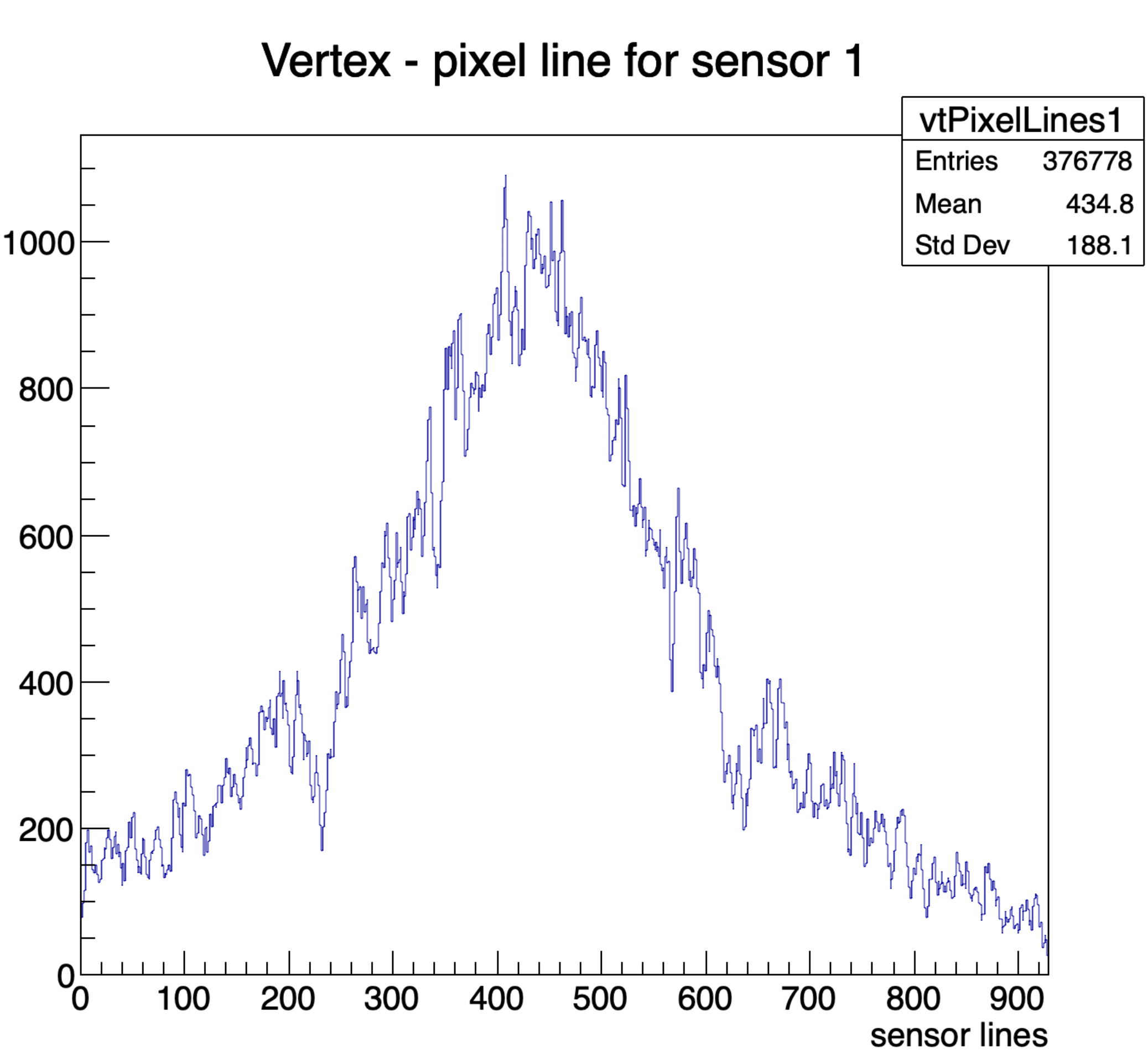
Inner Tracker - pixel line for sensor 2



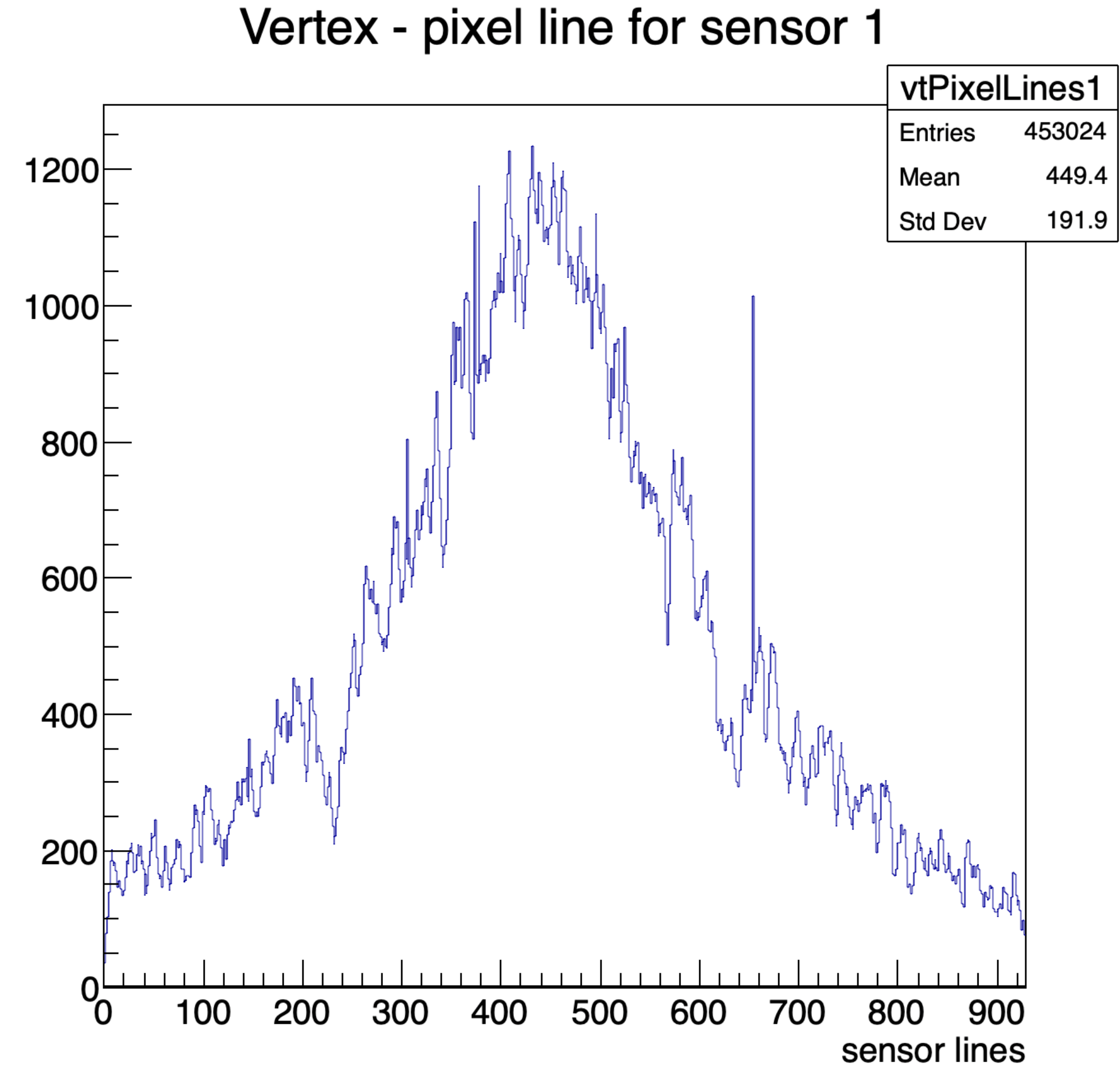
Inner Tracker - pixel line for sensor 2



Before and after the fix in VTX sensor 1



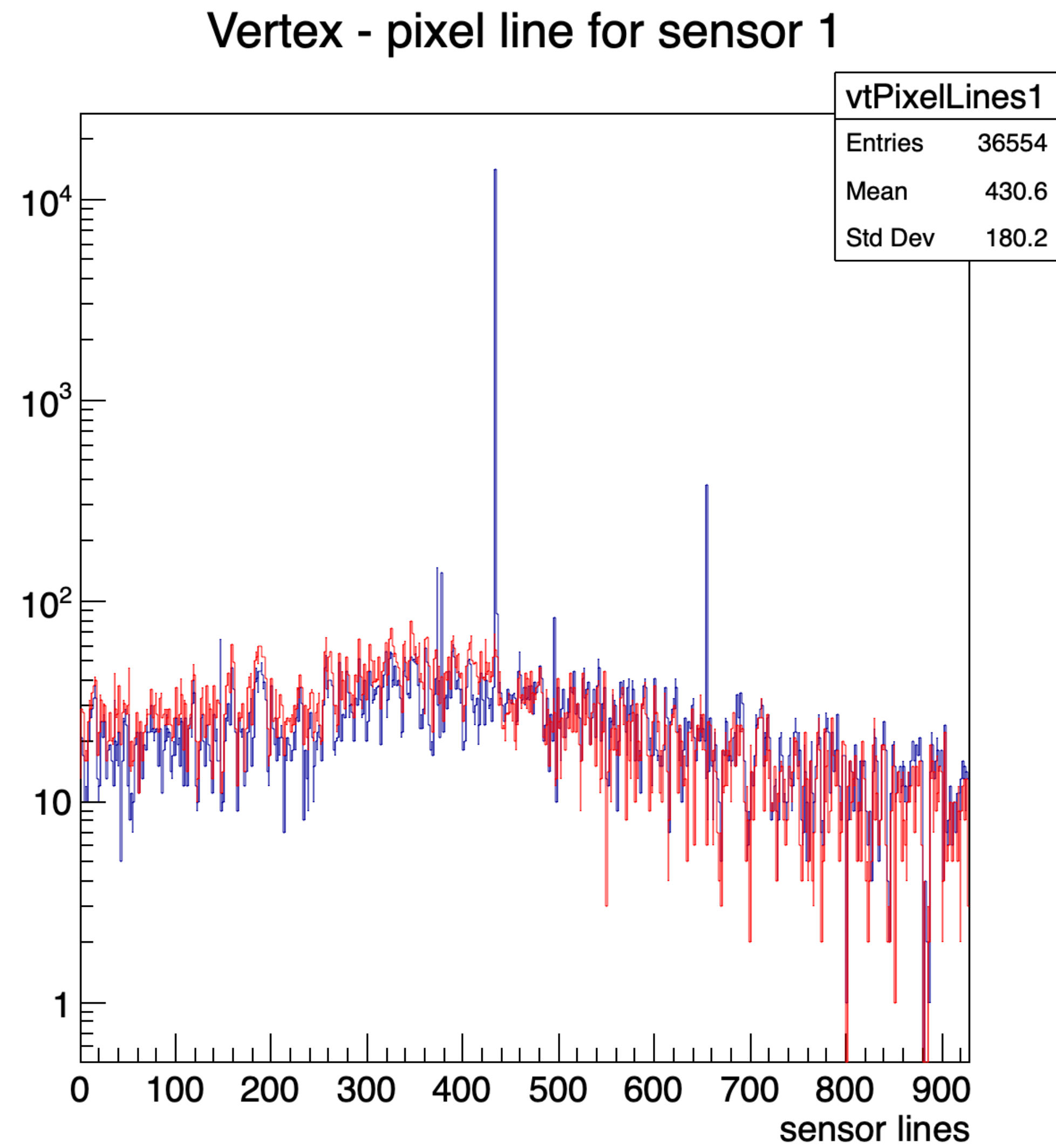
Before fix



After fix

Carbons run 7924

Before and after the fix in VTX sensor 1



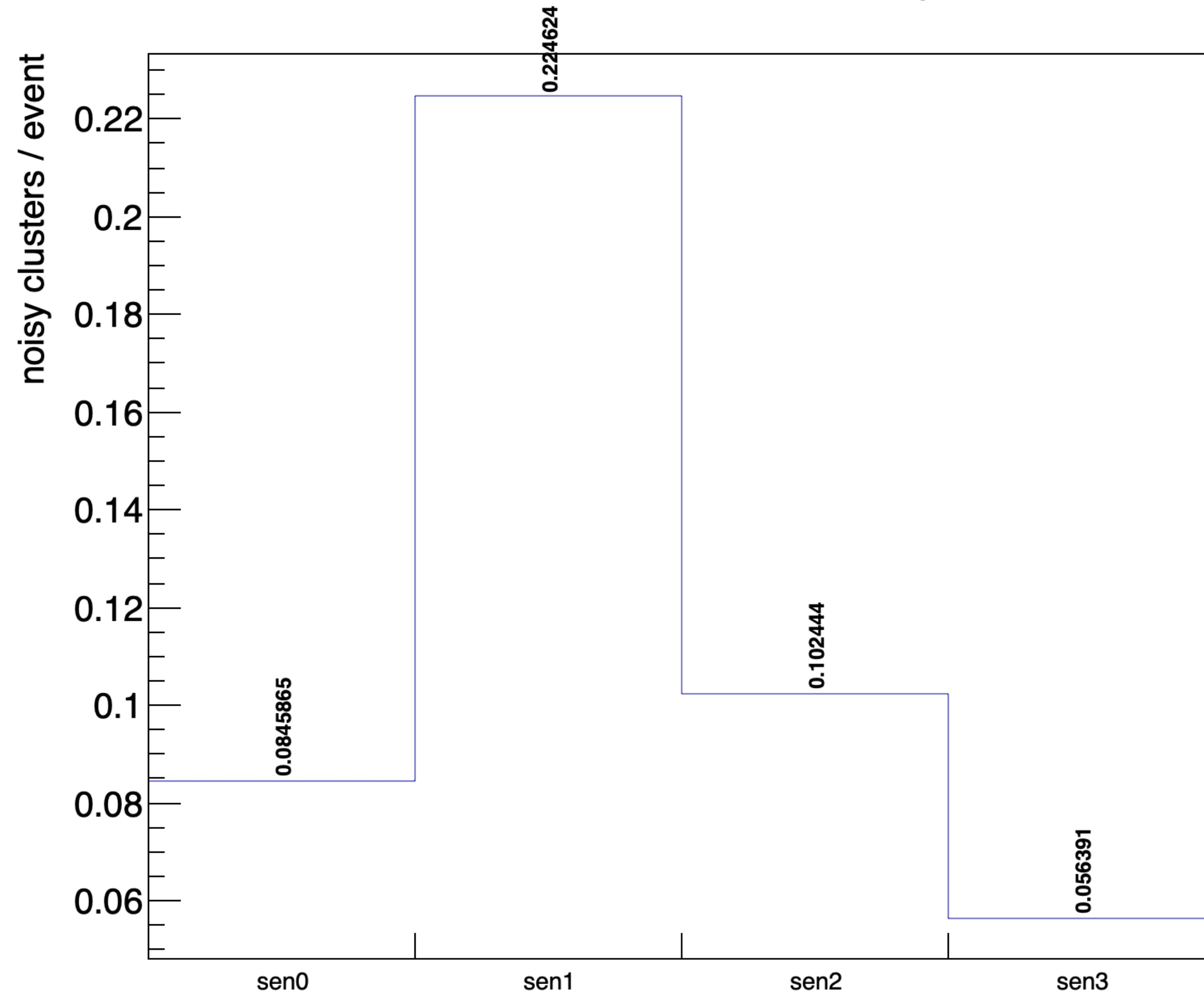
Protons run 7005

Before fix

After fix

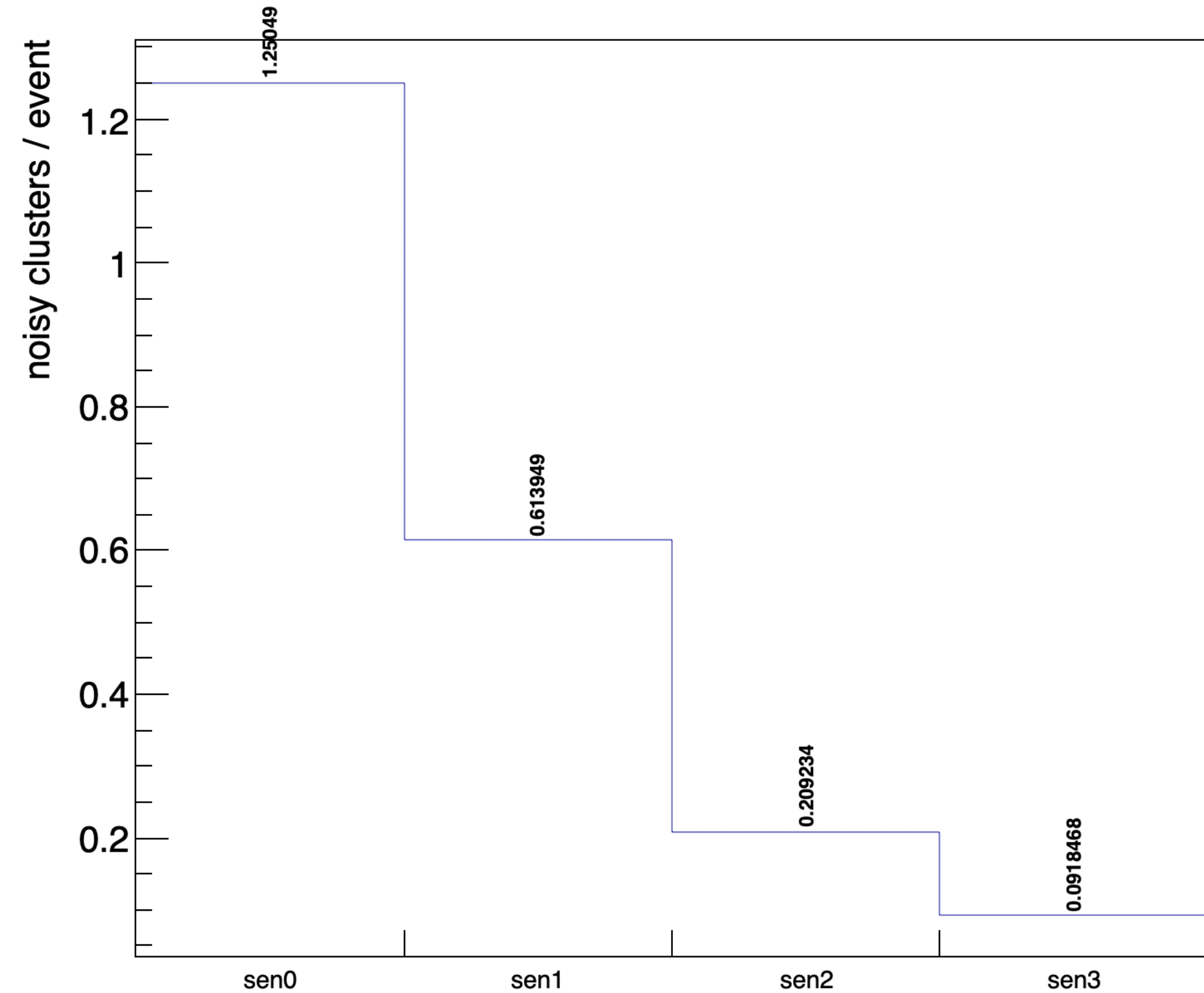
Noise during proton runs

VTX Noise - Not tracked Custers per event



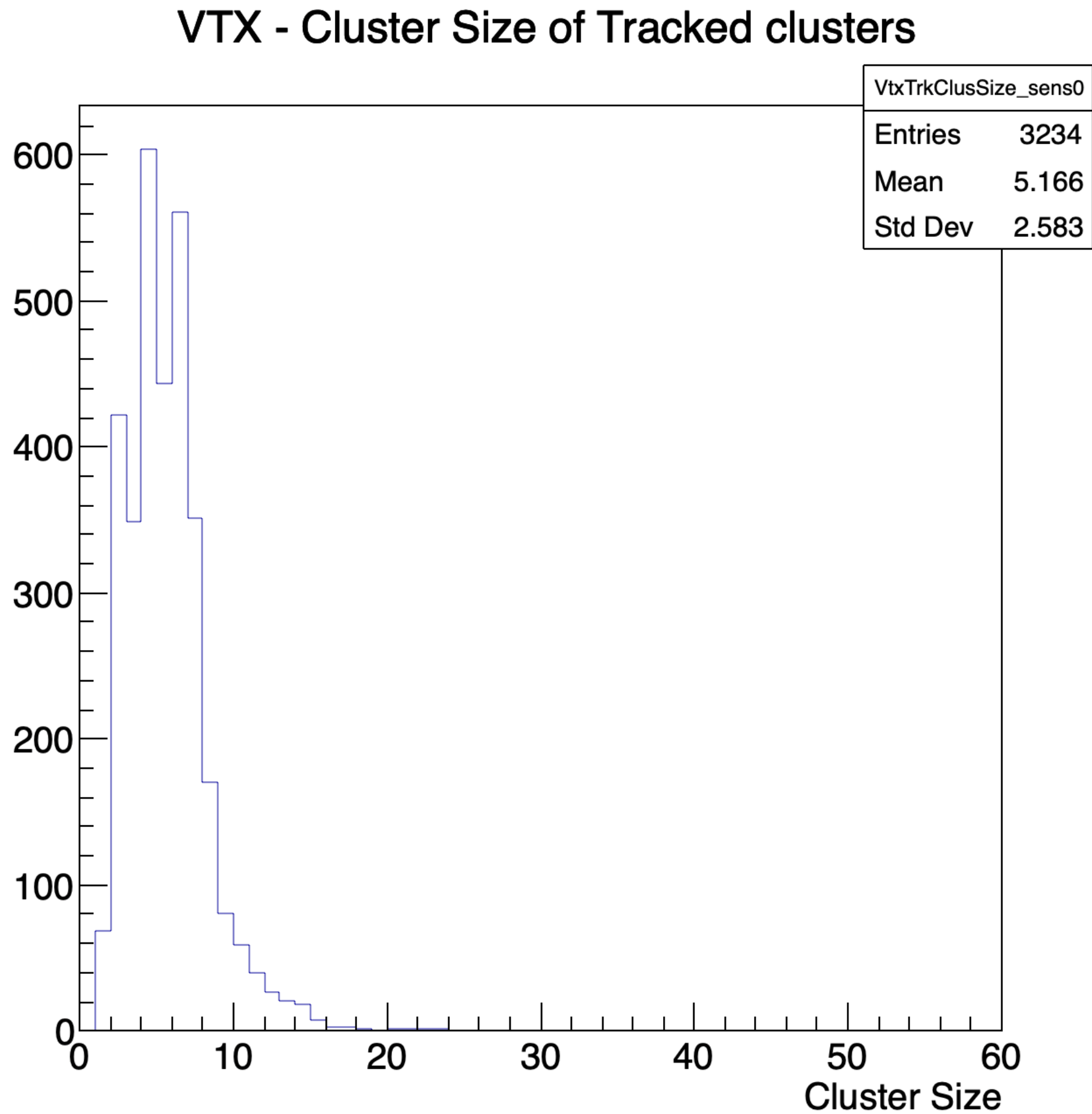
Before fix

VTX Noise - Not tracked Custers per event

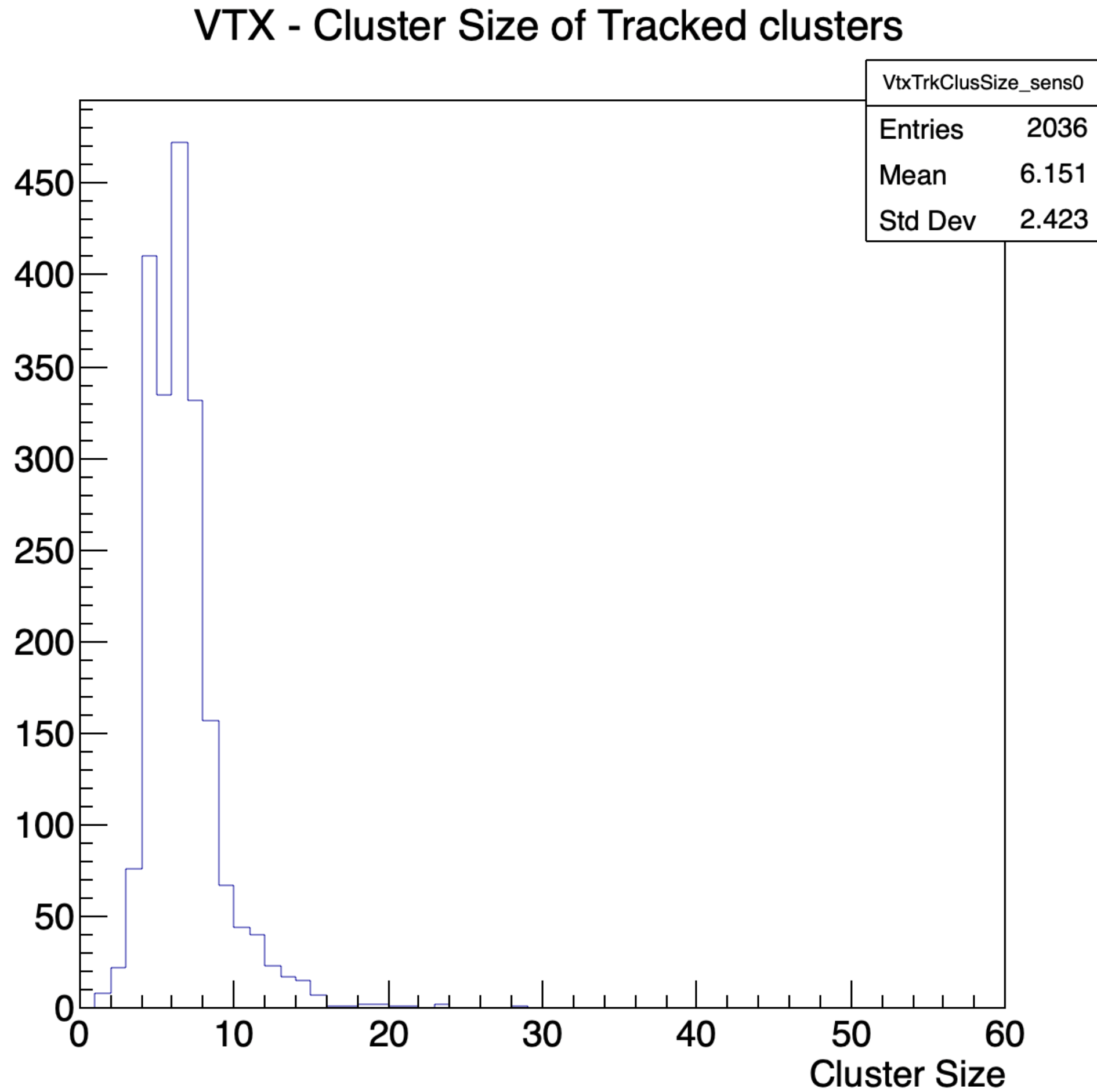


After fix

Cluster size proton runs (230 MeV)



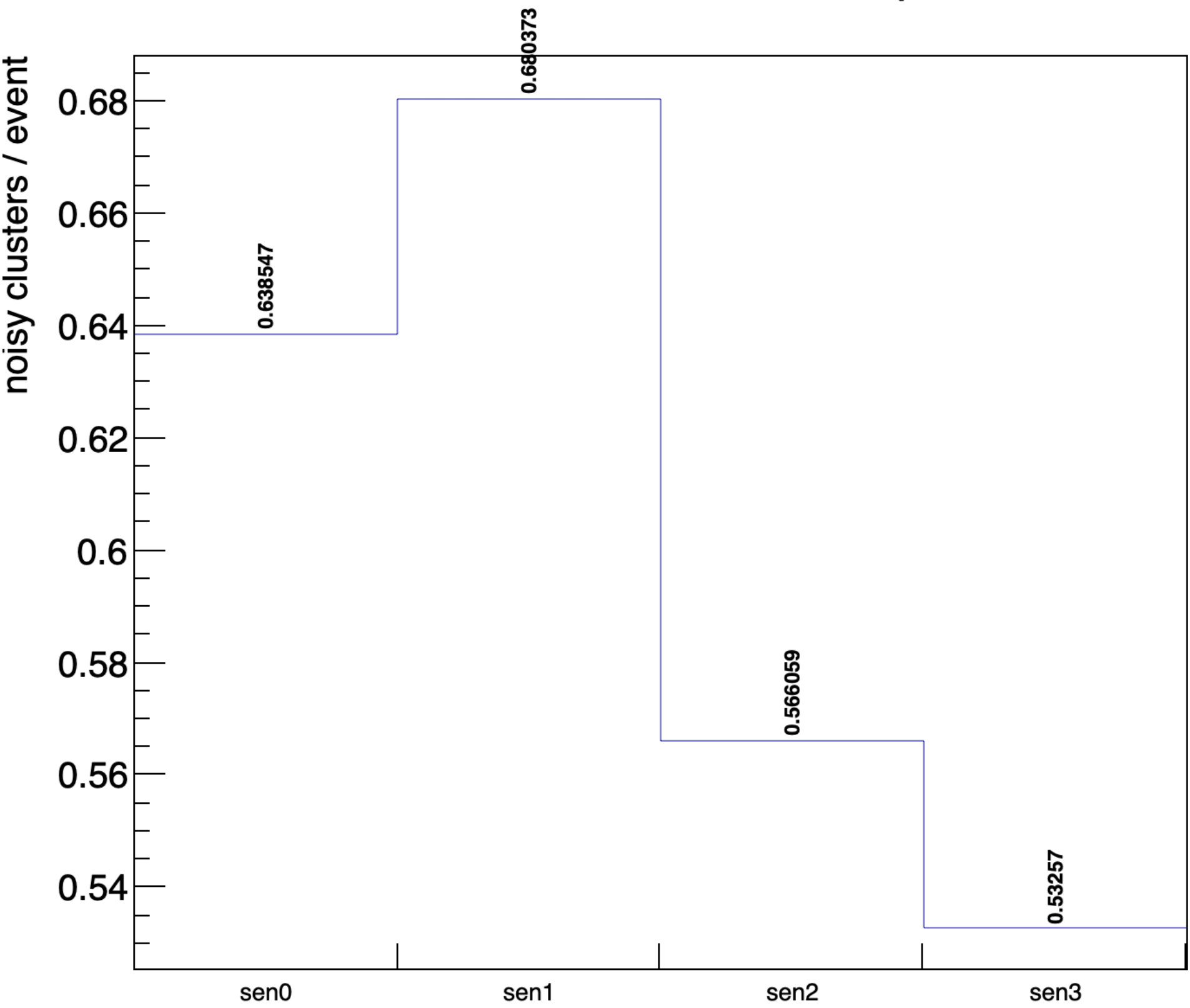
Before fix



After fix

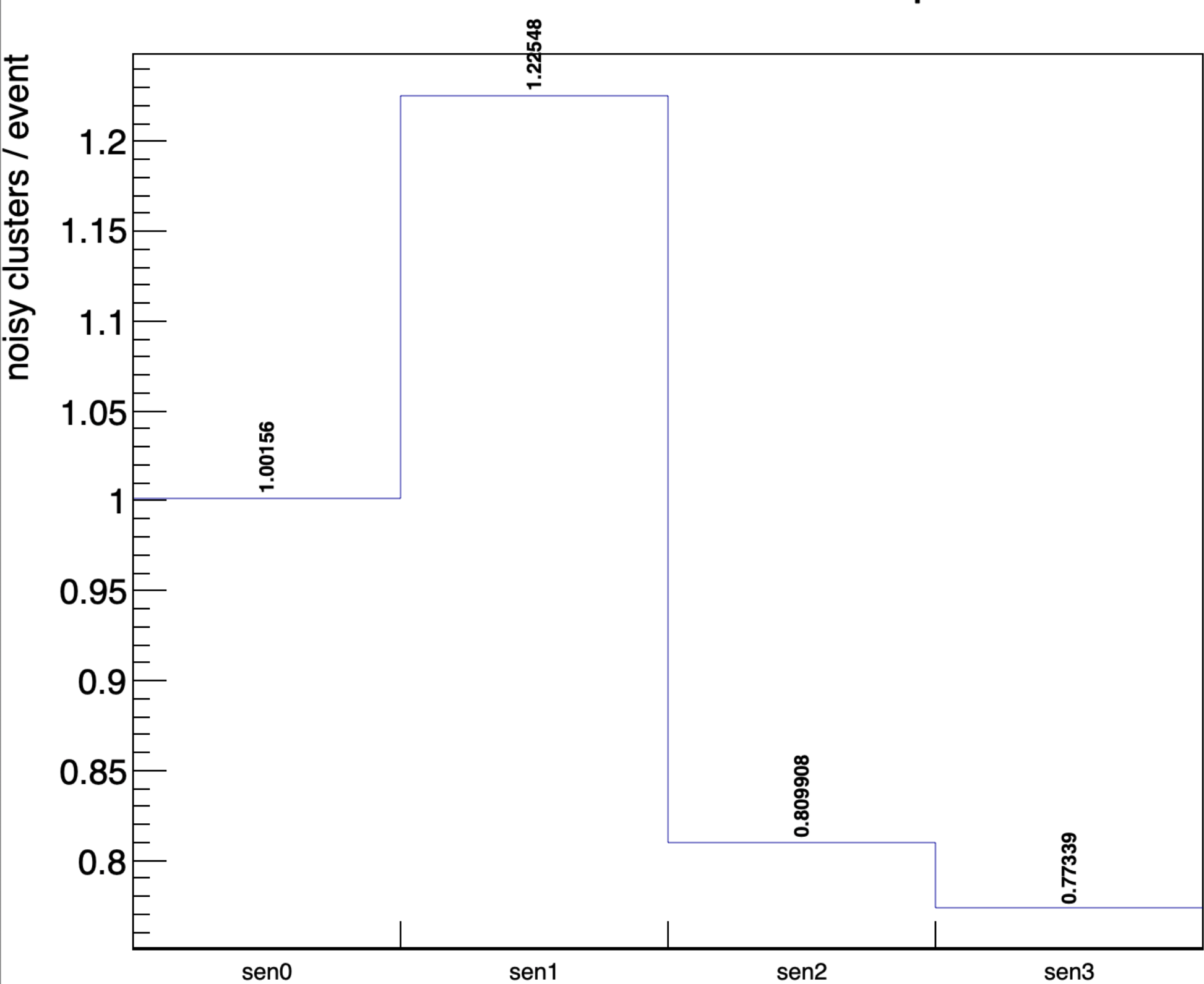
Noise during carbon runs

VTX Noise - Not tracked Custers per event



Before fix

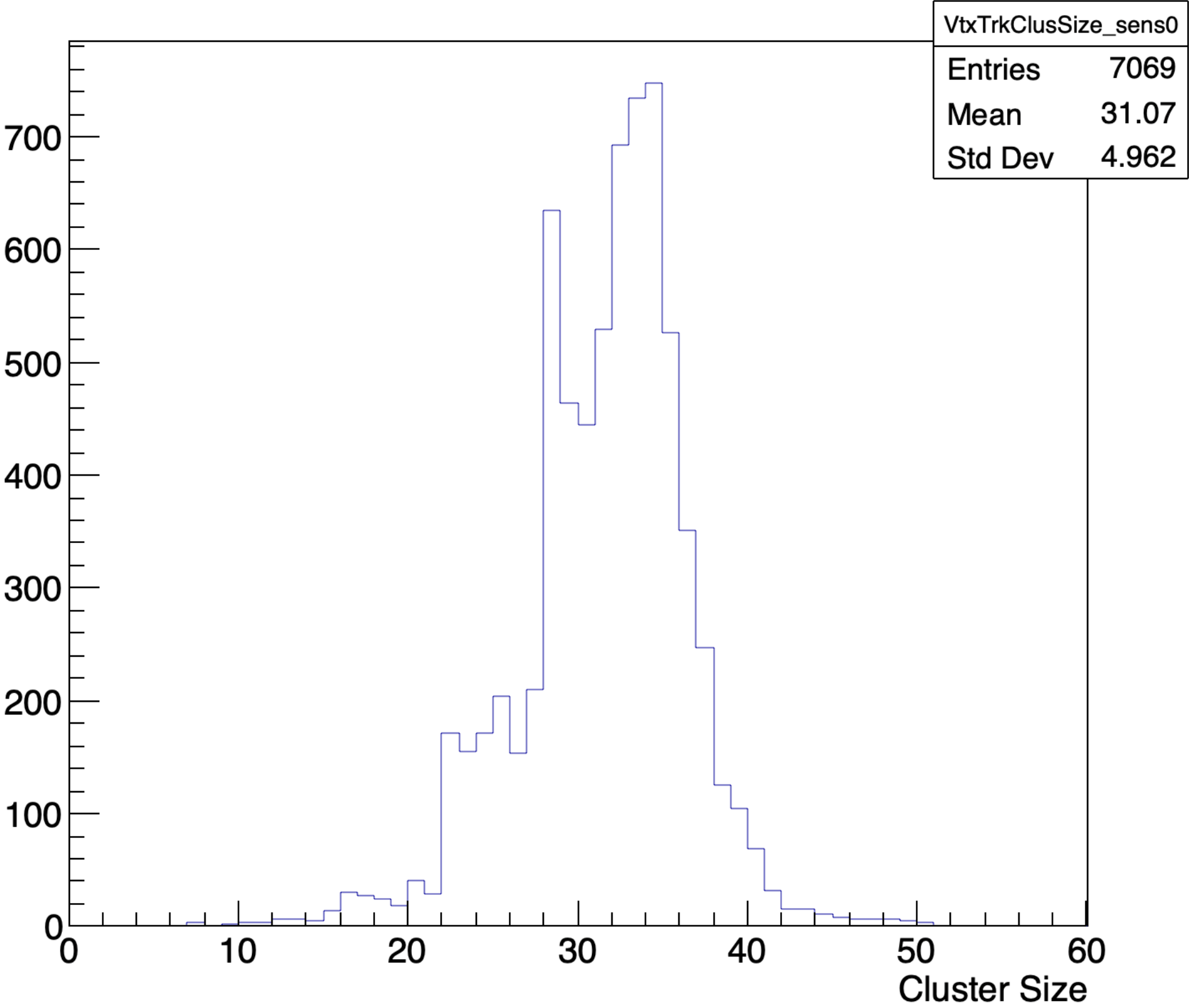
VTX Noise - Not tracked Custers per event



After fix

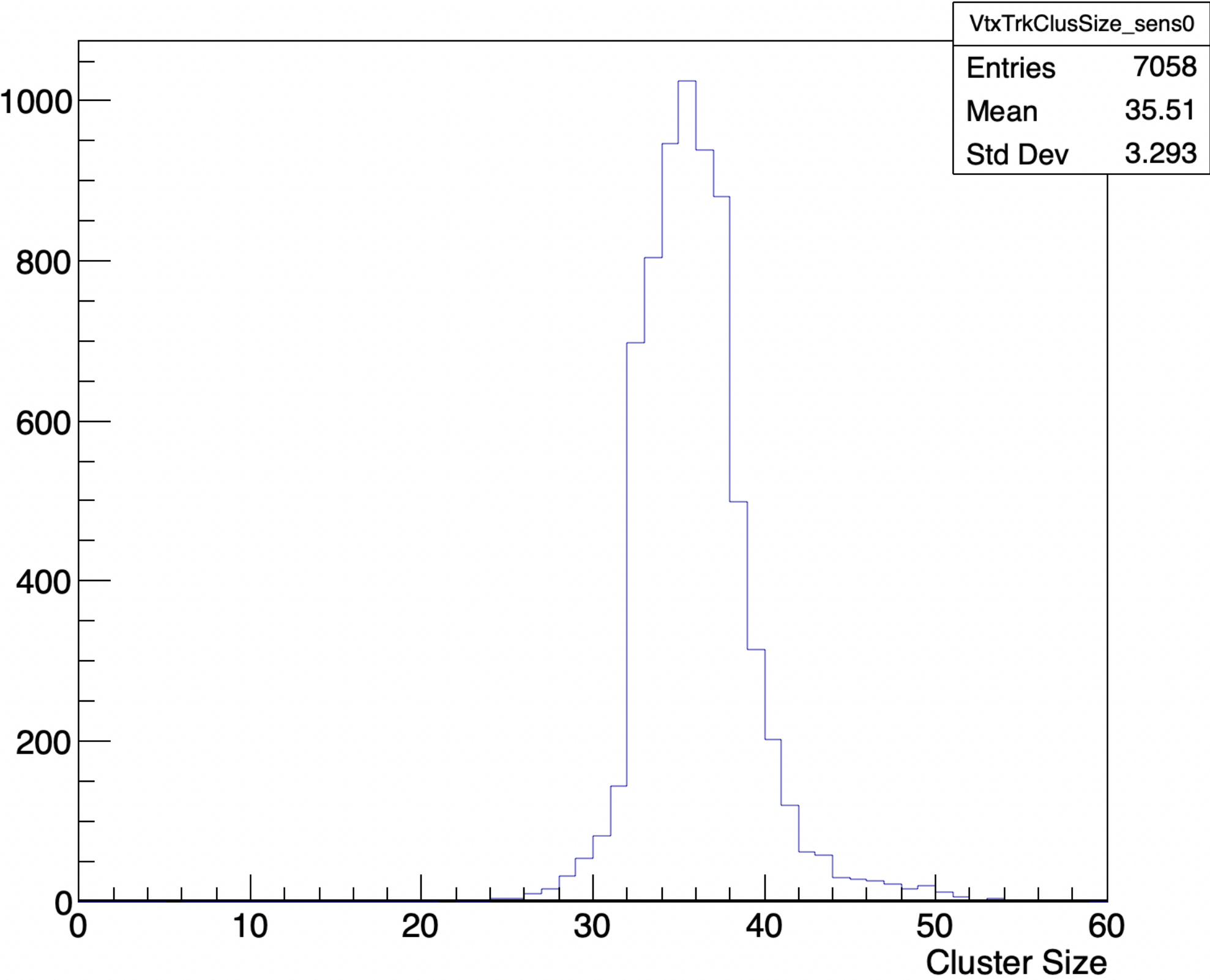
Cluster size carbon runs

VTX - Cluster Size of Tracked clusters



Before fix

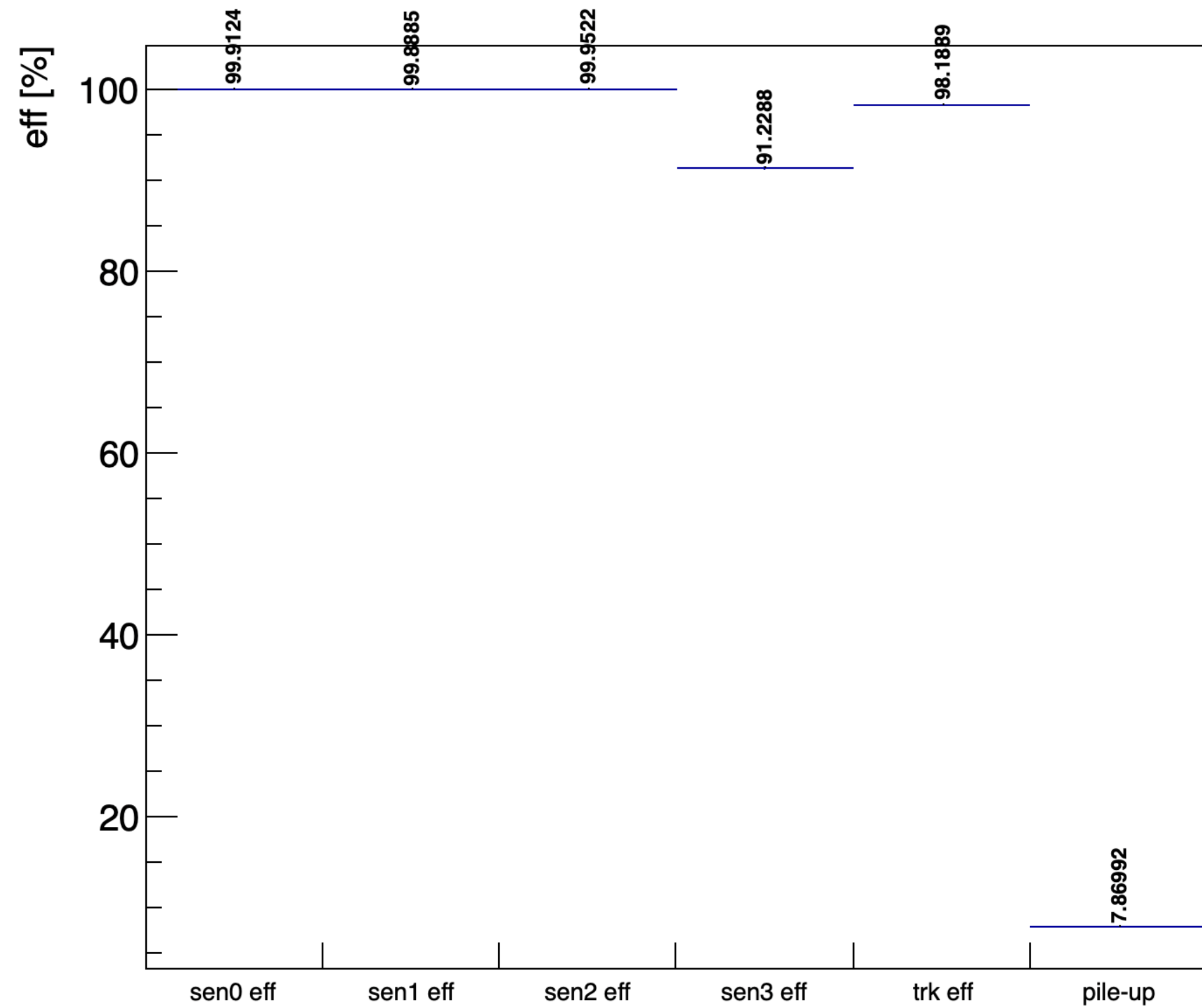
VTX - Cluster Size of Tracked clusters



After fix

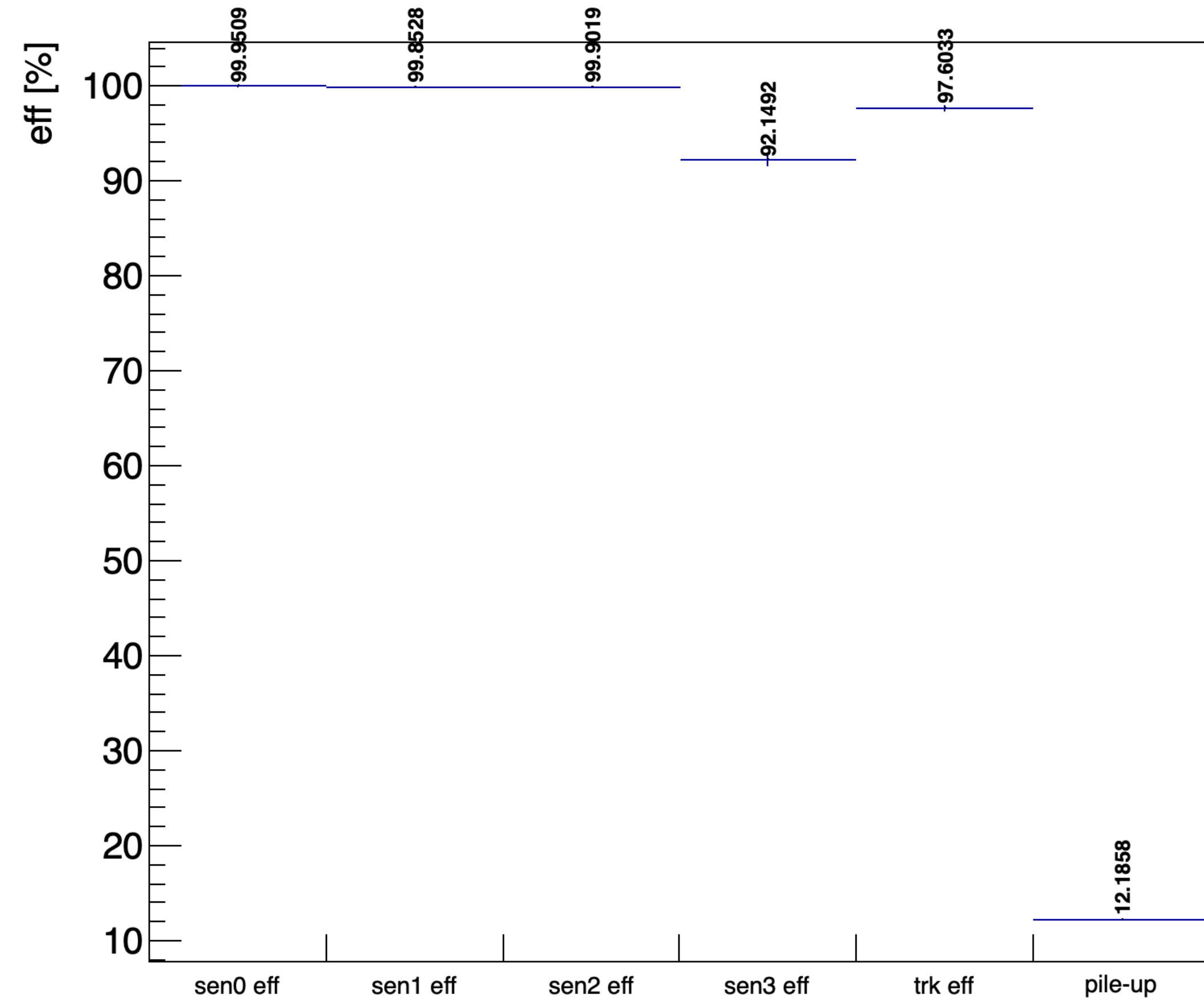
Proton efficiency

Vertex efficiency



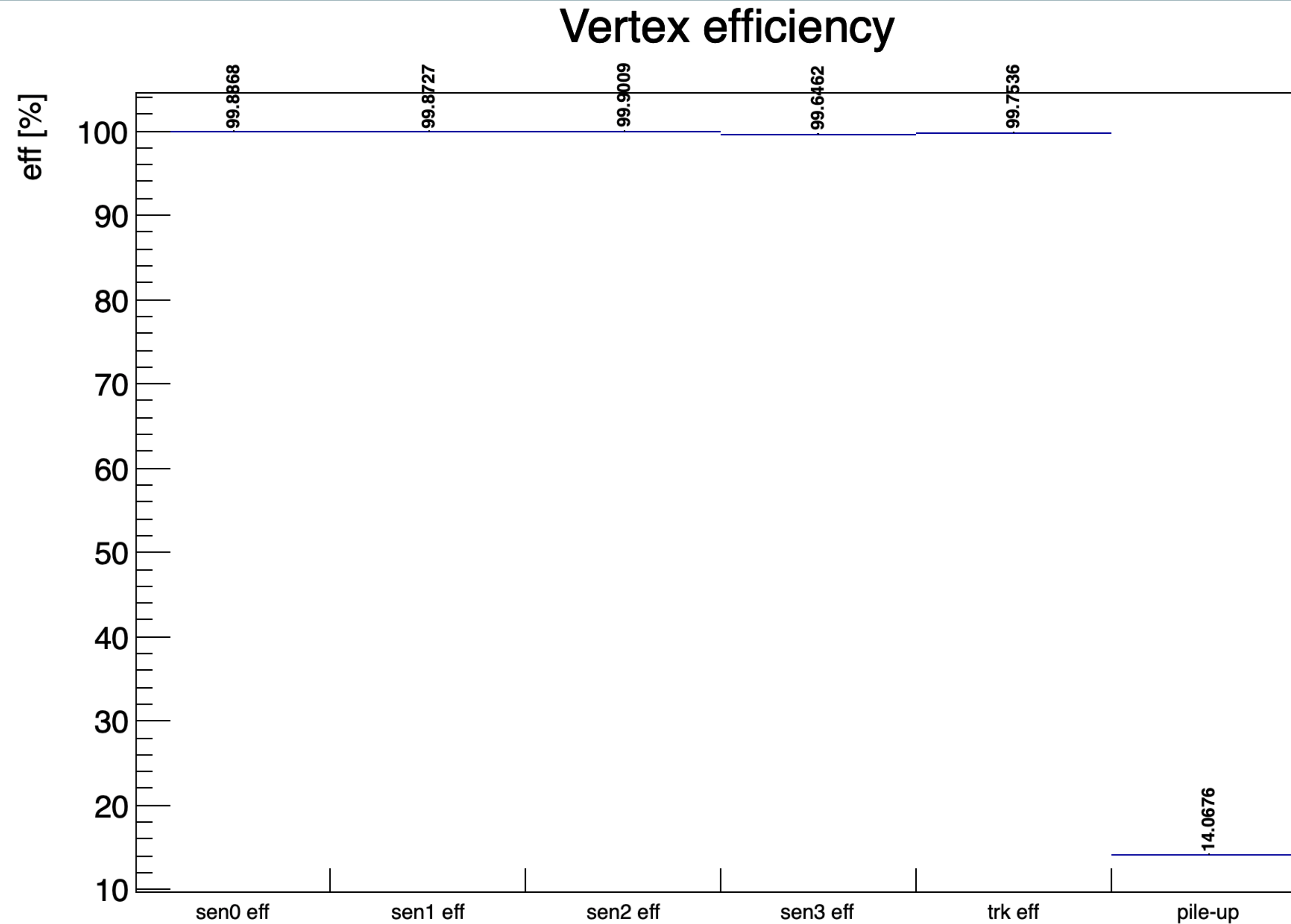
Runs: 7886 7887 -> protons @ 230 MeV

Vertex efficiency



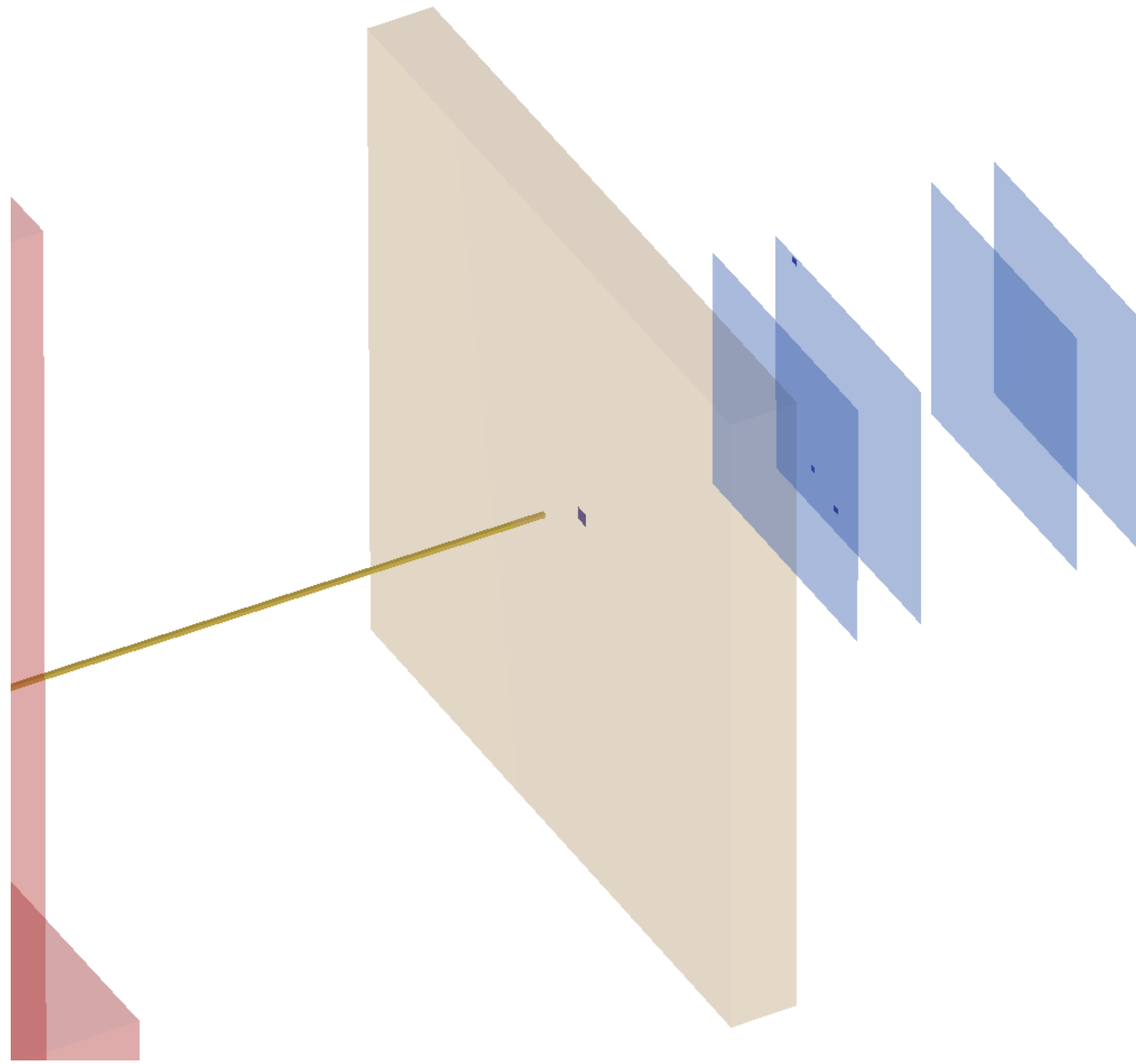
Runs: 7888, 7905 -> protons @ 150 MeV

Efficiency for carbon runs

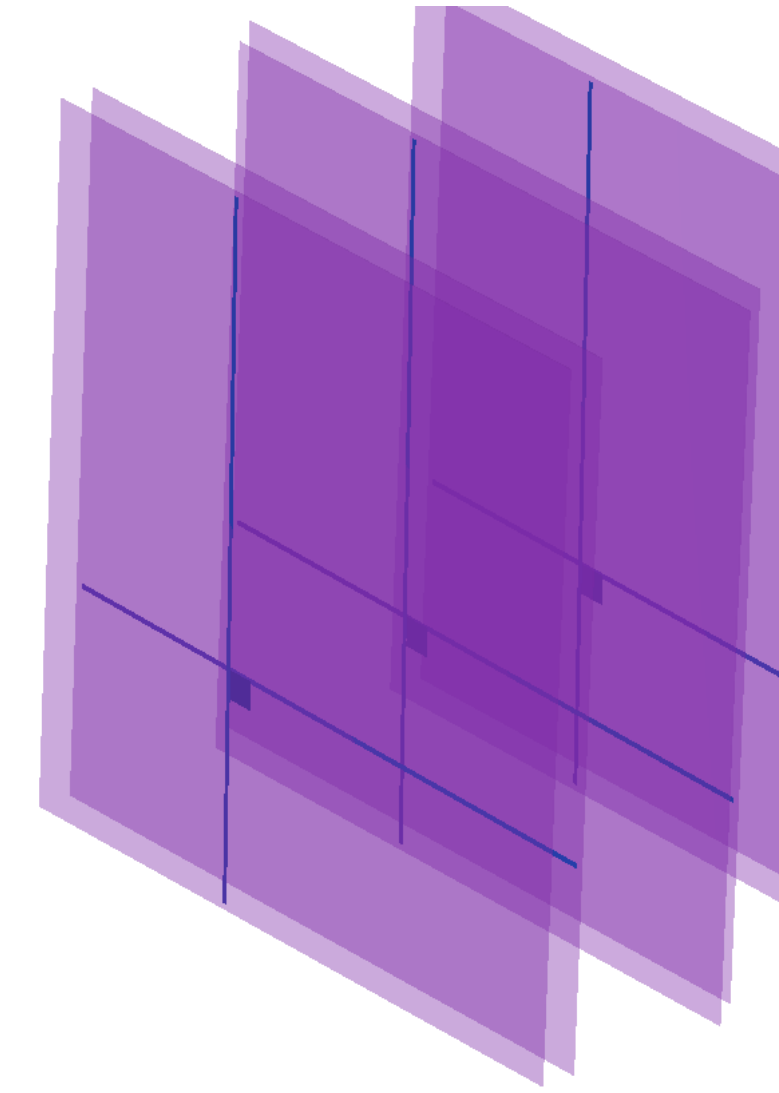
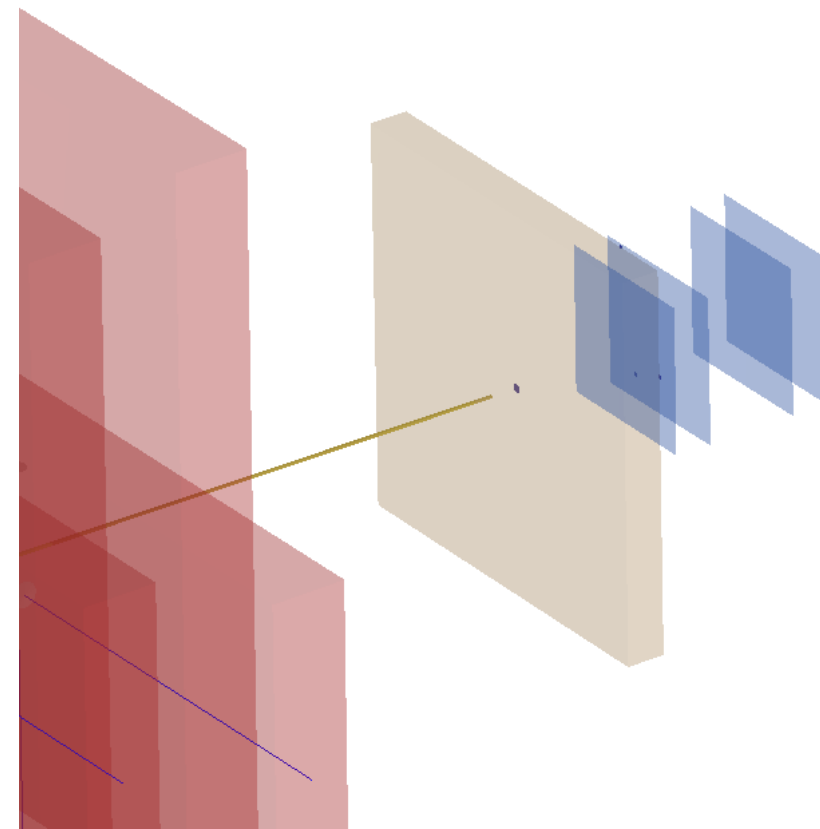


**Cosmic setup in Bologna for VTX
thank to Riccardo and Giacomo U :
80% efficiency (hopefully due to the
geometrical setup). No effect of
threshold change**

Strange events



Strange events



Conclusion

- Much better results with fixed M28 Decode for the analysis
- Still something needed to be understood about VTX reconstruction / decoding
- Some error in DAQ have been found and fixed