Preliminary results from FOOT test in Jülich

Valerii Panin and William Stafford, University of Bristol

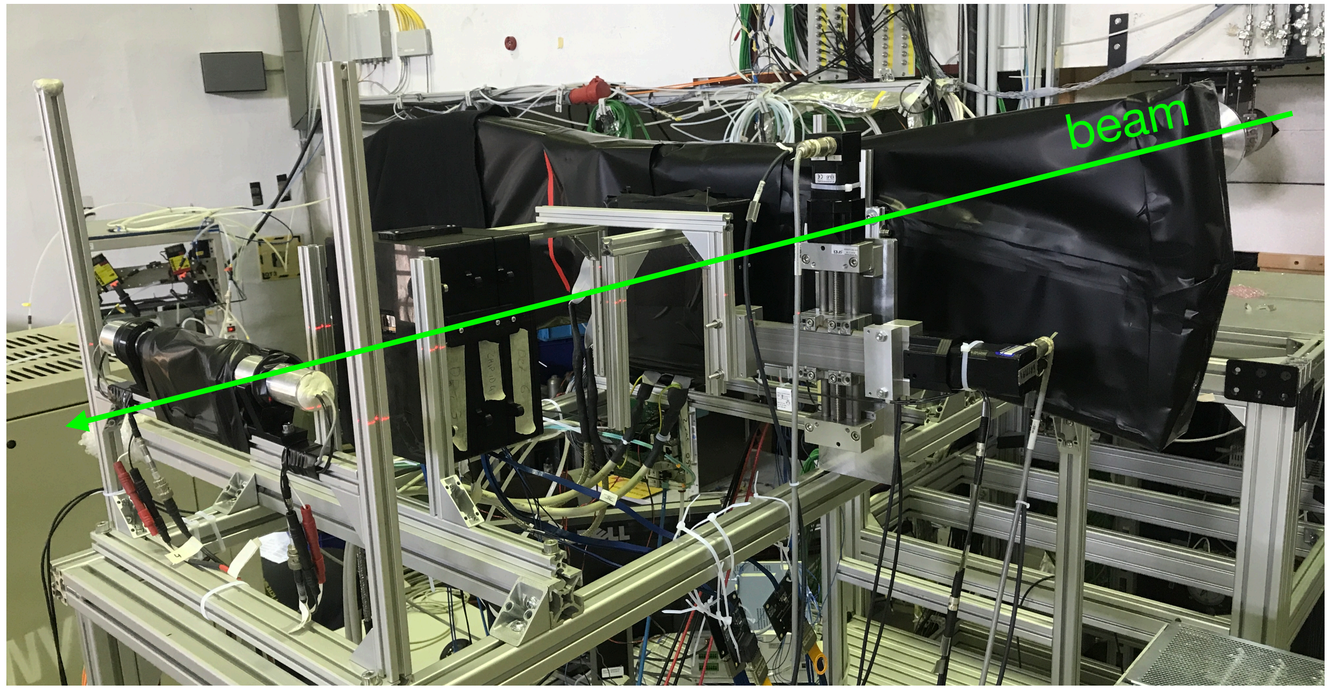
(GSI summer student program)

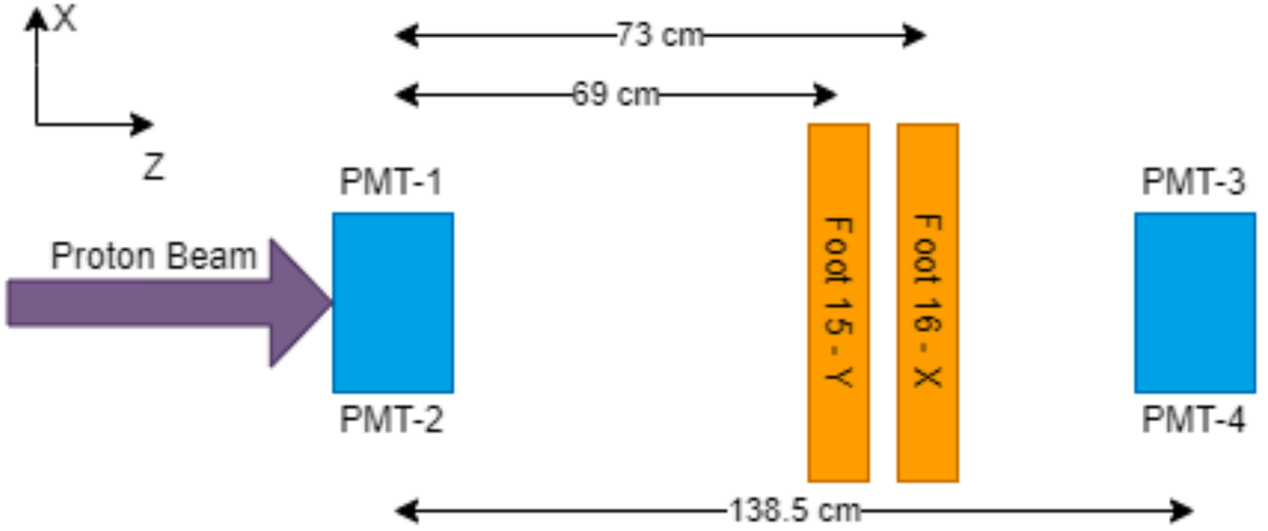
FOOT inside black box

Protons beams:

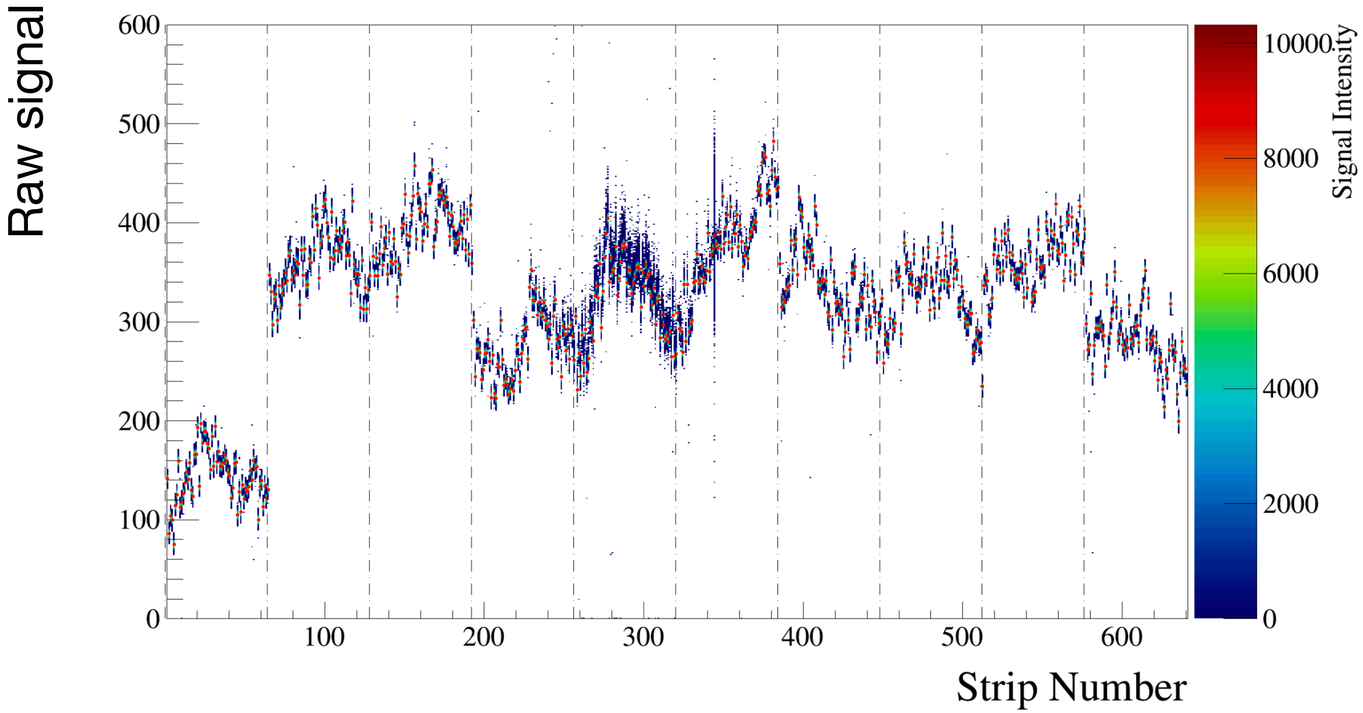
- 100 MeV
- 430 MeV
- 1000 MeV

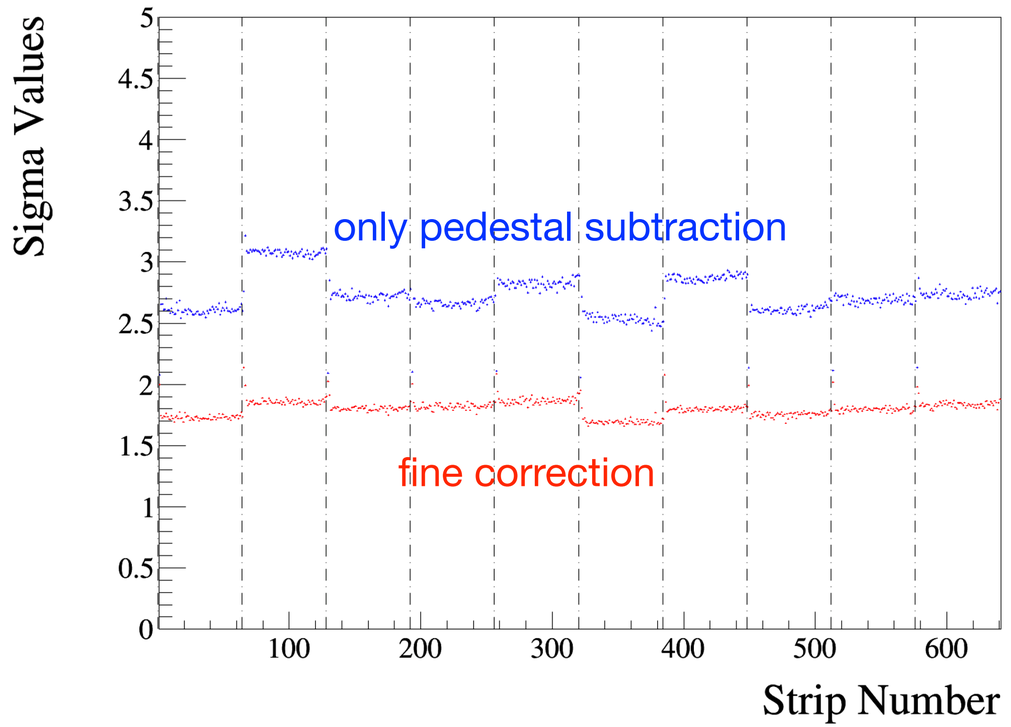
Experimental setup in Jülich





Baseline correction in a single FOOT



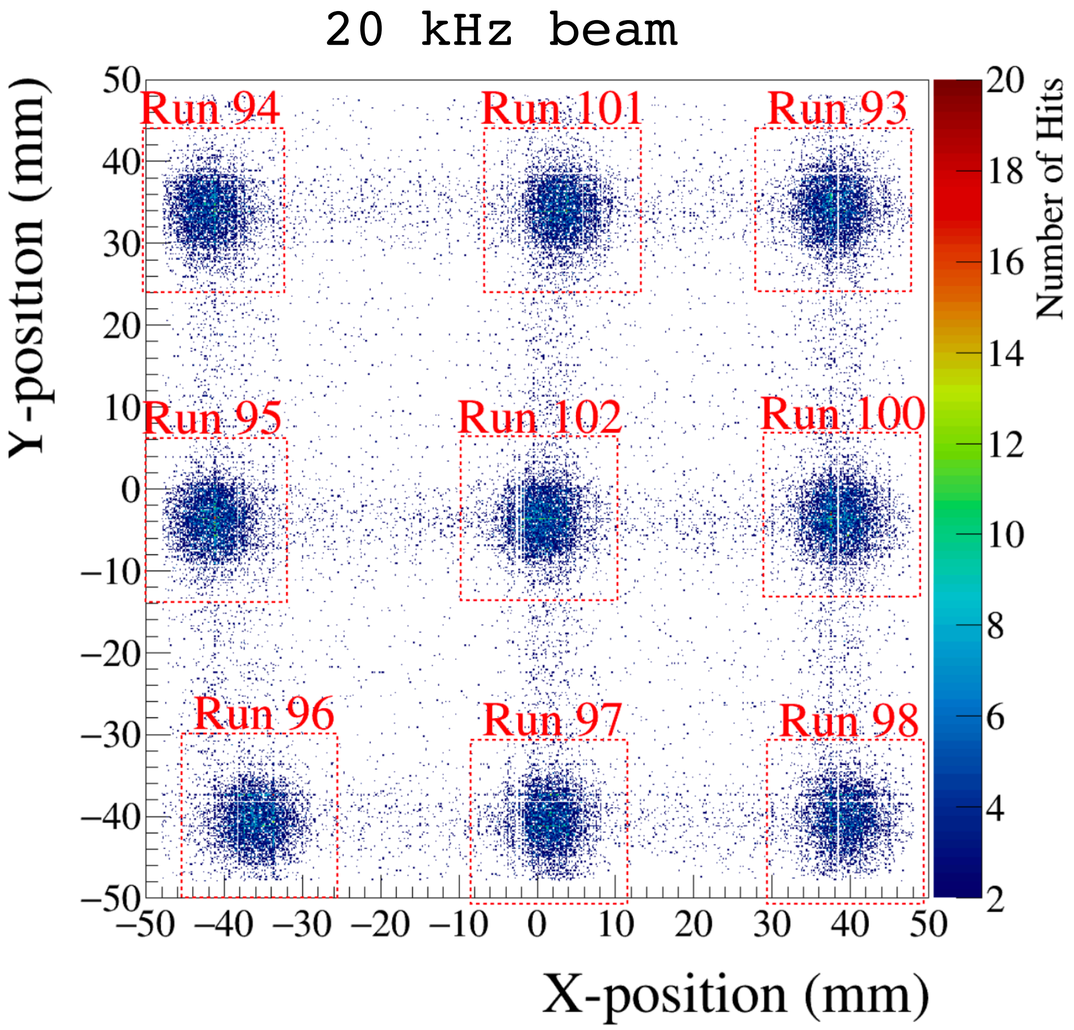


Signal in one strip — raw signal — pedestal — ASIC common offset

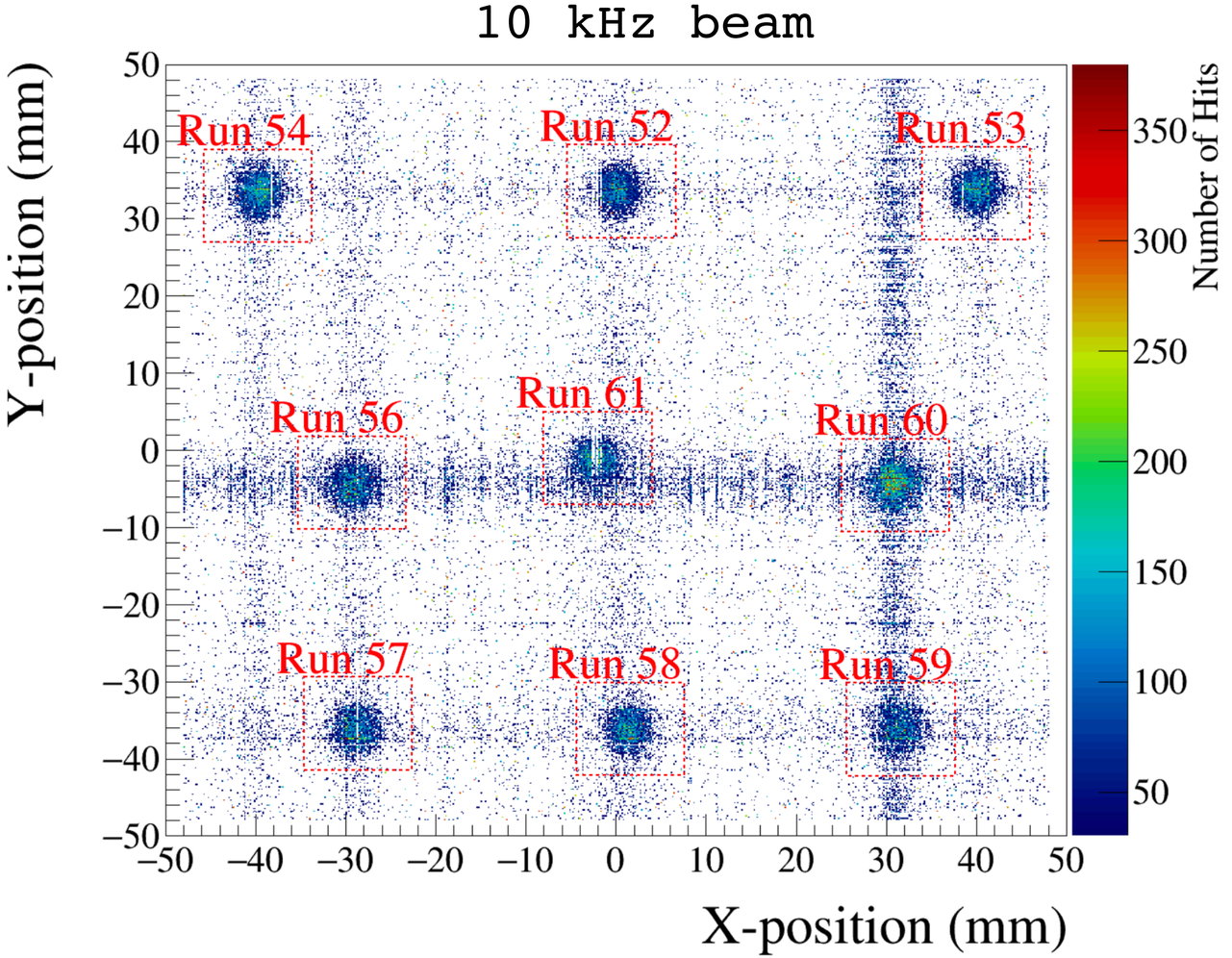
$$S_i = A_i - P_i - M_{ASIC} \longrightarrow M_{ASIC} = \sum_{k=1}^{N} \frac{(A_k - P_k)}{N}$$

- fine correction event by event

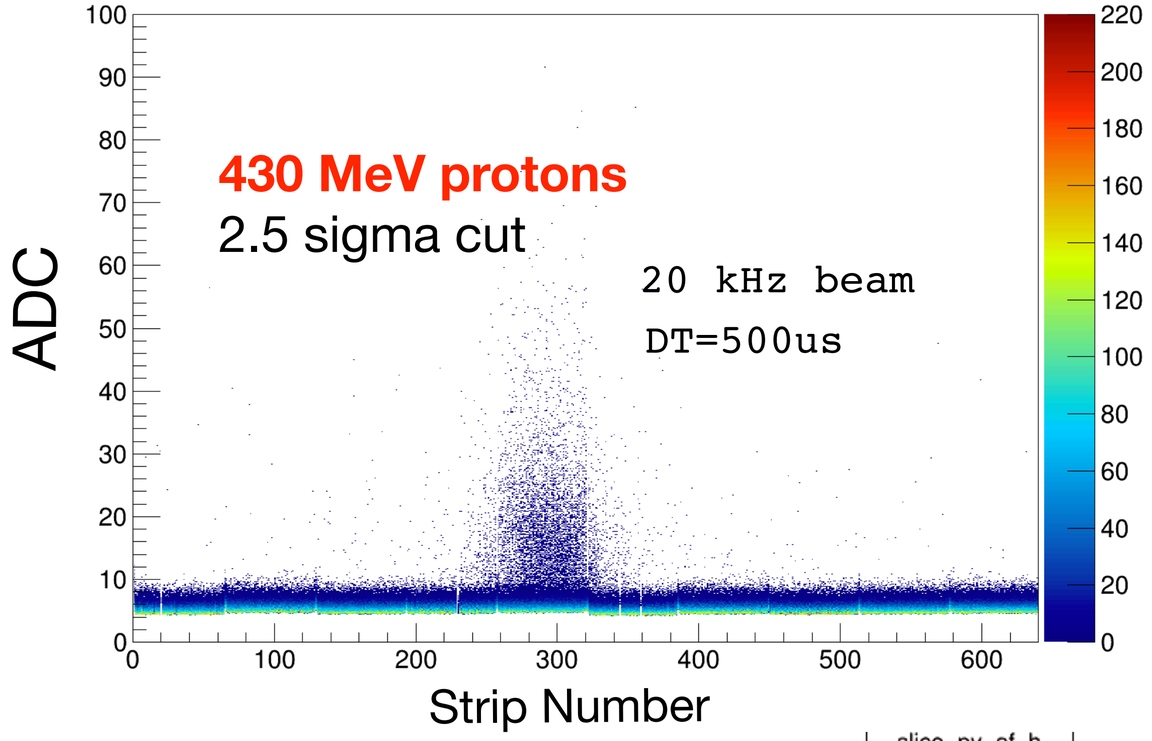
430 MeV protons

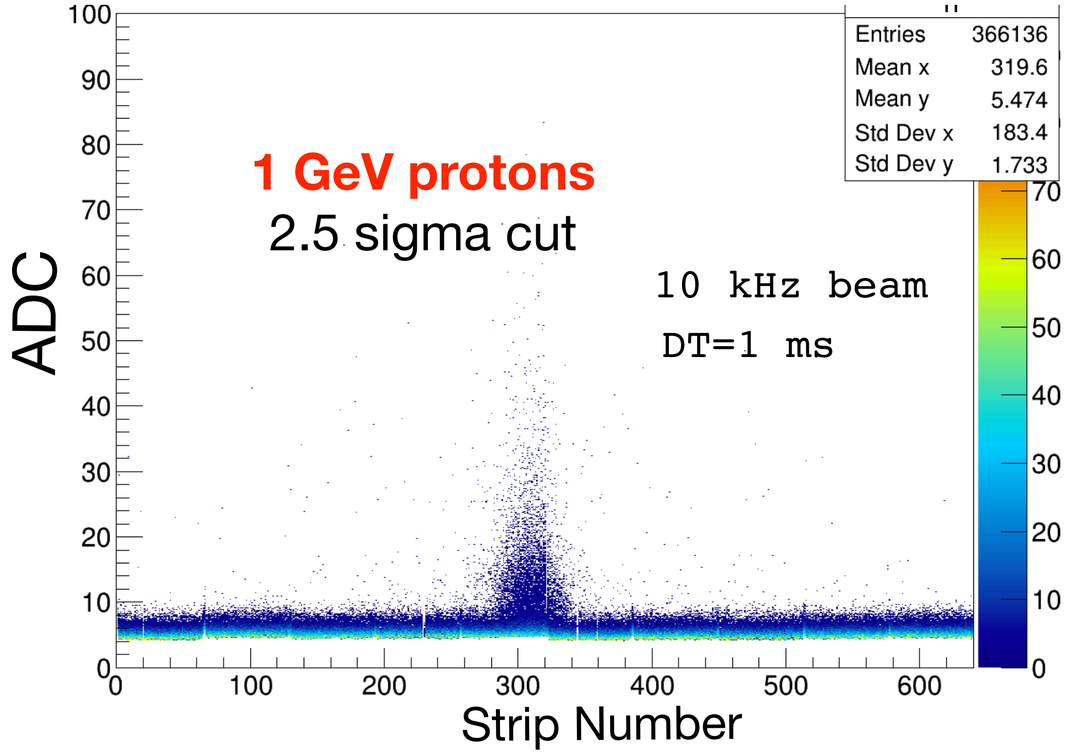


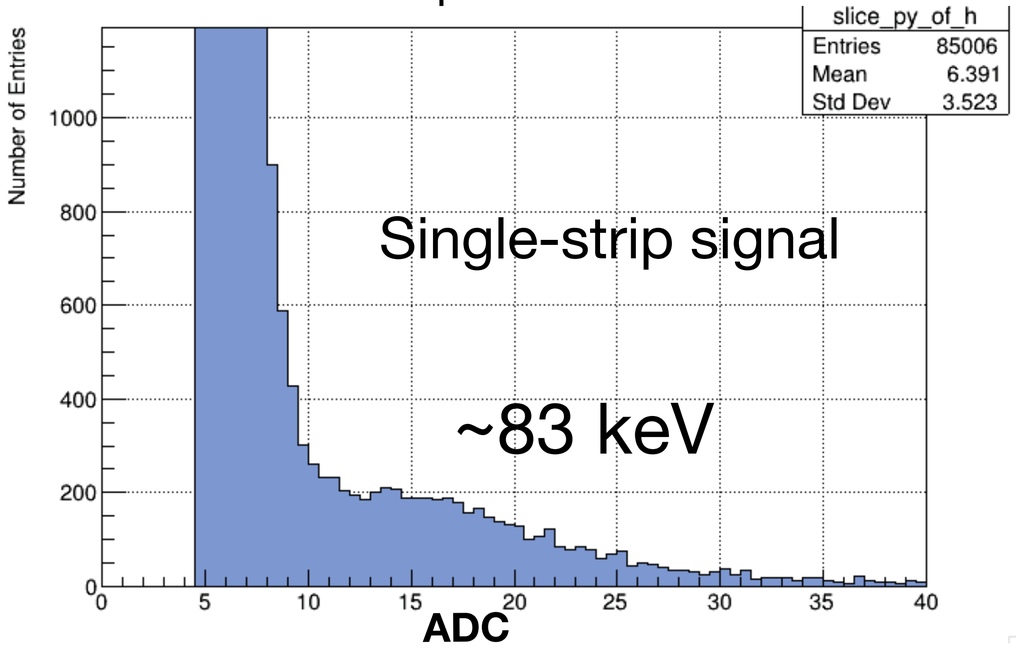
1000 MeV protons

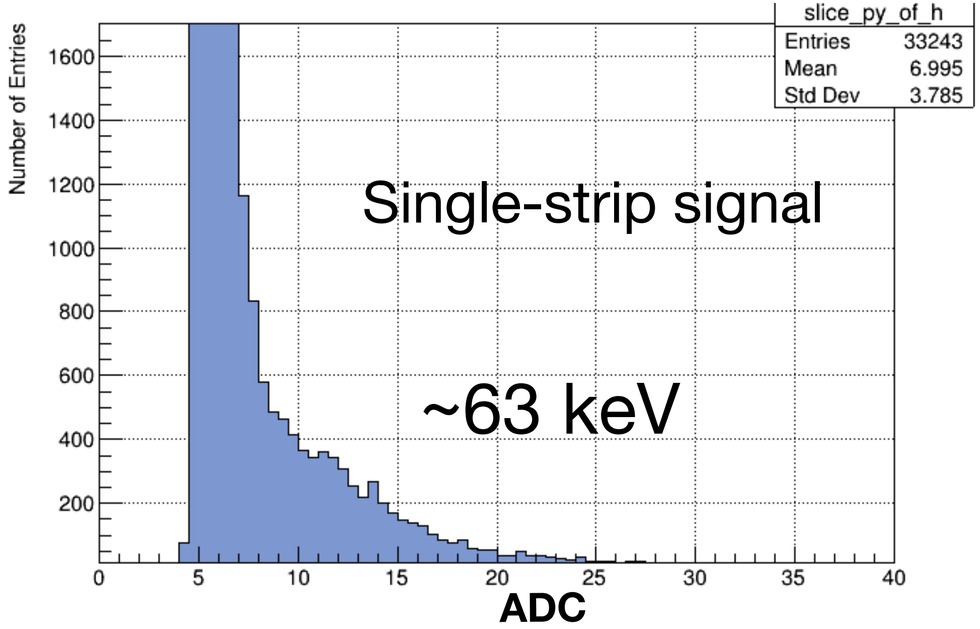


5 sigma threshold


430 MeV protons
2.5 sigma cut
20 kHz beam
DT=500us
ADC
Strip Number

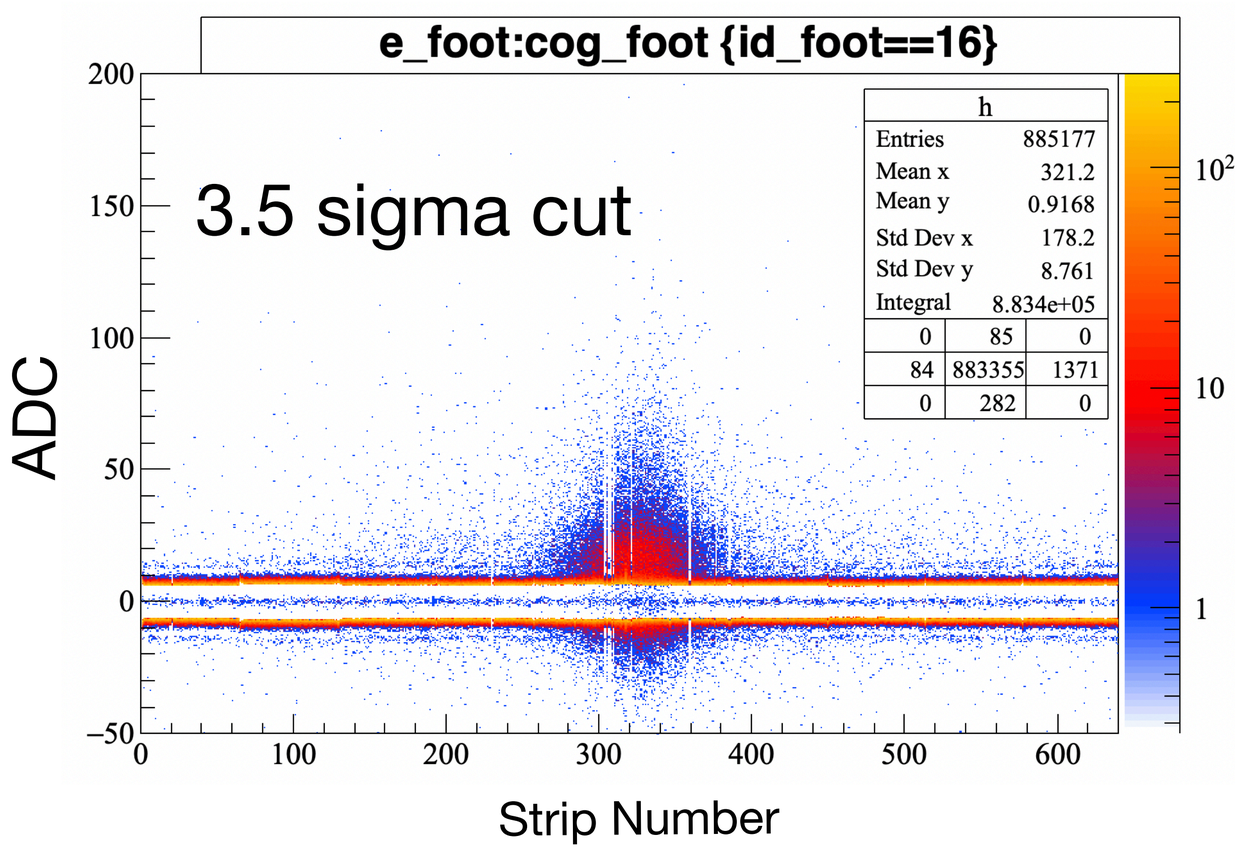

Entries 366136
Mean x 319.6
Mean y 5.474
Std Dev x 183.4
Std Dev y 1.733
1 GeV protons
2.5 sigma cut
10 kHz beam
DT=1 ms
ADC
Strip Number

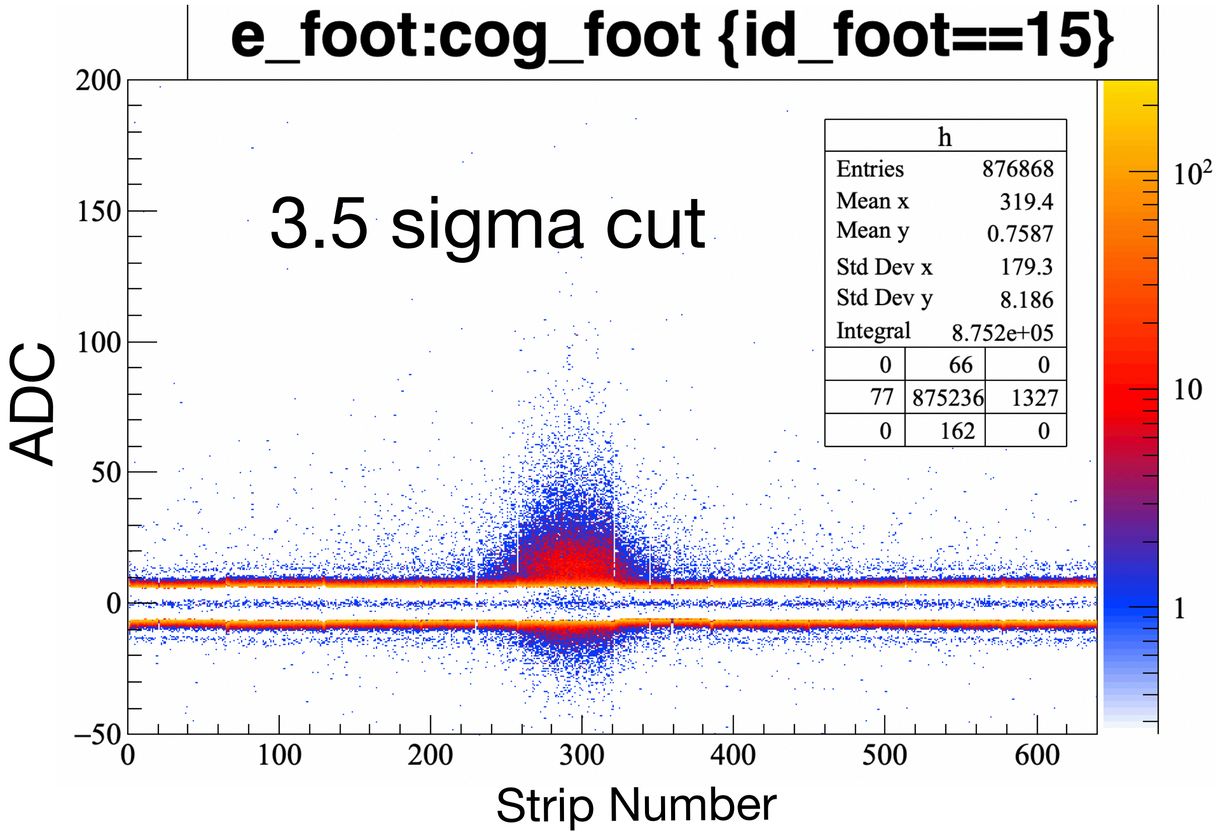

slice_py_of_h
Entries 85006
Mean 6.391
Std Dev 3.523
Single-strip signal
~83 keV
Number of Entries
ADC


slice_py_of_h
Entries 33243
Mean 6.995
Std Dev 3.785
Single-strip signal
~63 keV
Number of Entries
ADC

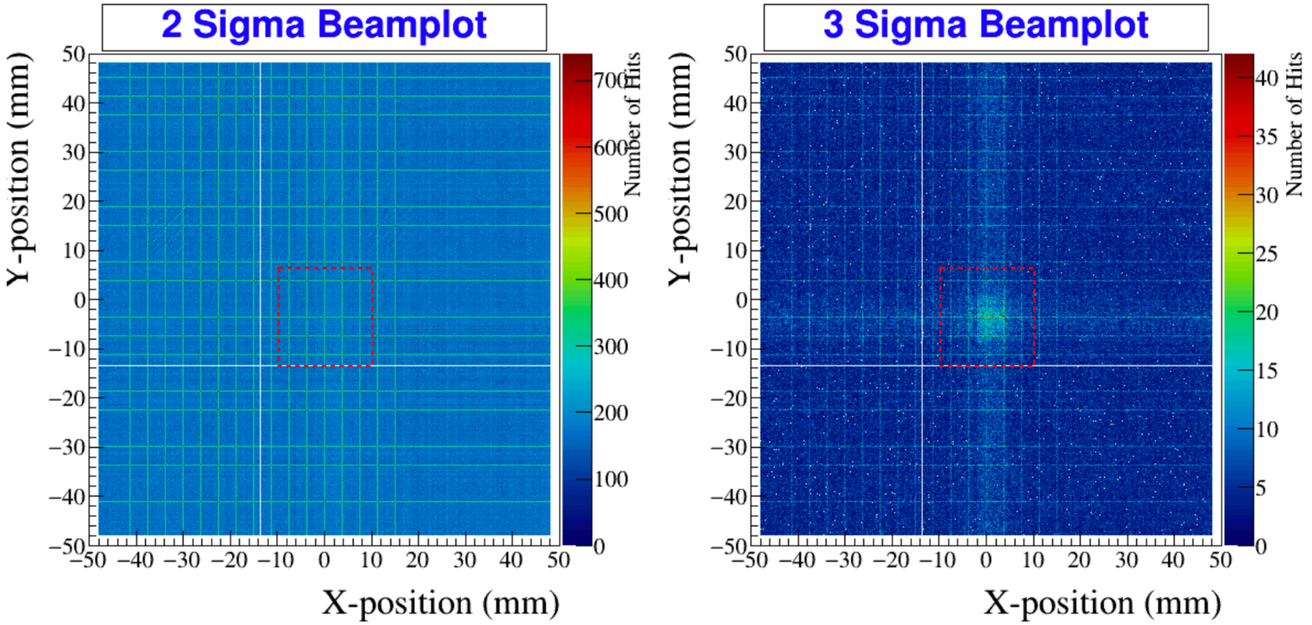
430 MeV protons

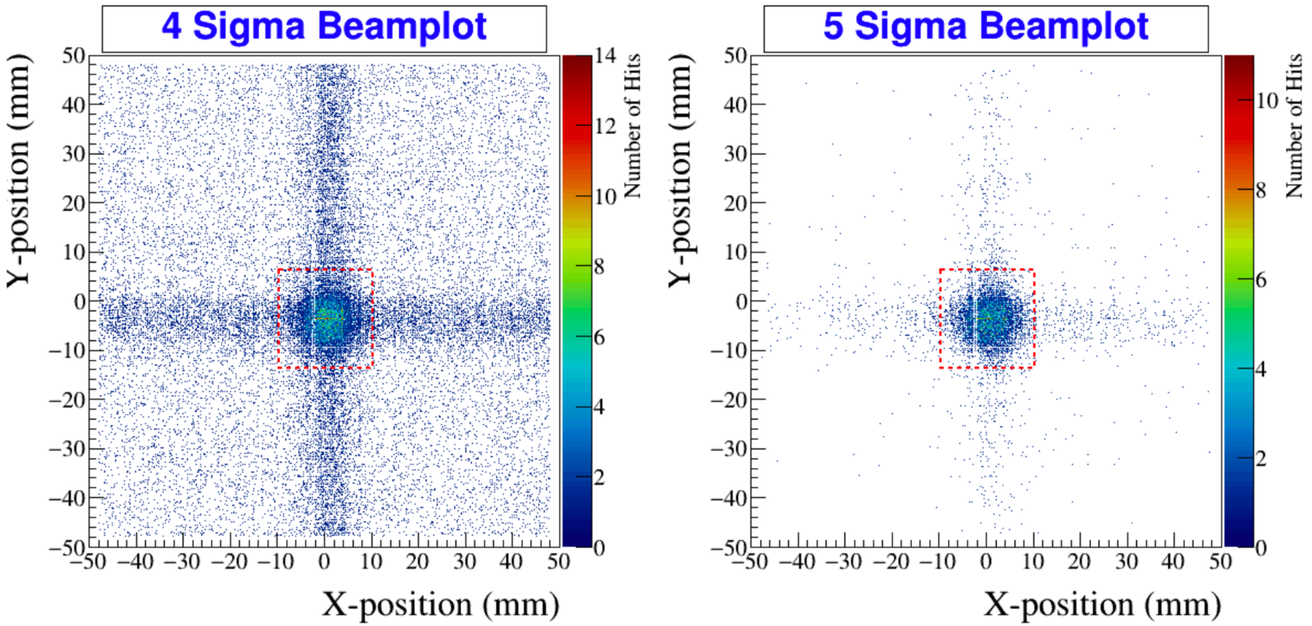
clustering with negative signals





430 MeV proton beam, different Nsigma threshold





Efficiency calculation:

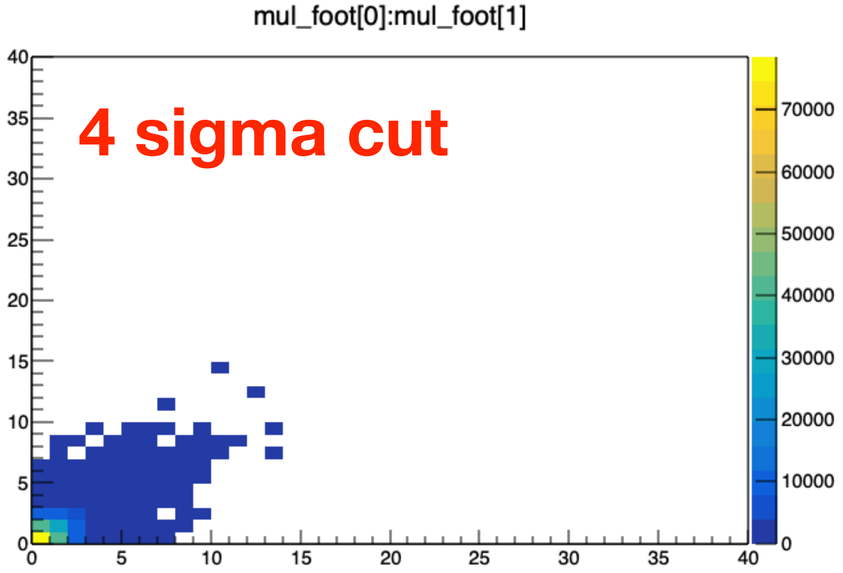
$$\epsilon = \frac{N_{2|1}}{N_1} \times 100\%$$

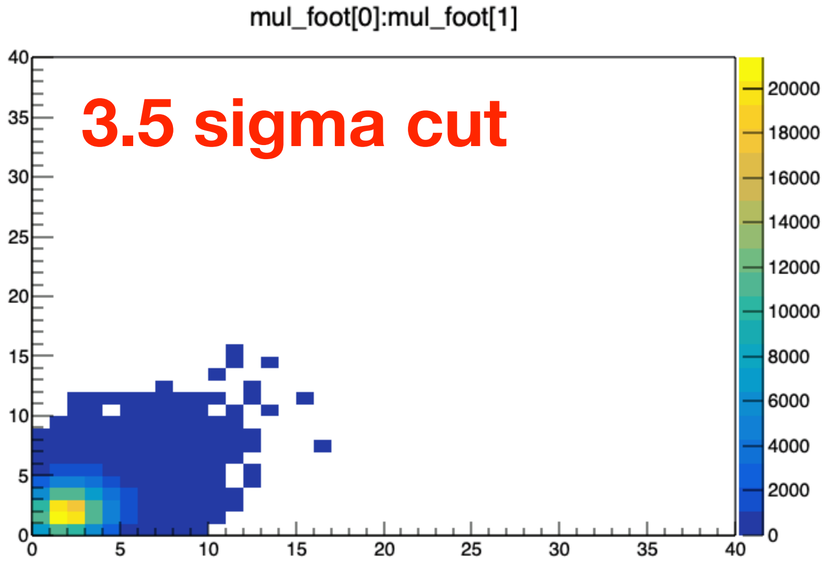
Method 1: 4 sigma (fine) threshold on N_1 and $N_{2|1}$

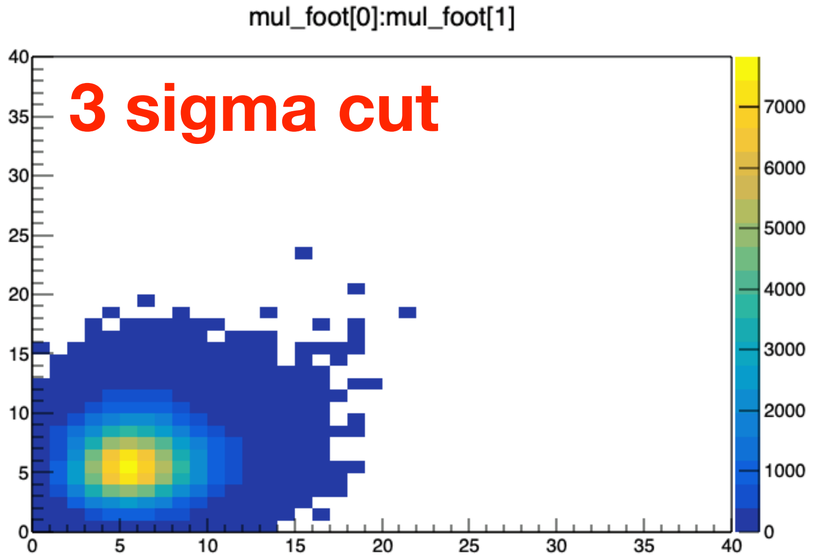
Method 2: fixed threshold on N_1 (15 ADC) and variable threshold on $N_{2|1}$

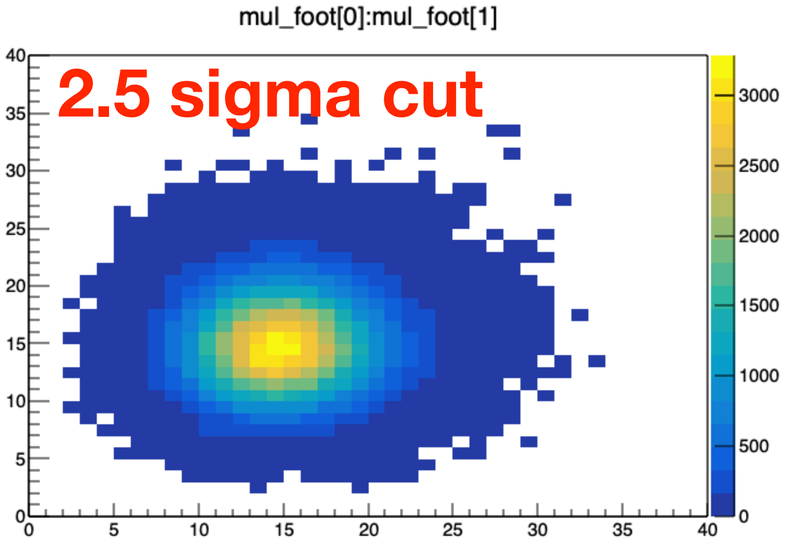
Multiplicity of clusters per detector

430 MeV protons



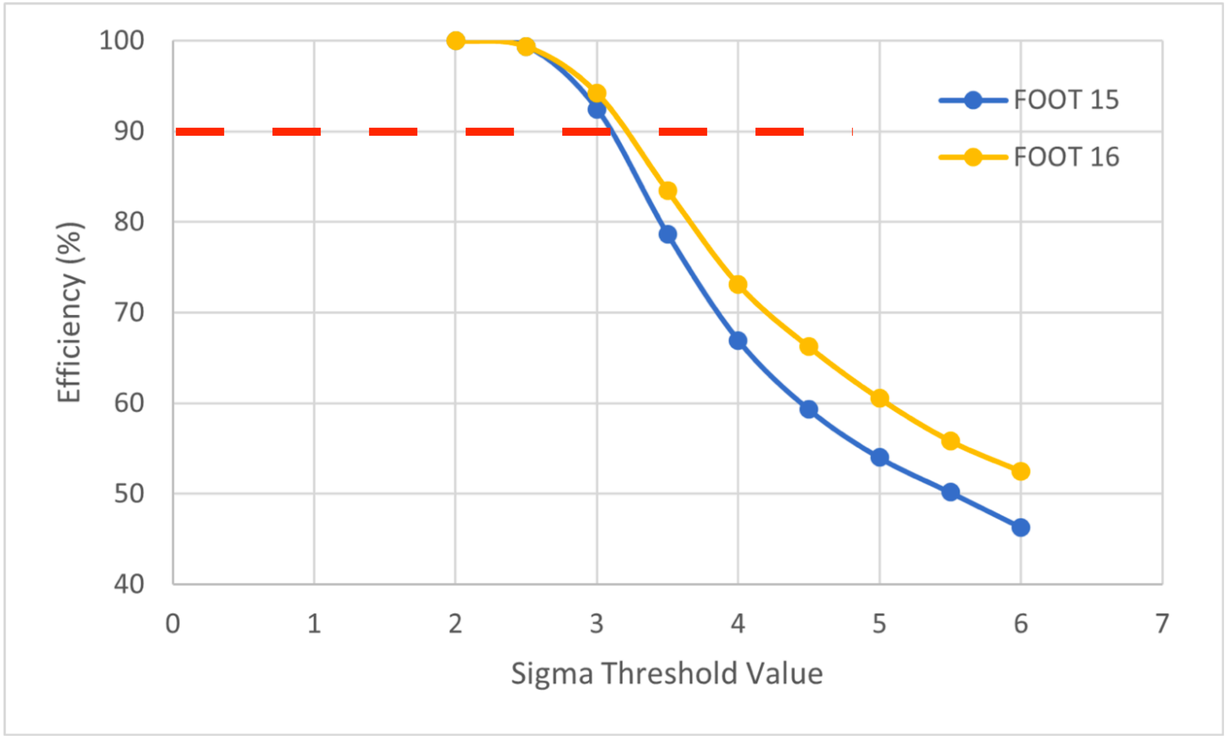




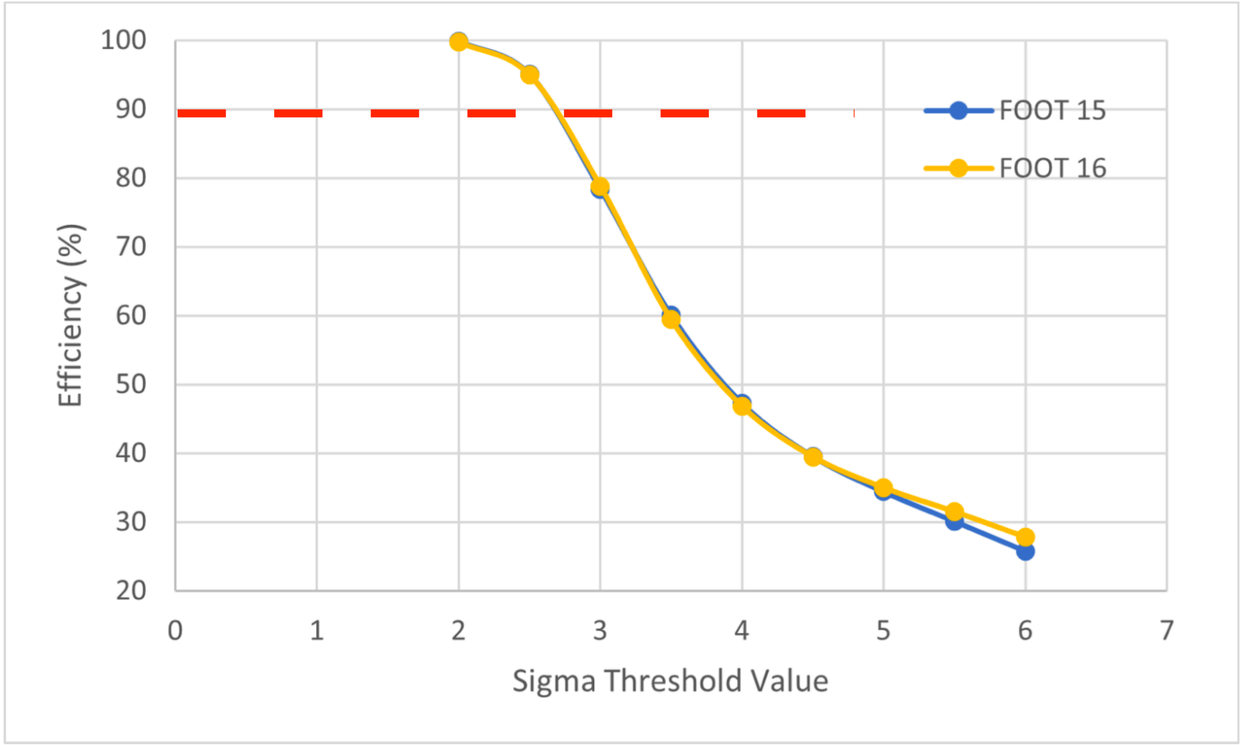


Method 2: beam centered on the detectors

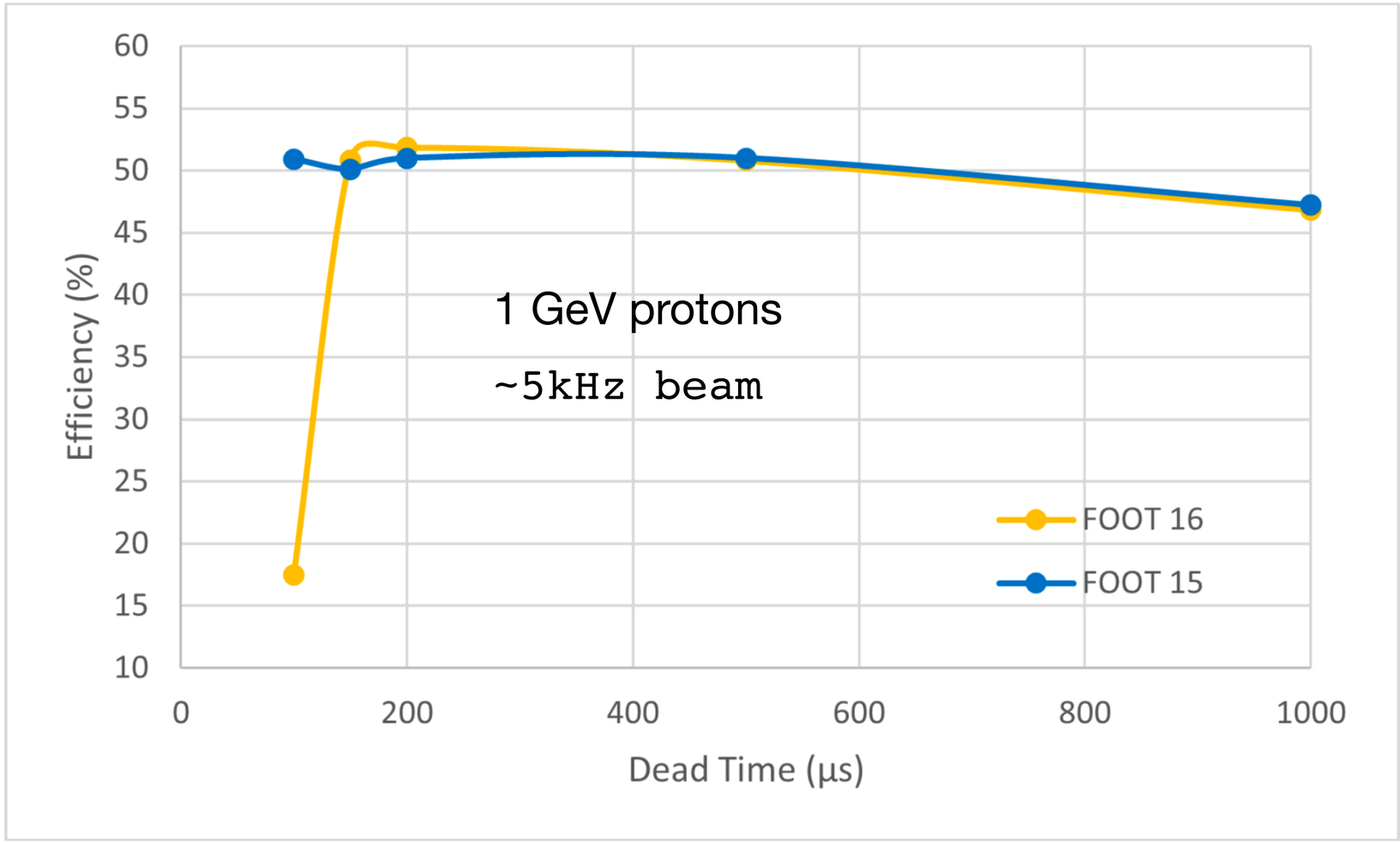
430 MeV protons



1 GeV protons



Efficiency vs. deadtime setting (centered beam, method 1)



That's all Folks!