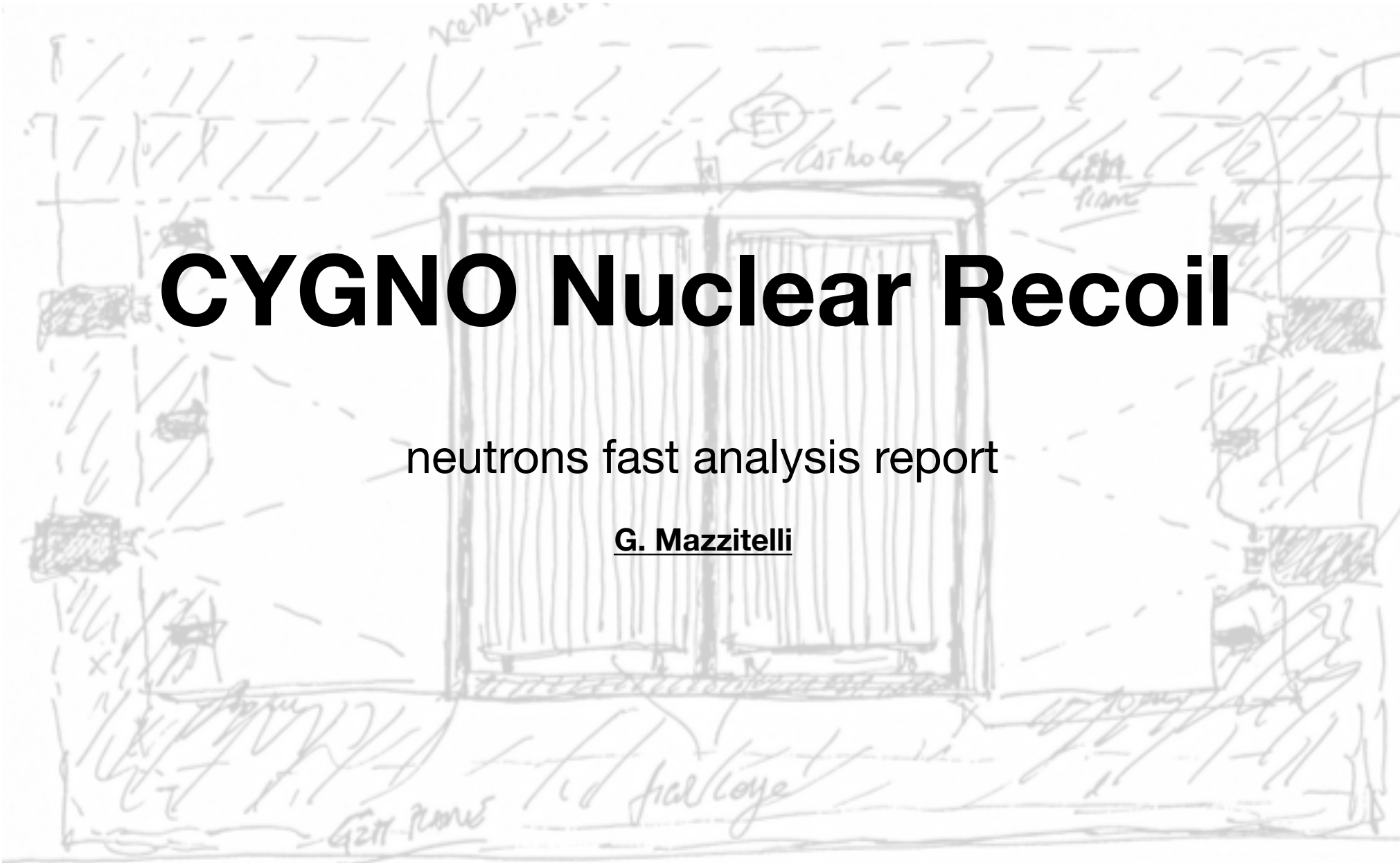


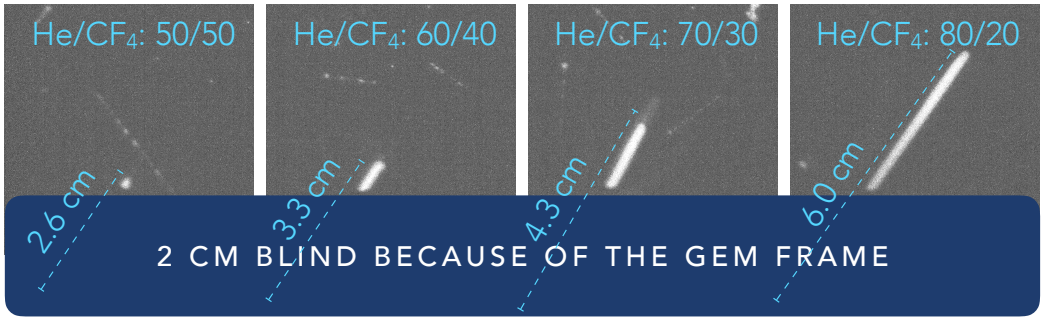
CYGNO Nuclear Recoil

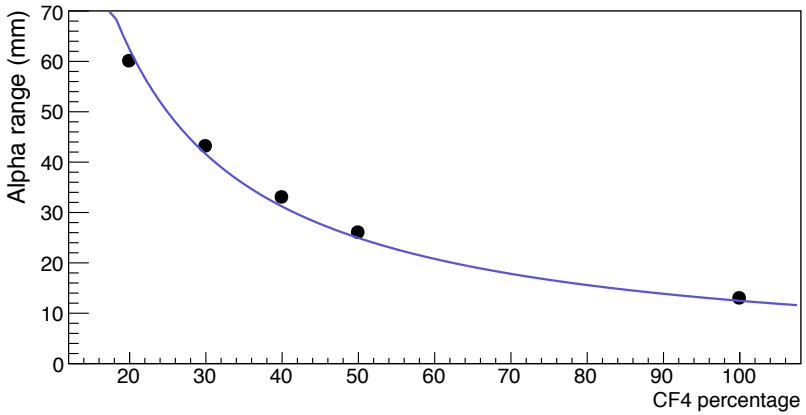
neutrons fast analysis report

G. Mazzitelli

Range and recoil energy released

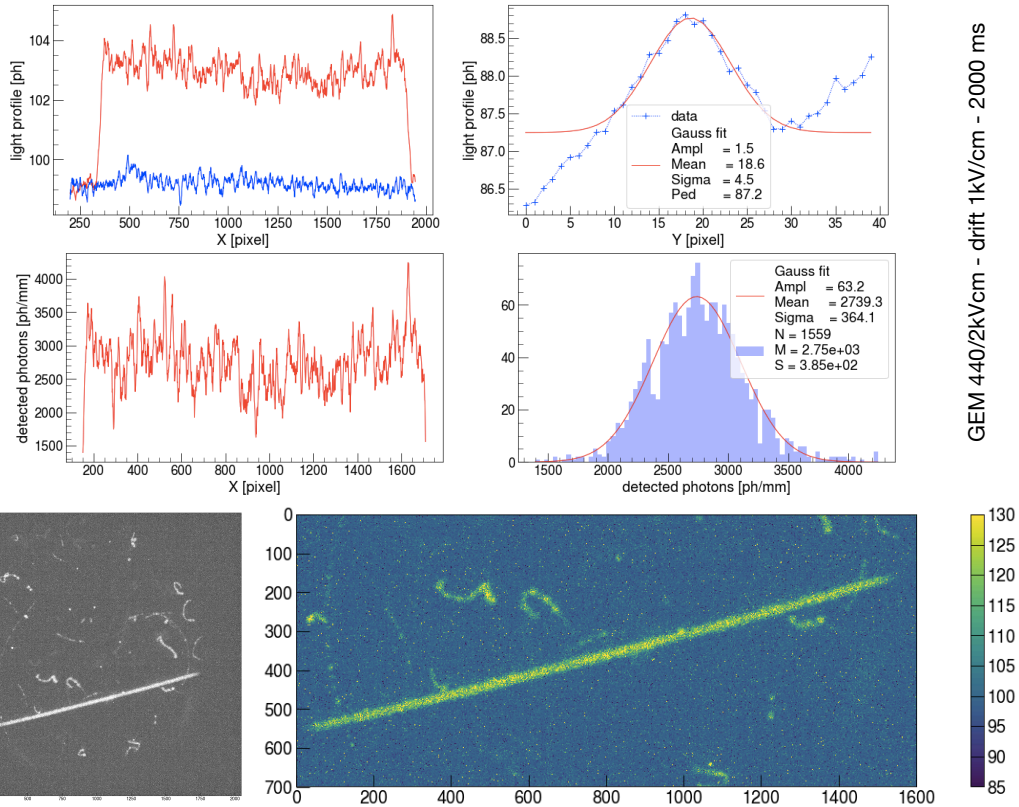
Am alpha source (5.48 MeV);
alpha range in $HeCF_4$





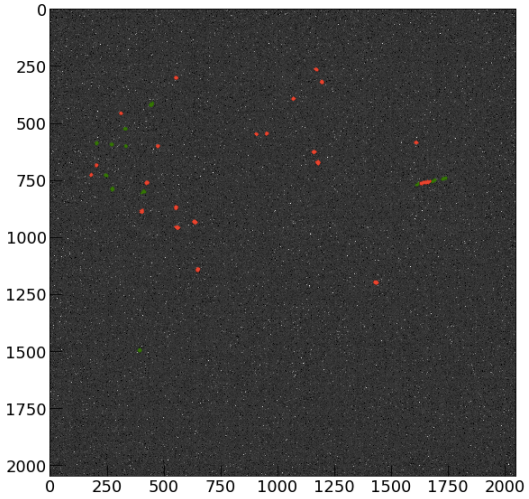
alpha range seems to be “determined” only by CF_4 and to decrease linearly with its amount

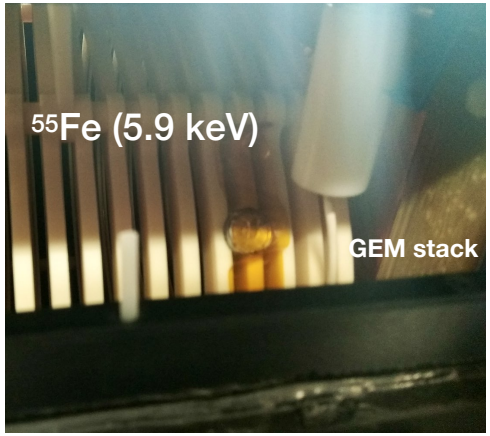
AmBe (5-11 MeV) neutron source;
nuclear recoil in $HeCF_4$ / 60:40

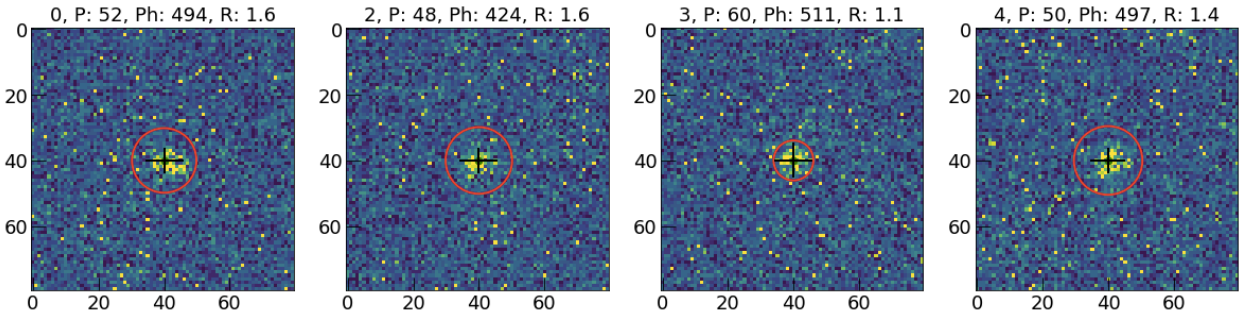


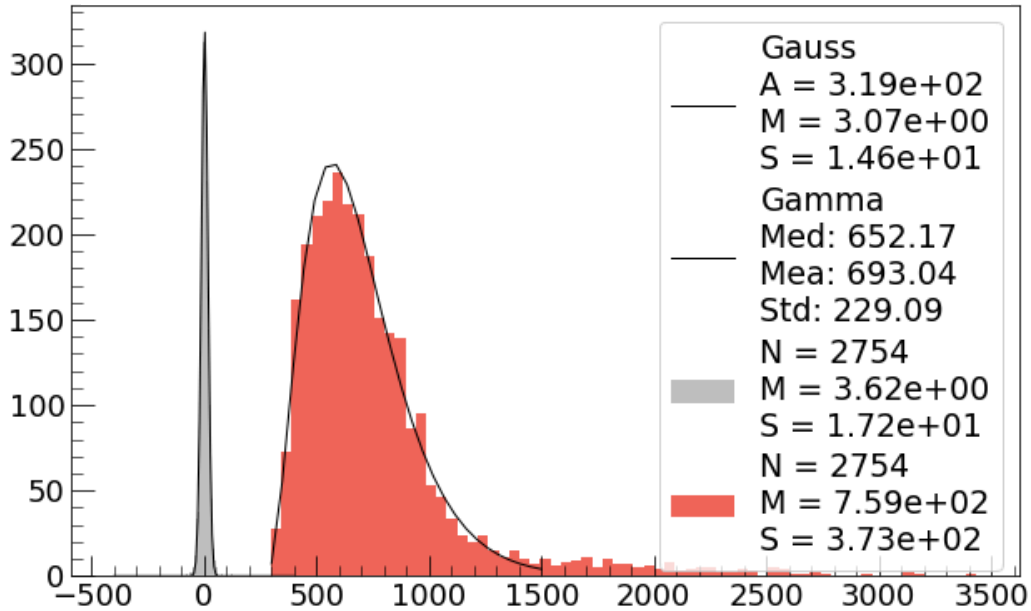
2740 [ph/mm] / 1.5 [ph/eV] —> 1.7 keV/mm (55 μm resolution)

Energy resolution ^{55}Fe (5.9 keV)









693 ph / 5900 eV
–> **0.12 ph/eV**.

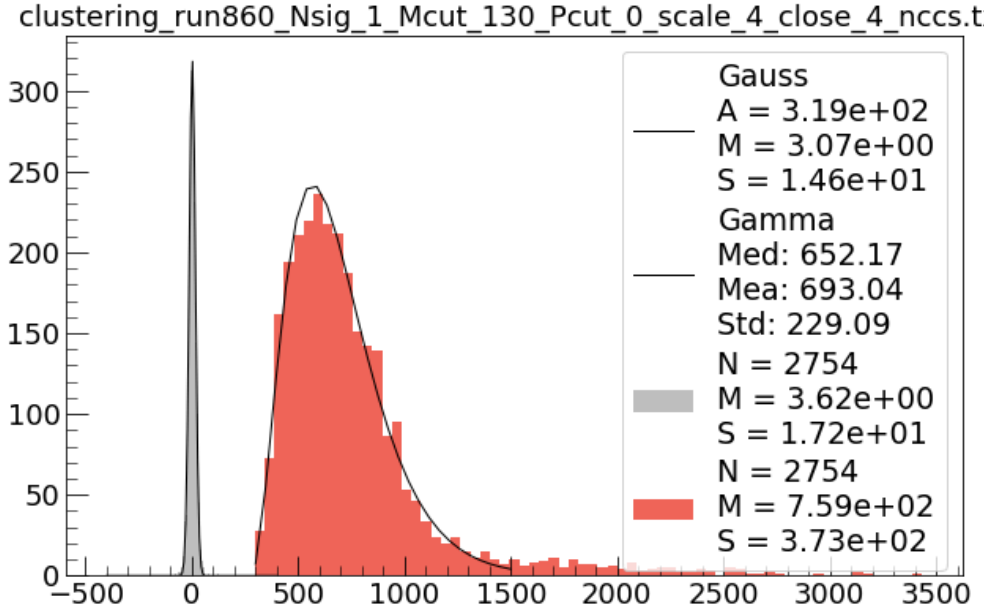
pedestal jitter 15 ph
@ 5 sigma **75 ph**
—> 75/0.12 —> **Th = 625 eV**

(pedestal based on average of the run within Fe source in the detector)

Energy resolution ~ **33% ~ 2 keV**

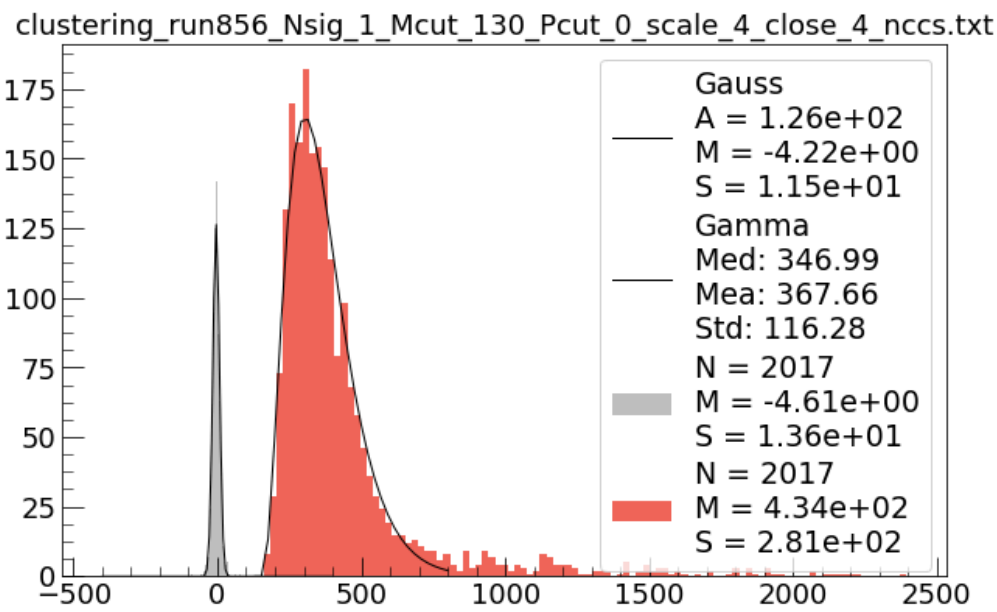
^{55}Fe (5.9 keV) fast analysis

LEMON - 460 - 0.6kV



693 ph / 5900 eV
–> **0.12 ph/eV**.

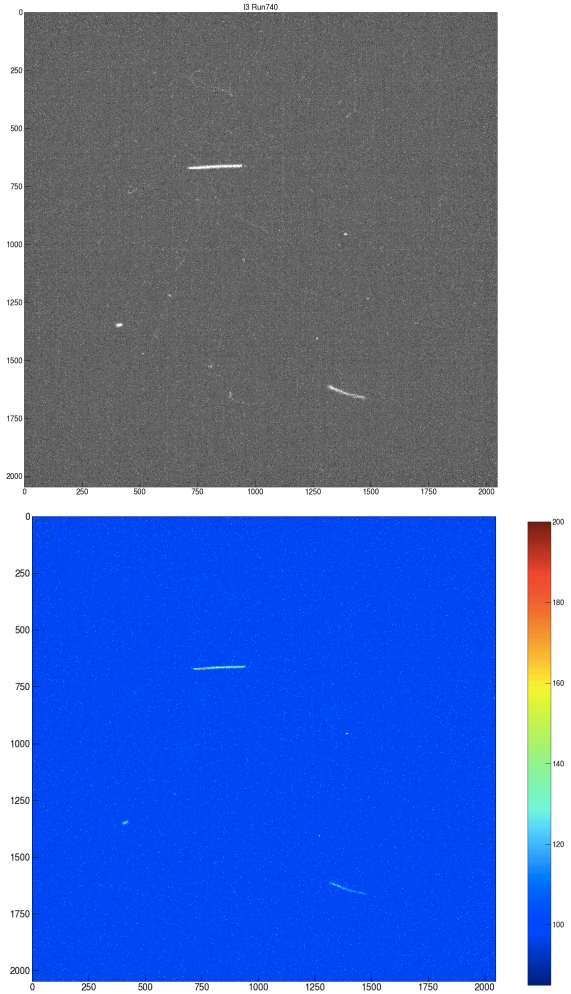
LEMON - 440 - 0.6kV



367 ph / 5900 eV
–> **0.06 ph/eV**.

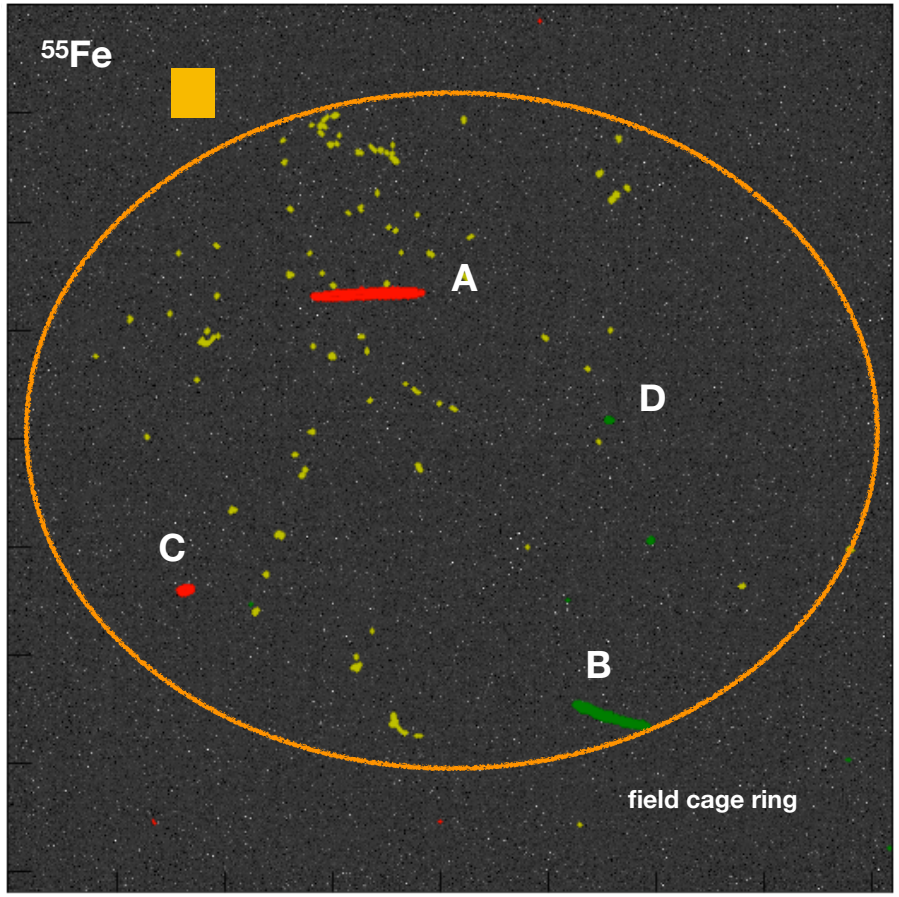
@450
590 ph / 5900 eV
–> **0.10 ph/eV**.

AmBe RUN740 setup, 2/450V/0.6kV/0.1s



NNC clustering

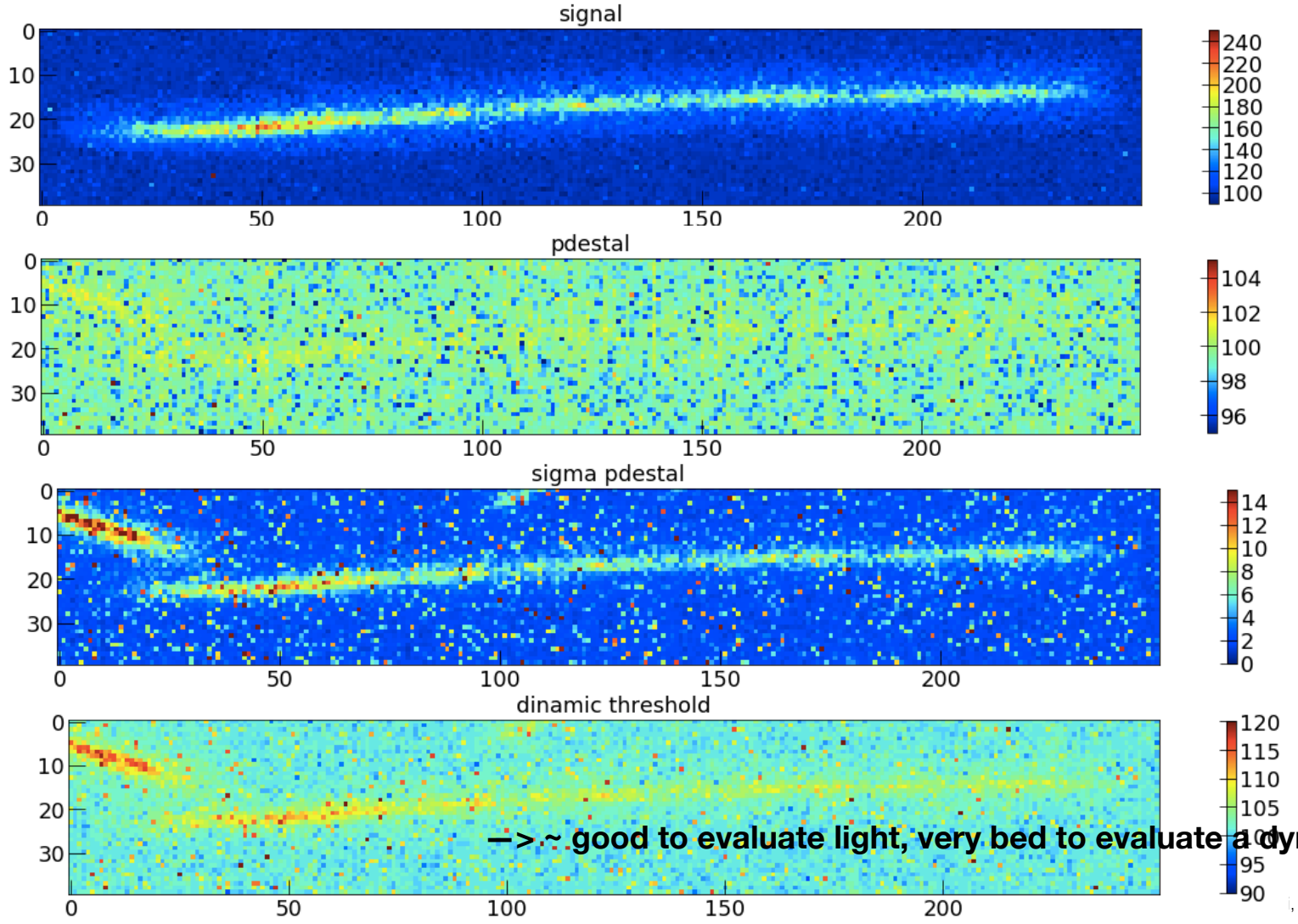
yellow < 10 ph/pixel
green 10< ph/pixel <15
red >10 ph/pixel



lead

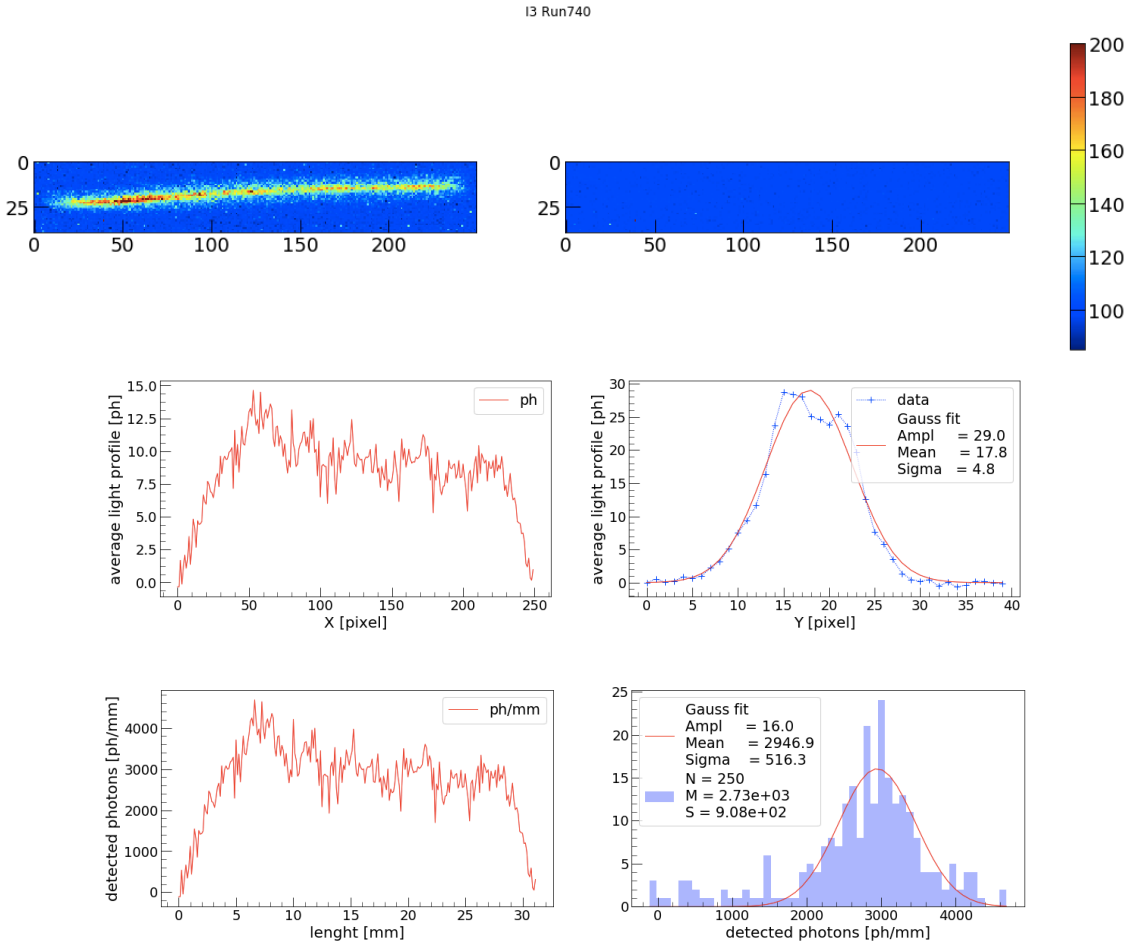
AmBe

Pedestal on RUN

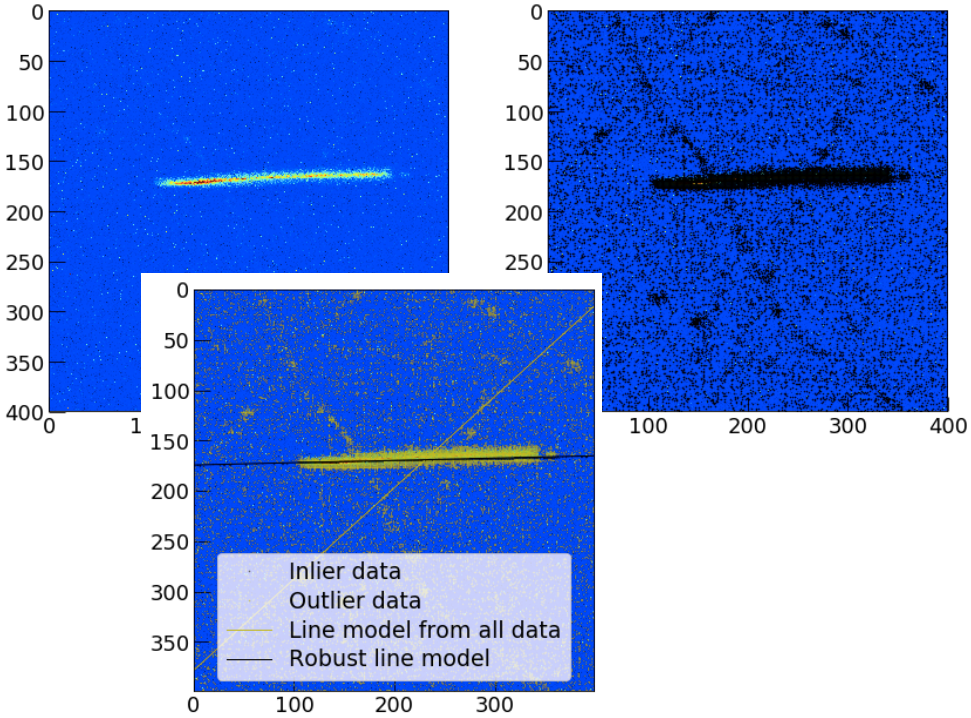


—> ~ good to evaluate light, very bed to evaluate a dynamic threshold

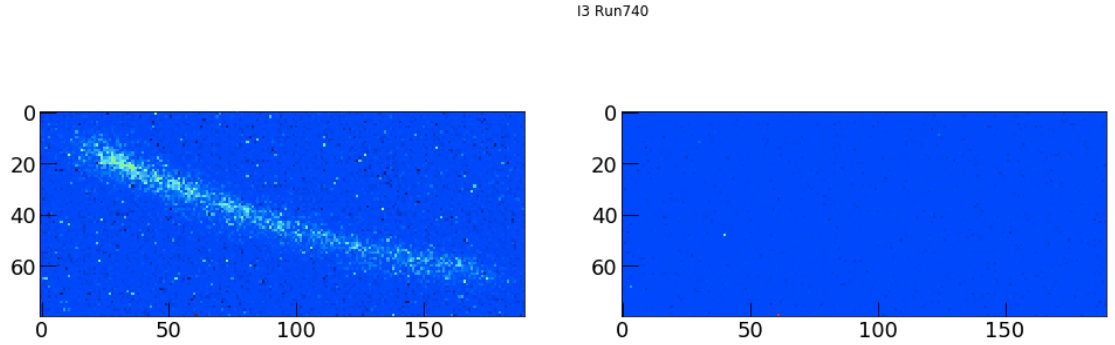
AmBe RUN740-I3, 2/450V/0.6kV/0.1s

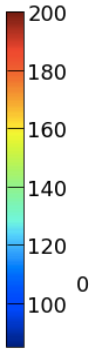


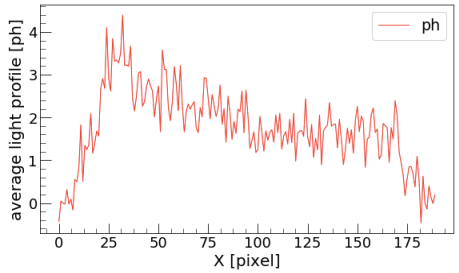
Pedestal mean: 99.09, sigma: 1.08, over th. (200) 25
Sigma mean: 2.54, sigma: 2.14, over th. (50) 16
Signal: 85137 photons 851.37 keV

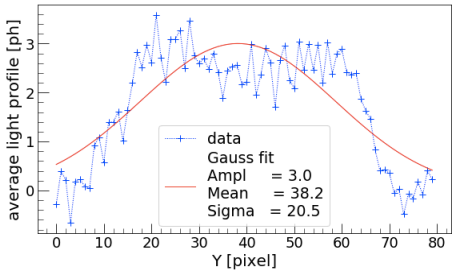


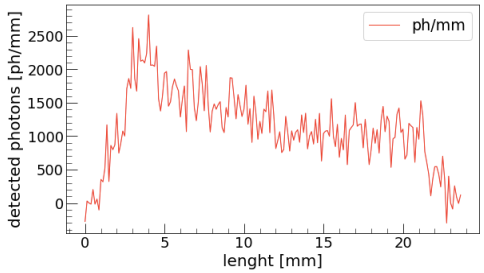
AmBe RUN740-I3, 2/450V/0.6kV/0.1s

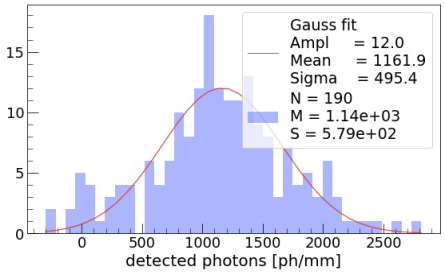




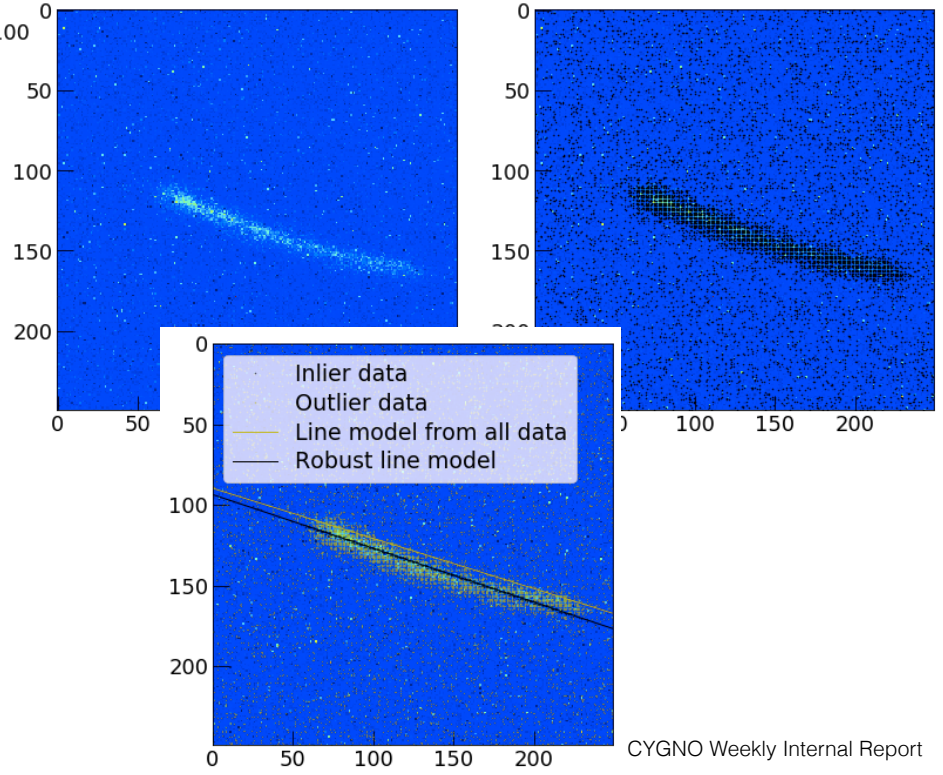




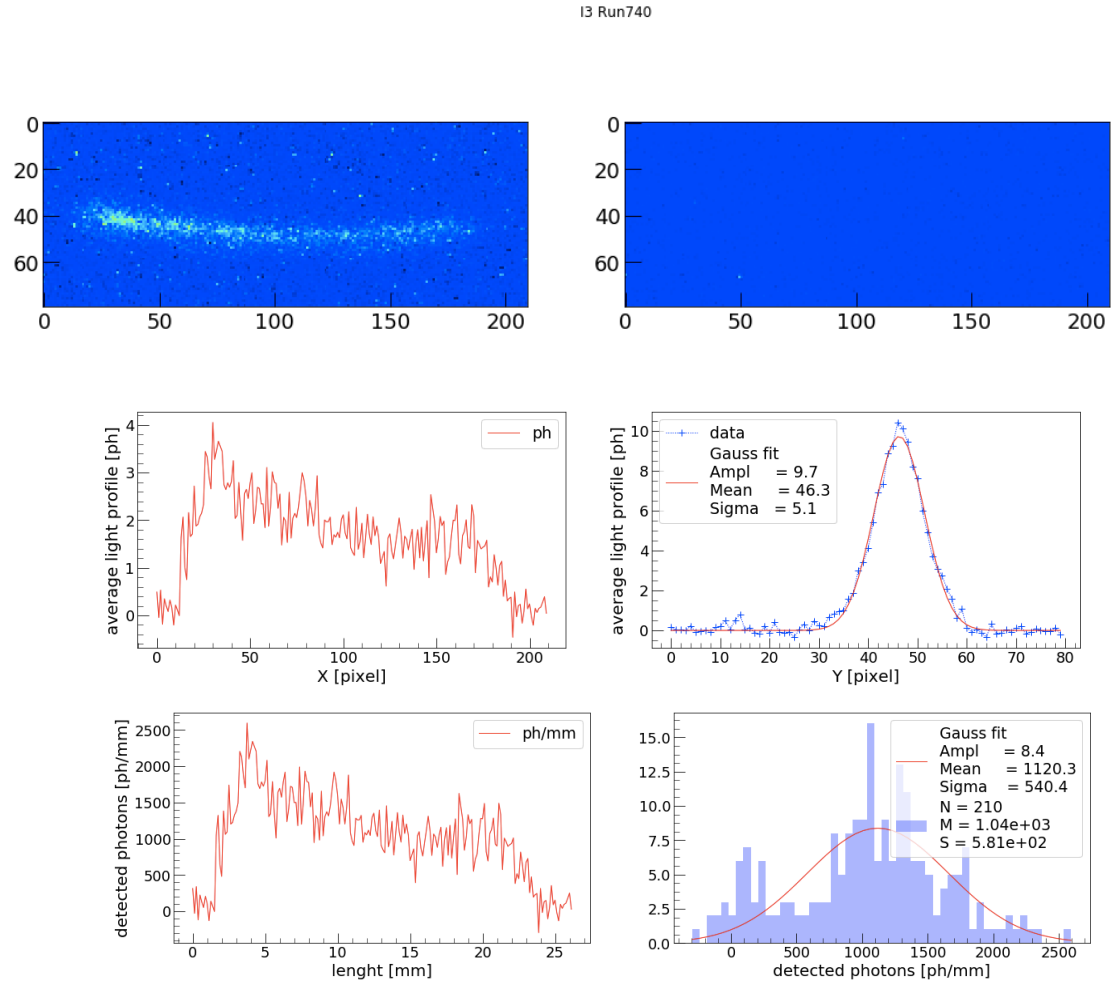


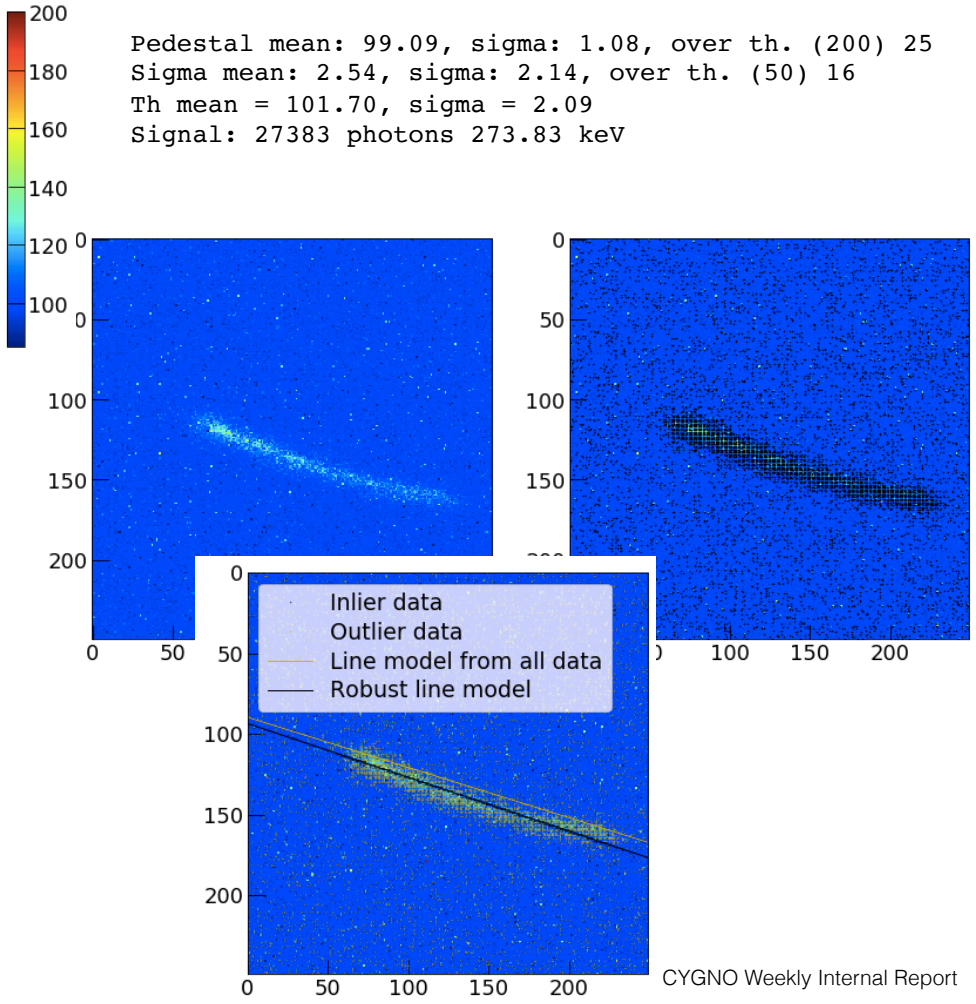



```
Pedestal mean: 99.09, sigma: 1.08, over th. (200) 25
Sigma mean: 2.54, sigma: 2.14, over th. (50) 16
Th mean = 101.71, sigma = 2.36
Signal: 27045 photons 270.45 keV
```

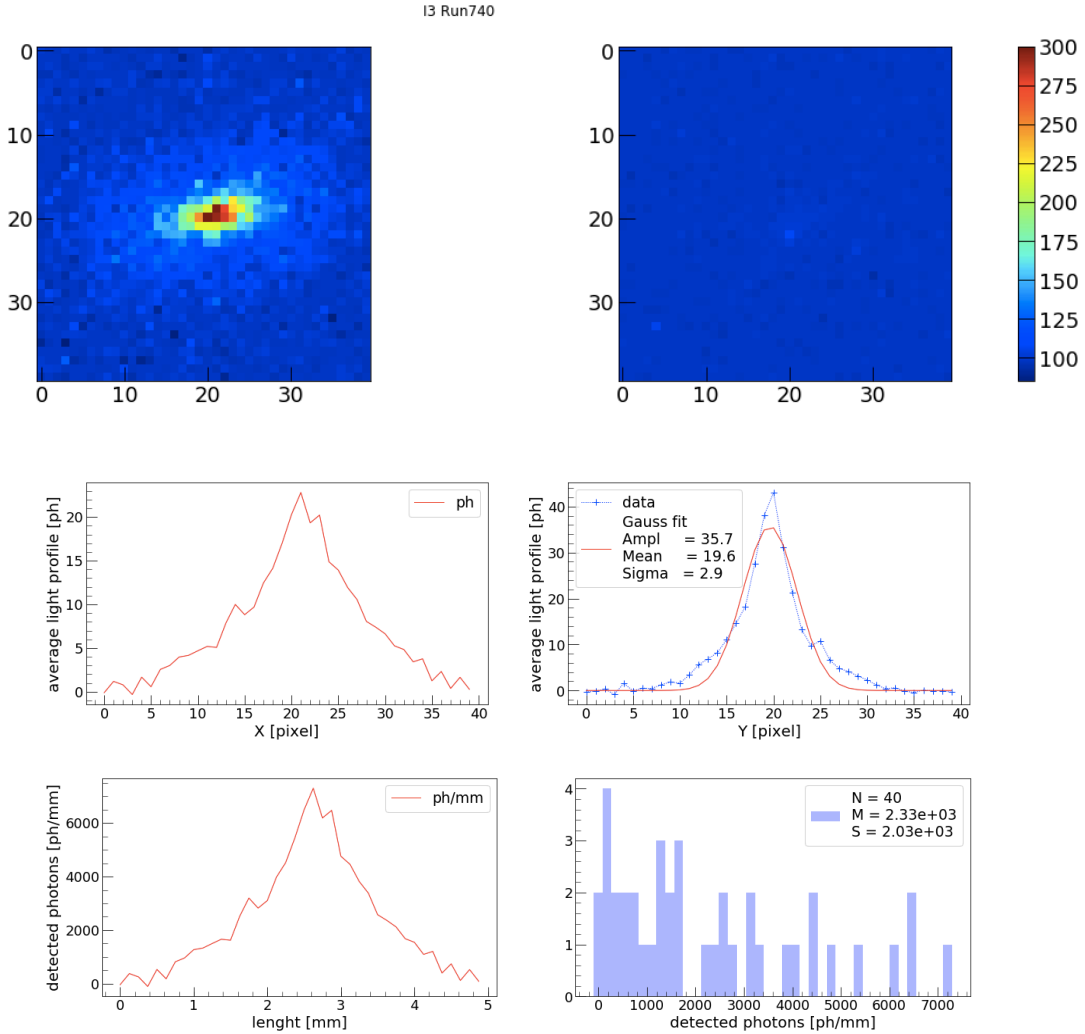


AmBe RUN740-I3, 2/450V/0.6kV/0.1s

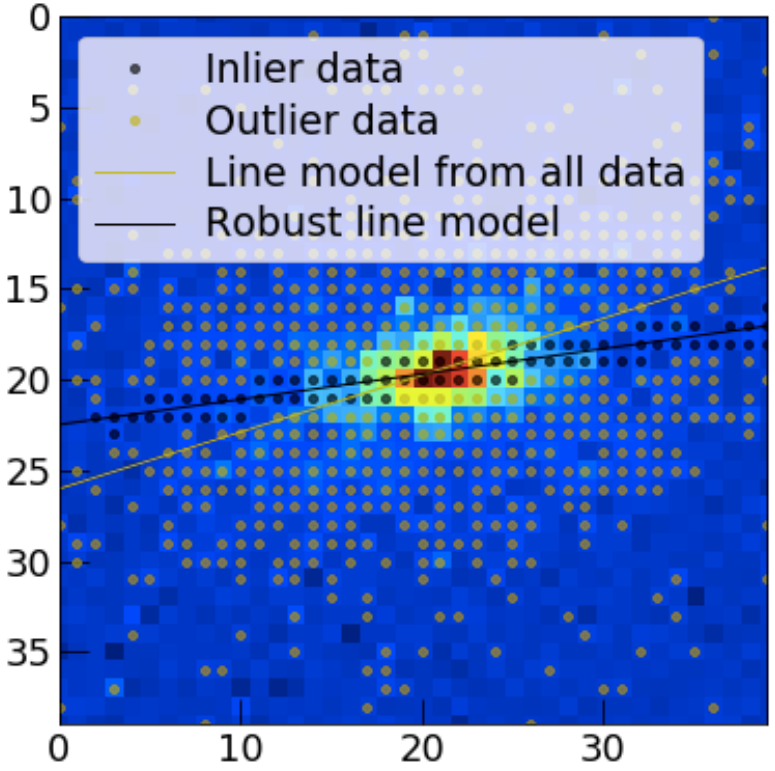




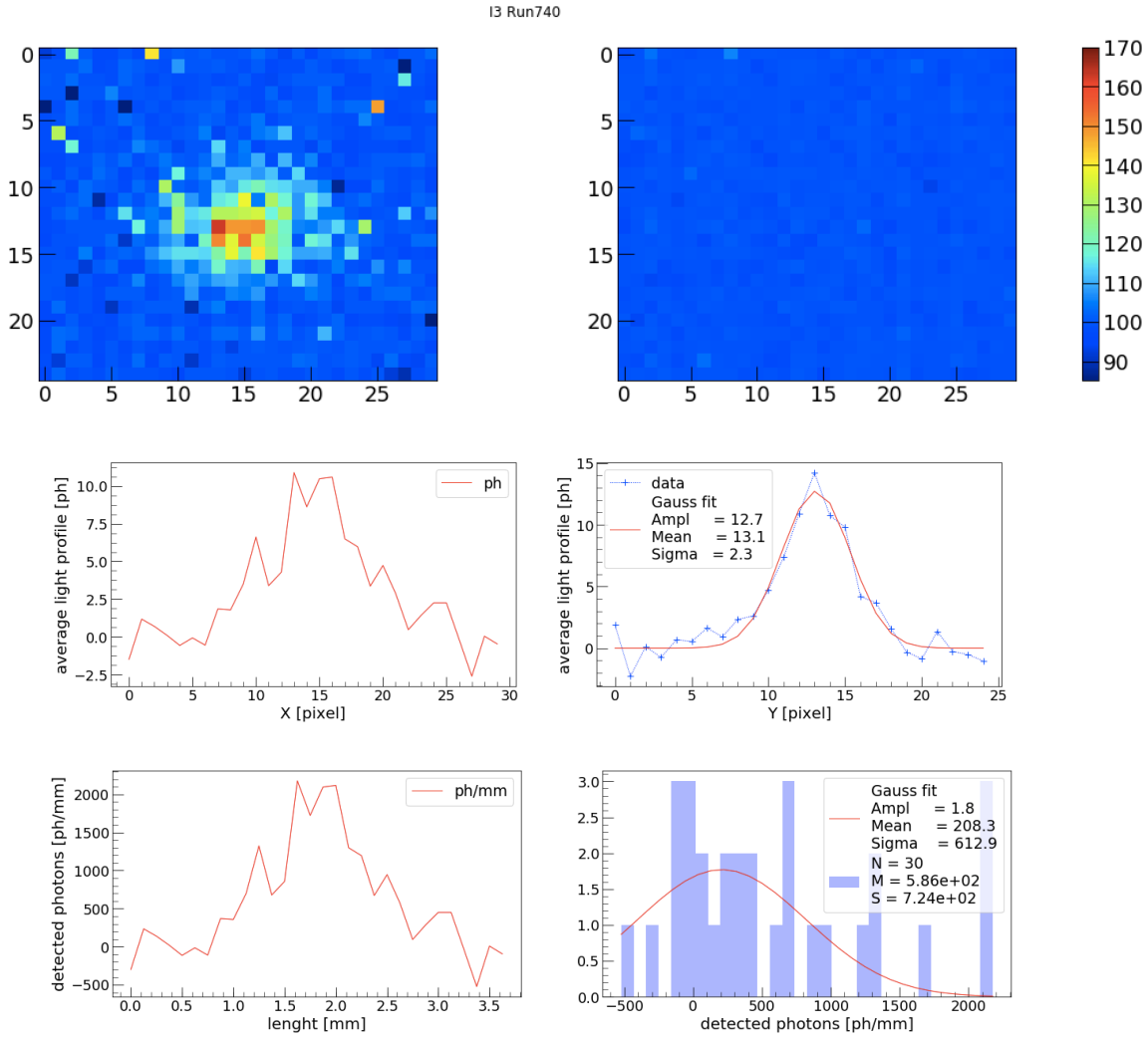
AmBe RUN740-I3, 2/450V/0.6kV/0.1s



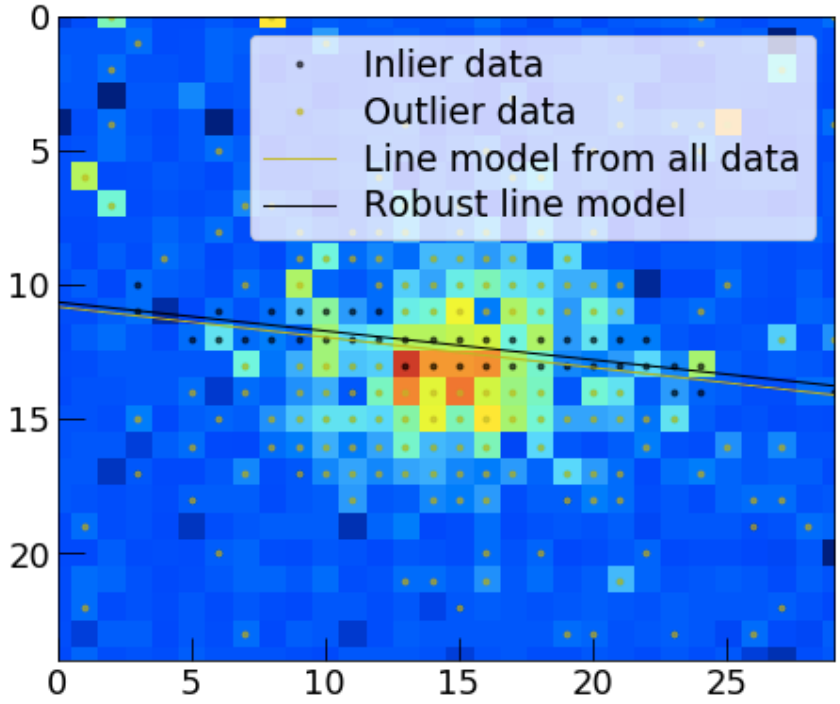
PPedestal mean: 99.09, sigma: 1.10, over th. (300) 11
Sigma mean: 2.54, sigma: 2.14, over th. (50) 16
Th mean = 102.15, sigma = 2.82
Signal: 11661 photons 116.61 keV



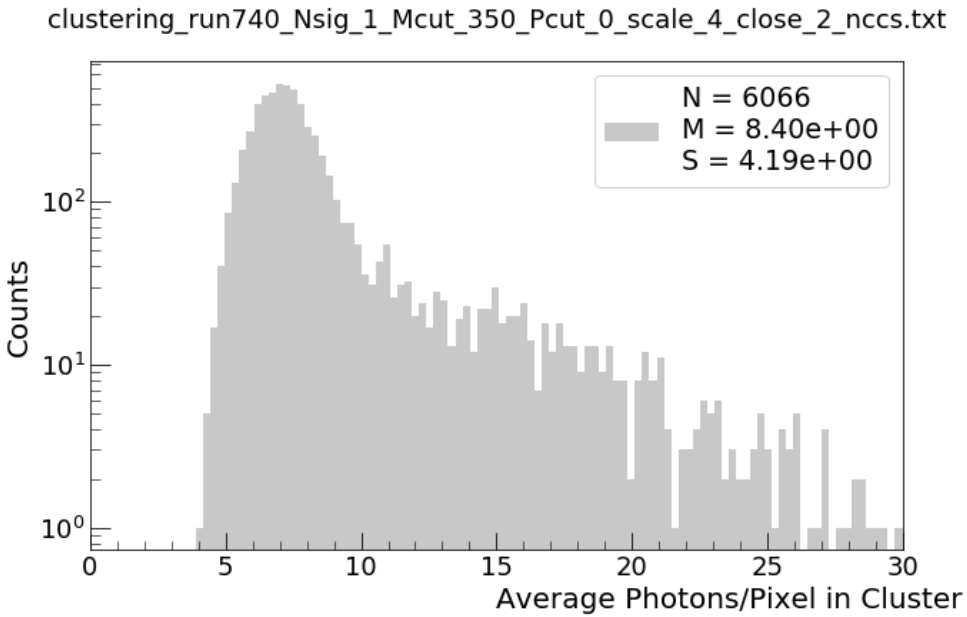
AmBe RUN740-I3, 2/450V/0.6kV/0.1s



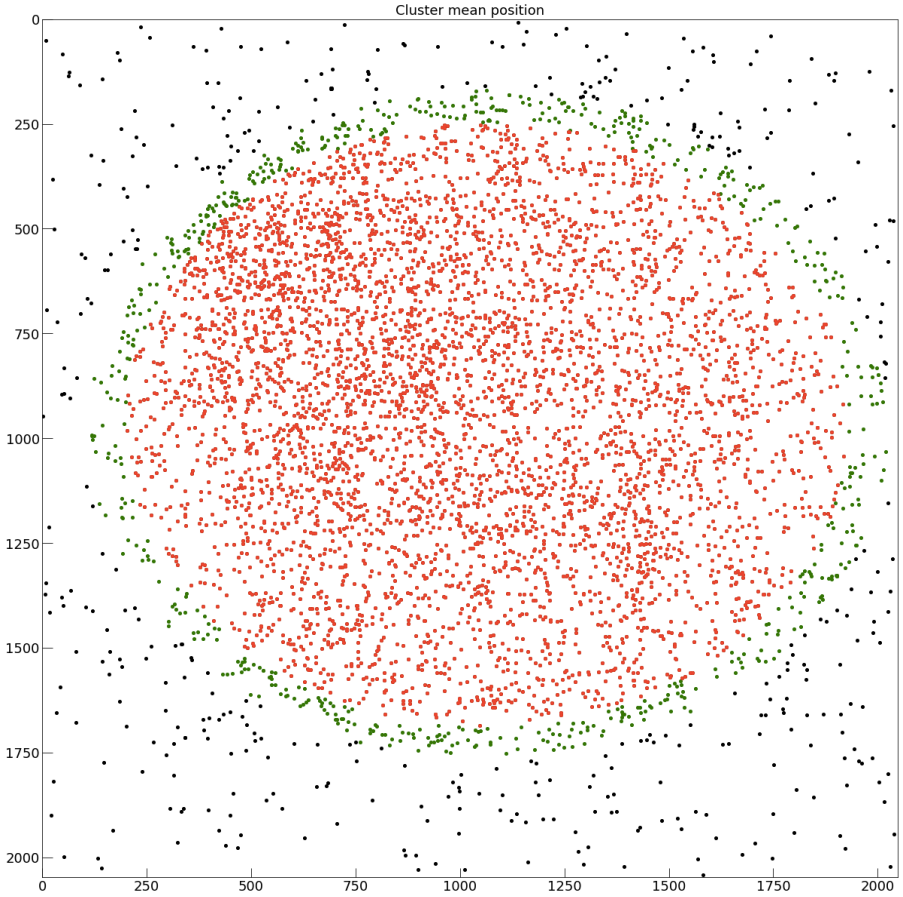
Pedestal mean: 99.09, sigma: 1.07, over th. (170) 43
Sigma mean: 2.54, sigma: 2.14, over th. (50) 16
Th mean = 102.17, sigma = 2.96
Signal: 2195 photons 21.96 keV



AmBe RUN740, 2/450V/0.6kV/0.1s

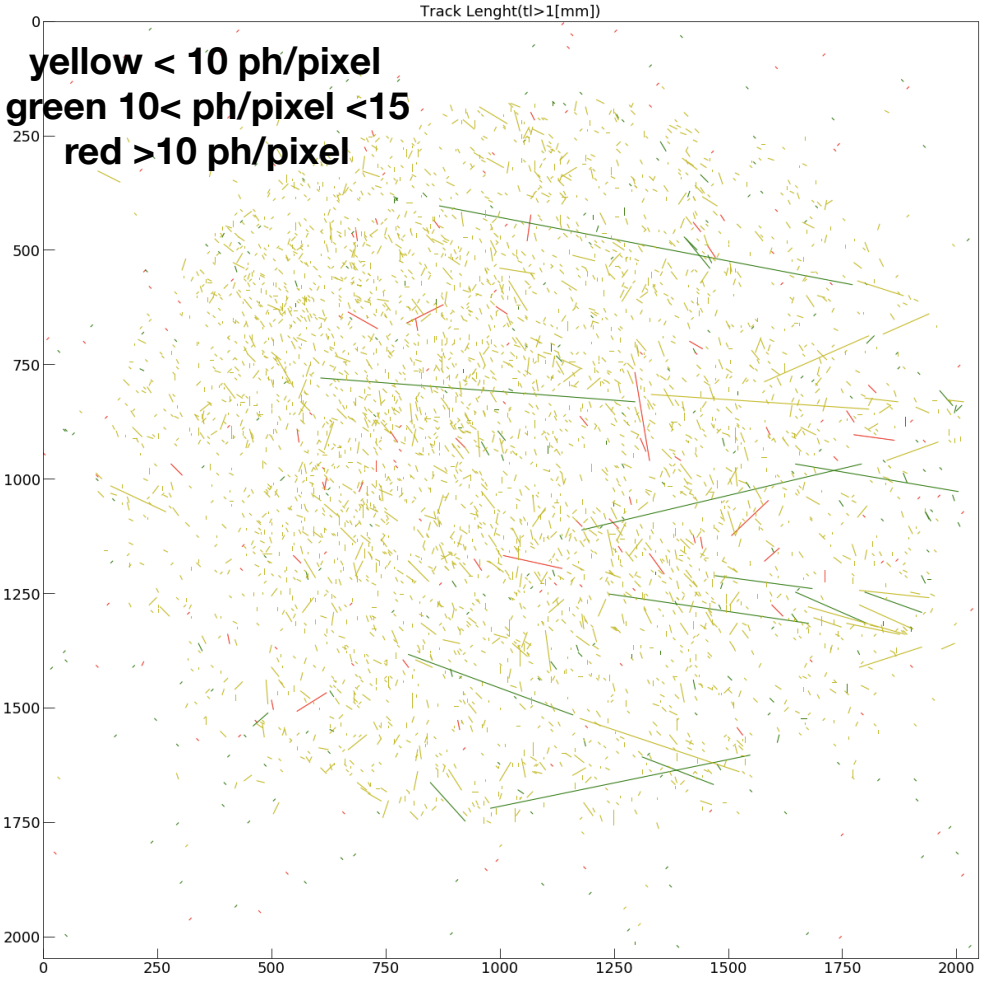


NNC clustering pixel distribution

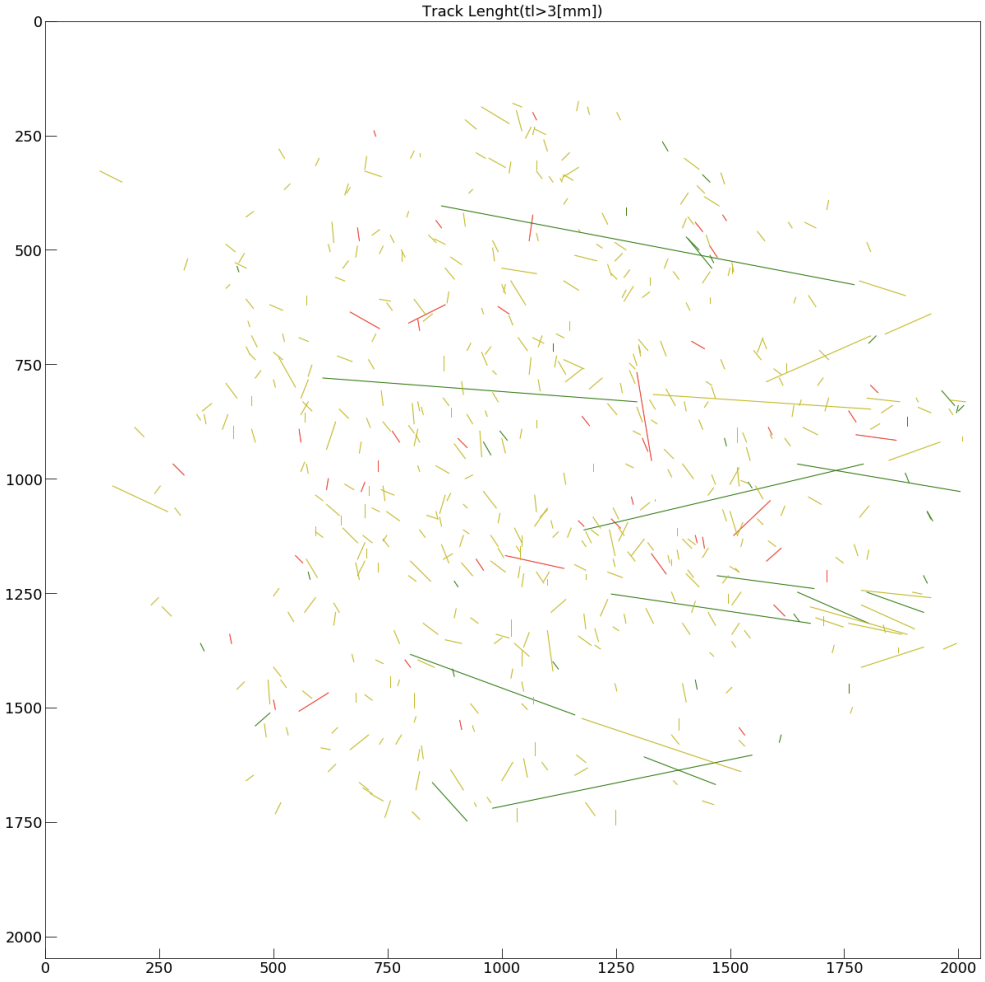


NNC clustering mean cluster position

AmBe RUN740, 2/450V/0.6kV/0.1s

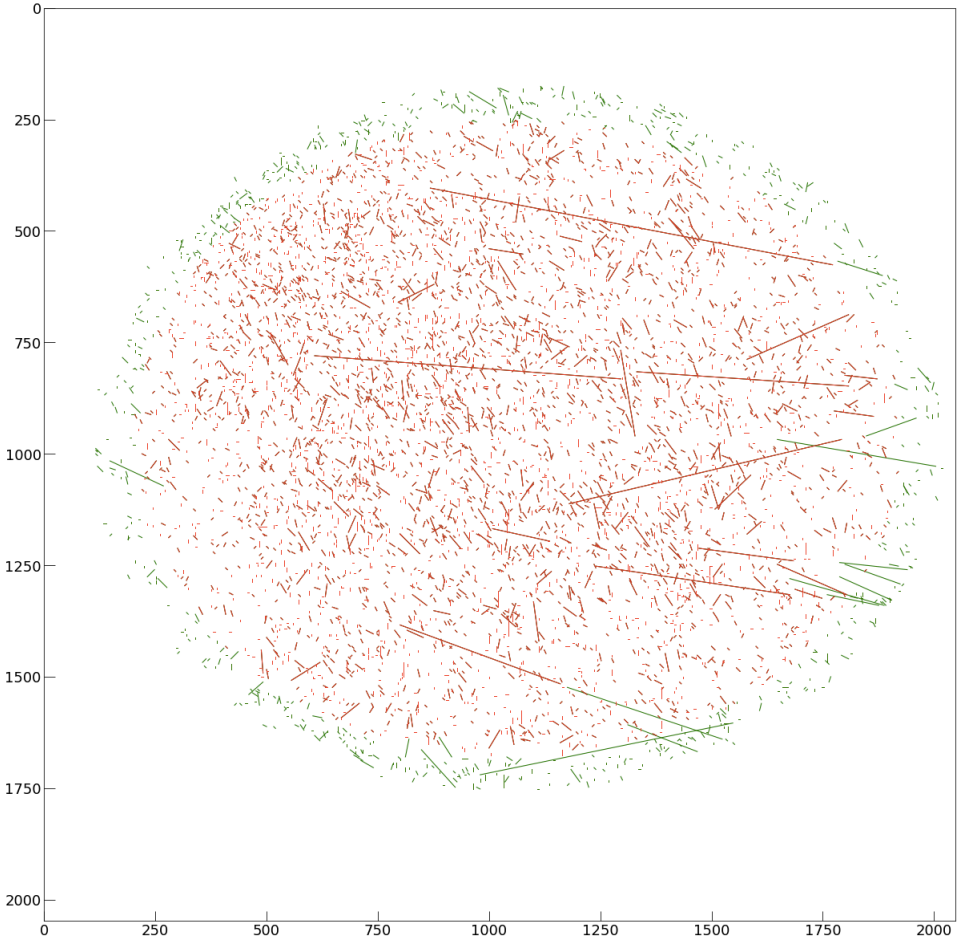


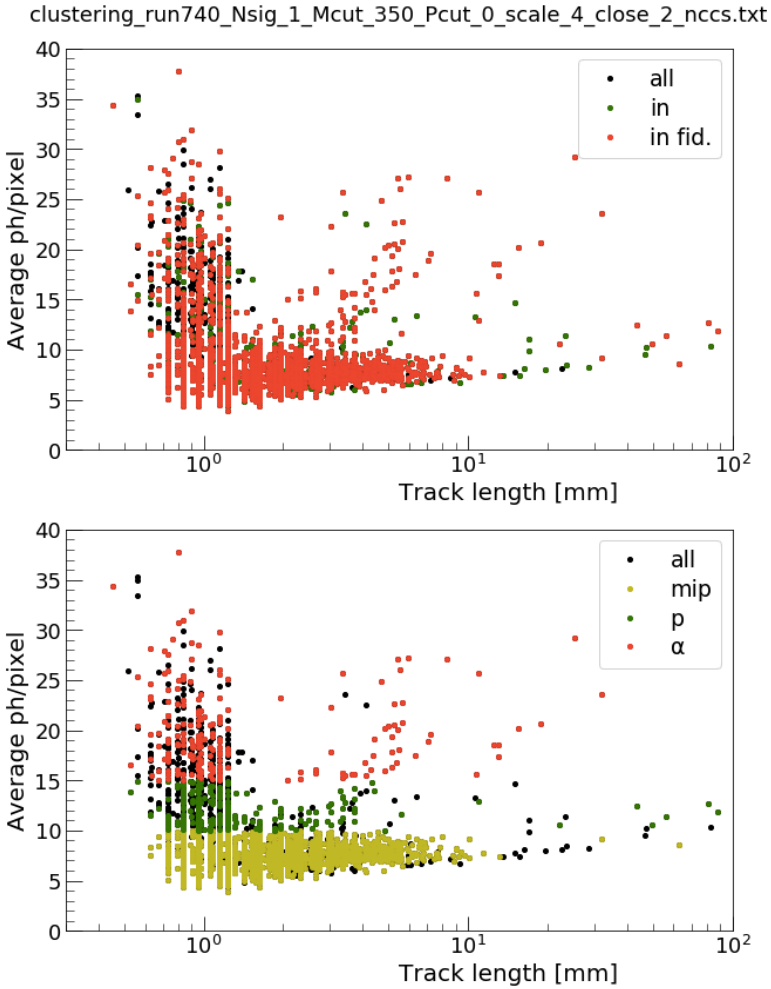
NNC clustering length, L>1 mm



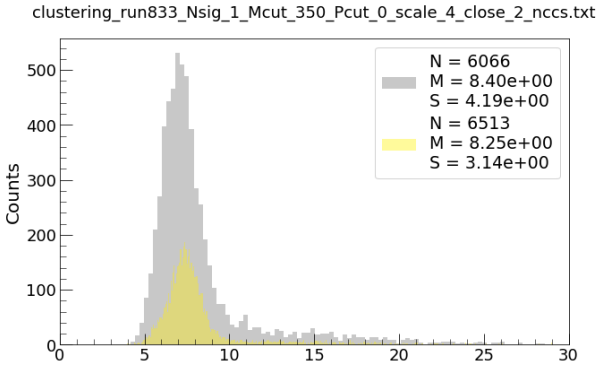
NNC clustering length, L>3 mm

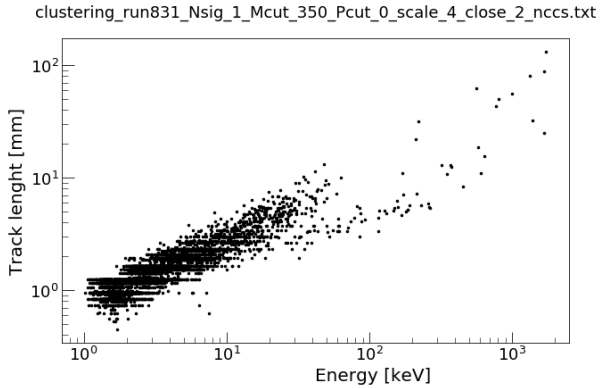
AmBe RUN740, 2/450V/0.6kV/0.1s

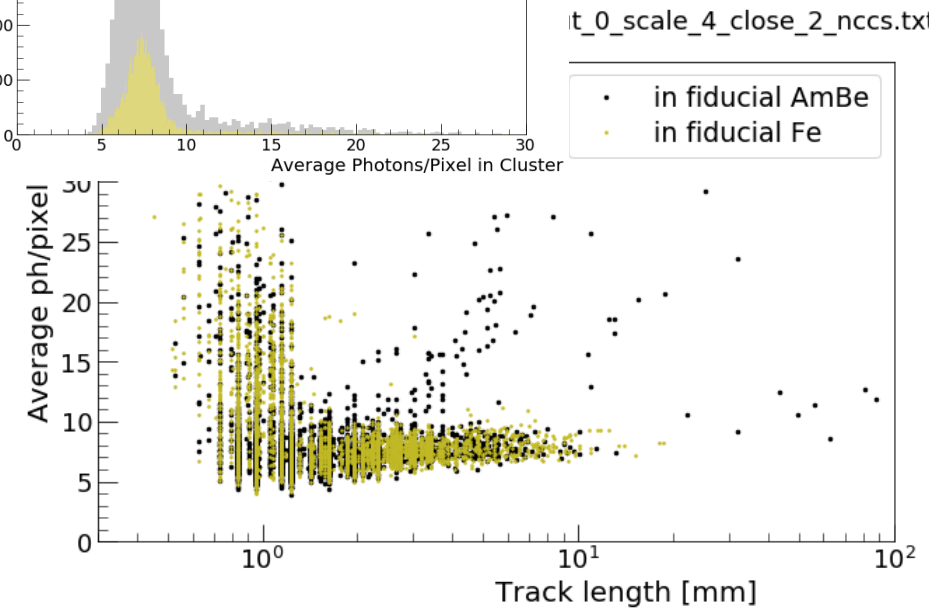


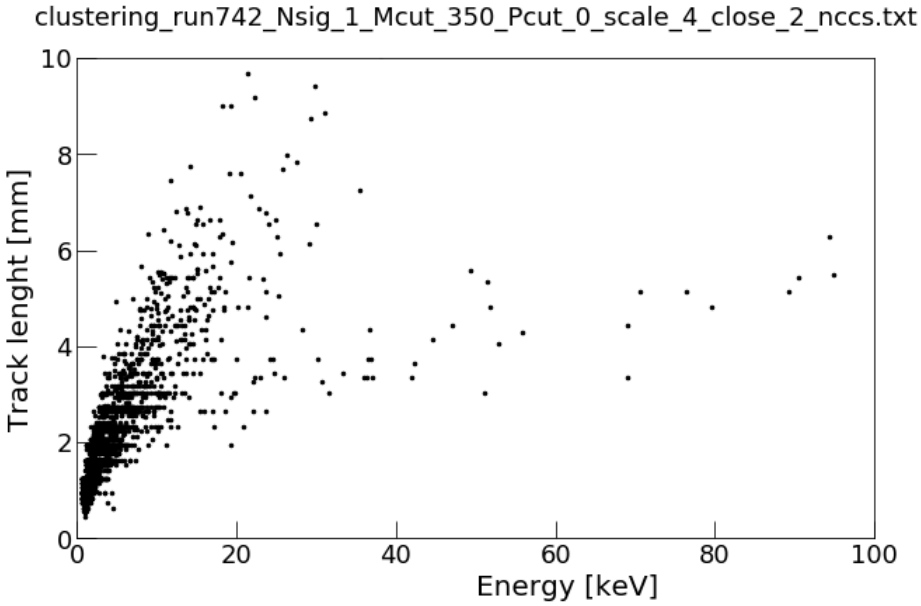


AmBe (Fe)





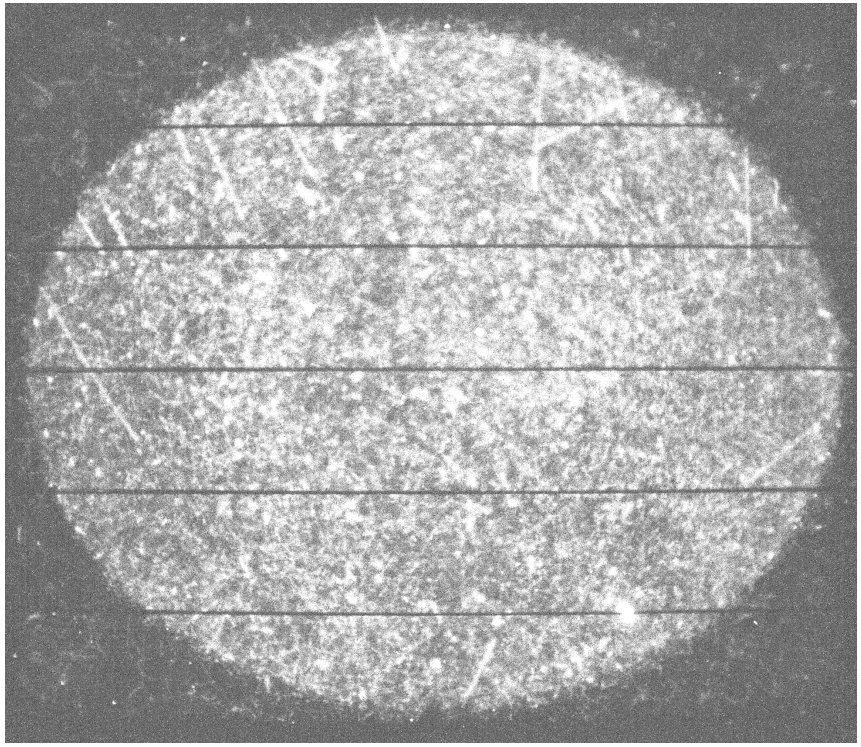




overexposing run 833 (Fe @ 450) on run 740 (AmBe @ 450)

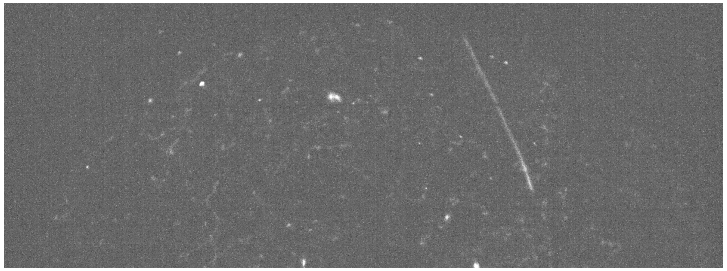
LEMOn @ ENEA FNG

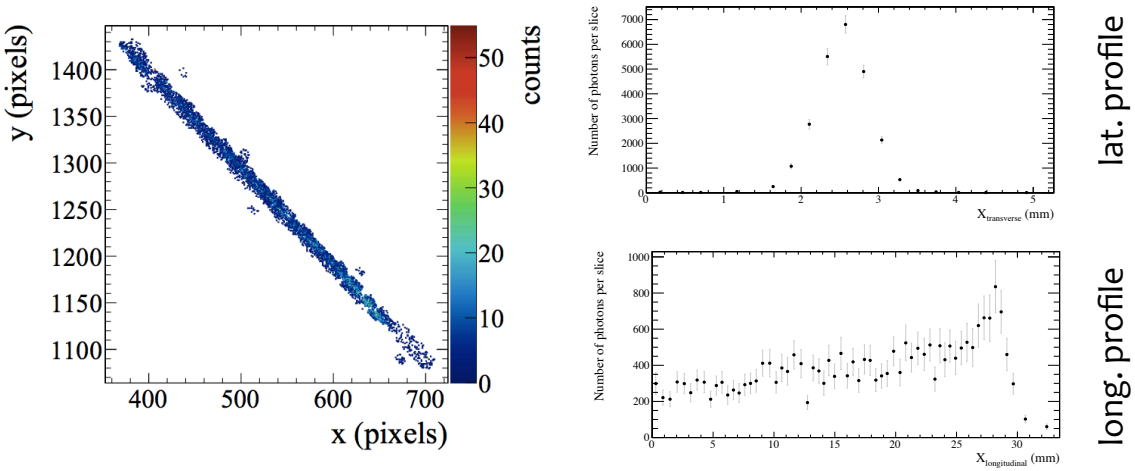
5s exposure @ 2.45 MeV neutrons
Frascati Neutron Generator



test beam 18-20 June 2018
(tanks to FNG)

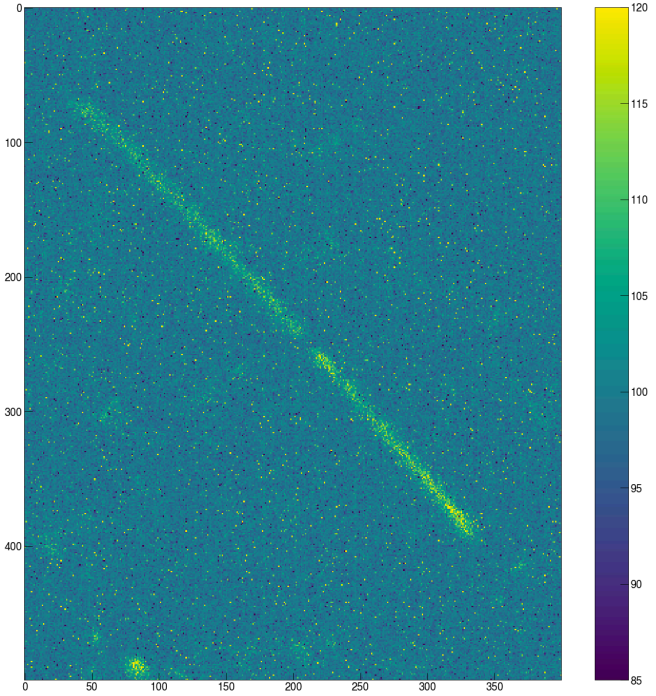
0.1s exposure @ 2.45 MeV neutrons
Frascati Neutron Generator



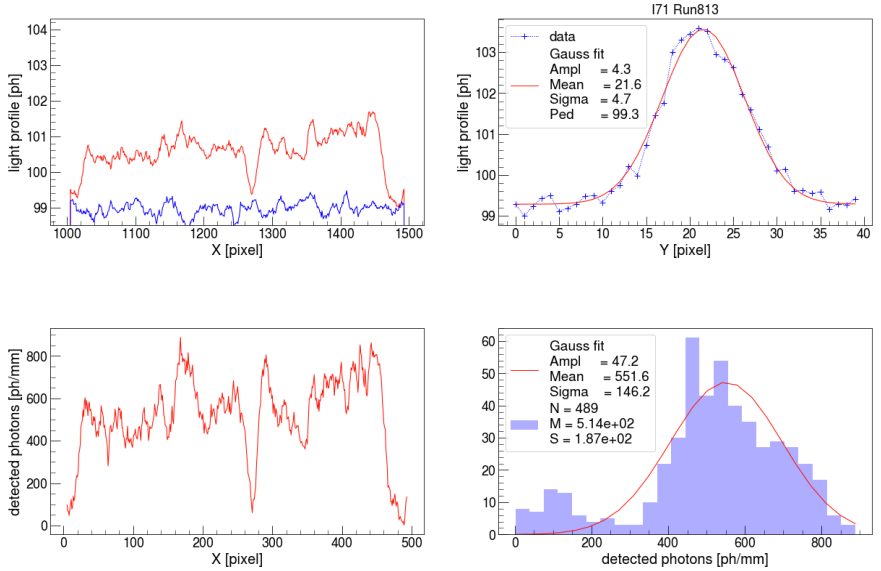


Longitudinal light profile shows a typical Bragg peak shape

LEMOn @ ENEA FNG



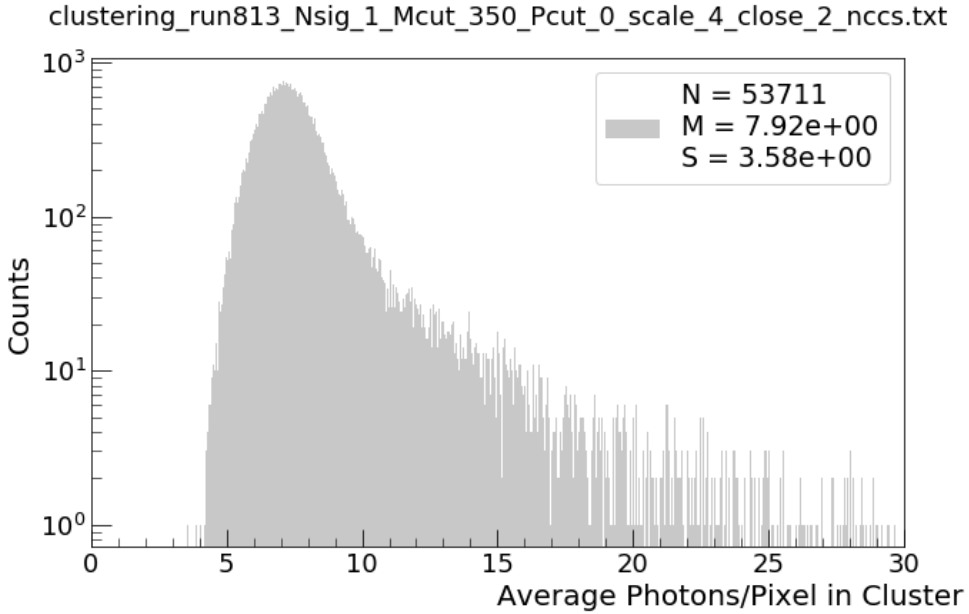
GEM 440V/2kV/cm - drift 0.6kV/cm - 100 ms



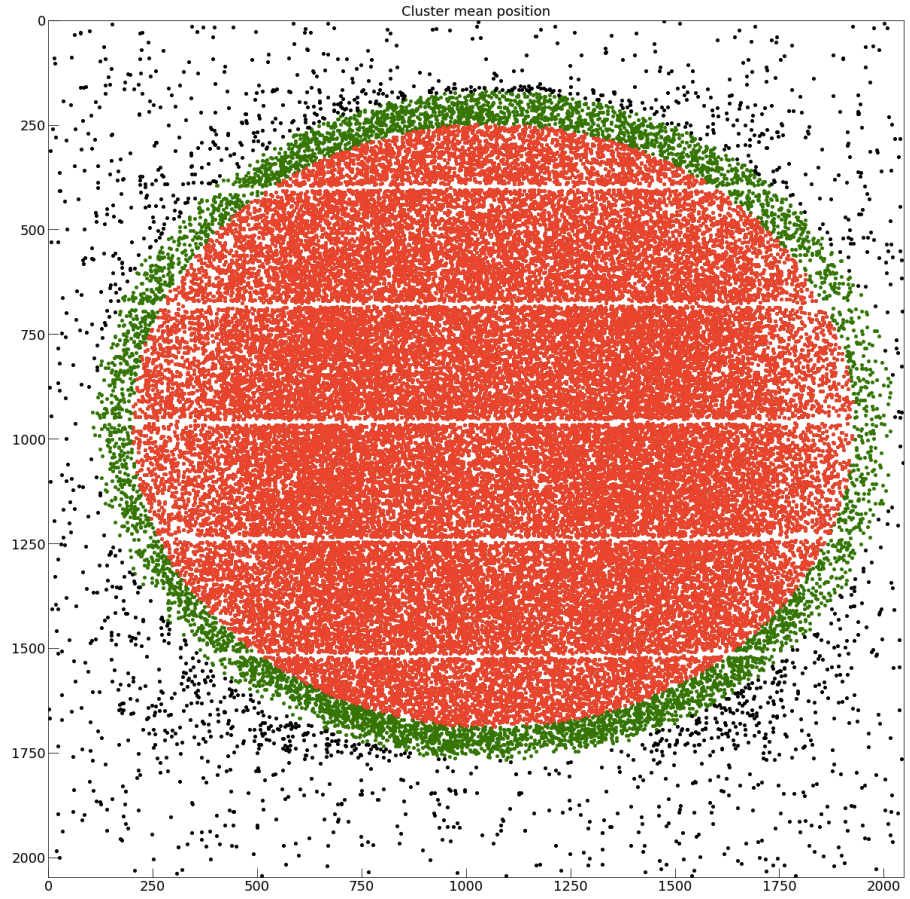
550 [ph/mm] / 0.06 [ph/eV] —> 9.2 keV/mm (125 µm resolution)

~ 0.575 MeV (6 cm) nuclear recoil

FNG-RUN813-2/440V/0.6kV/0.1s

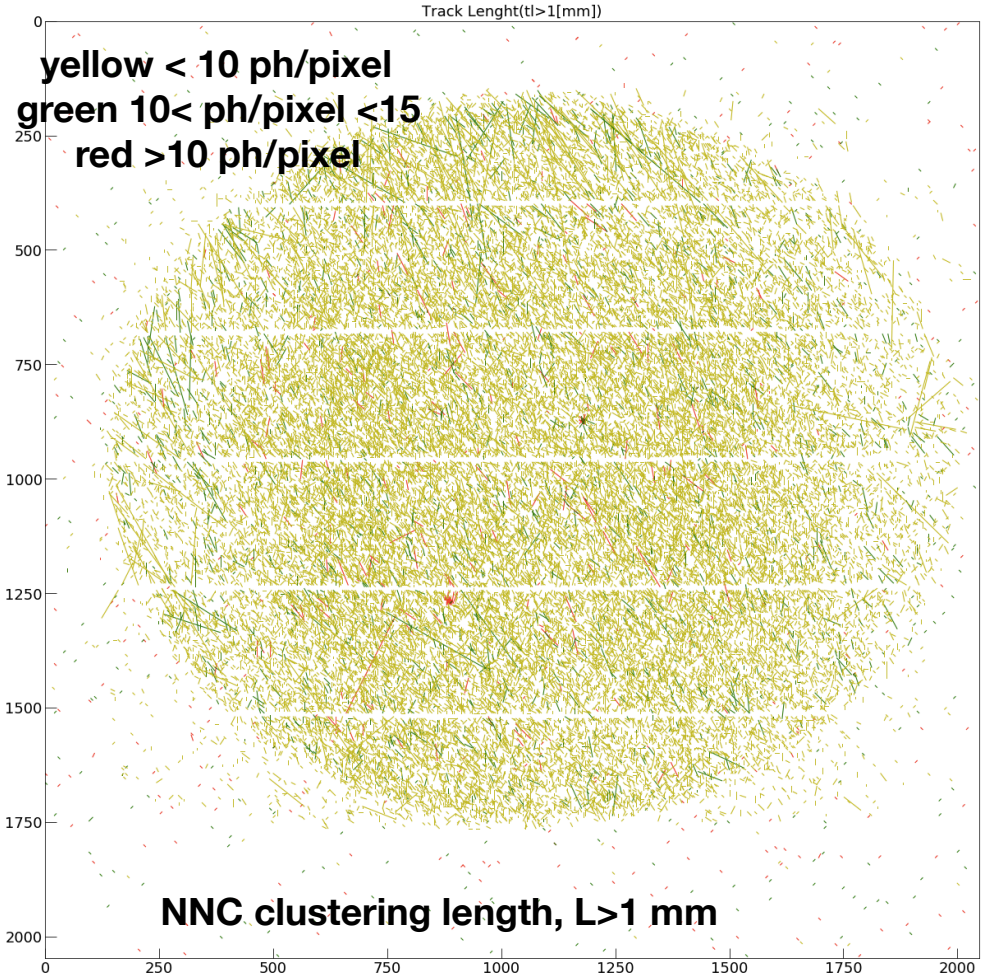


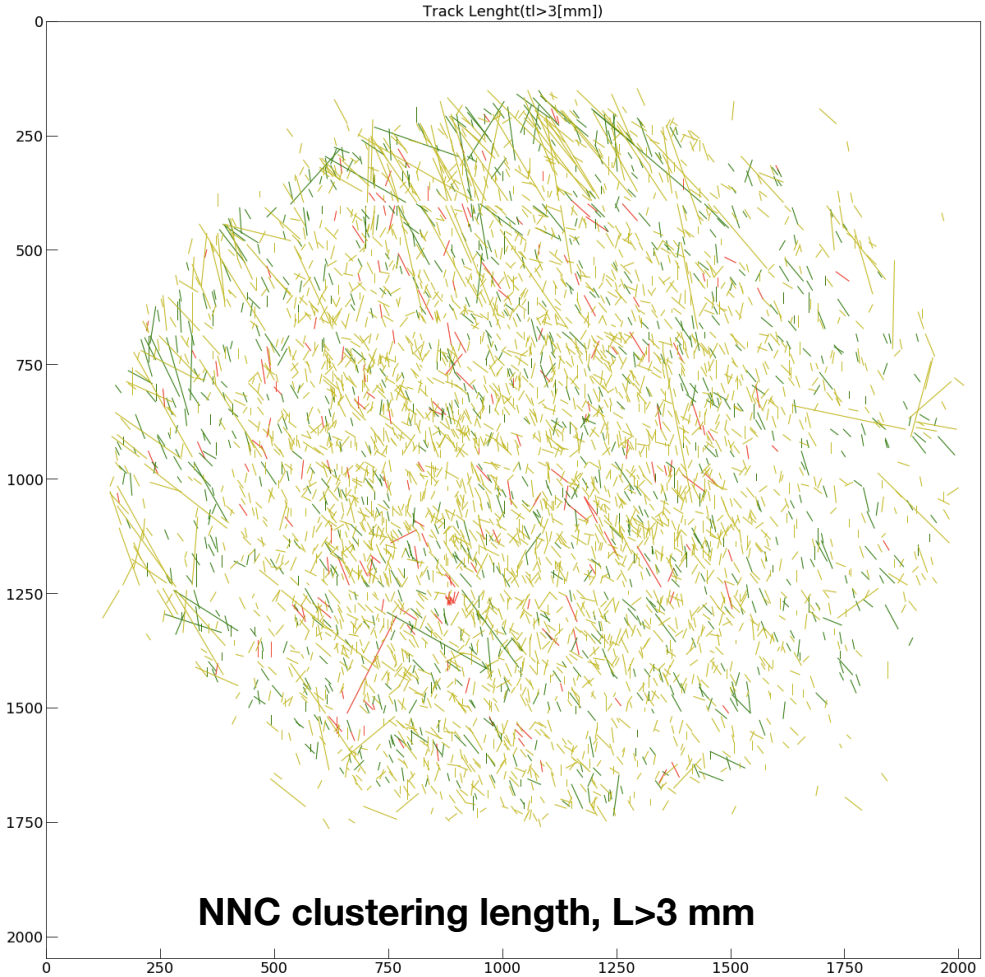
NNC clustering pixel distribution



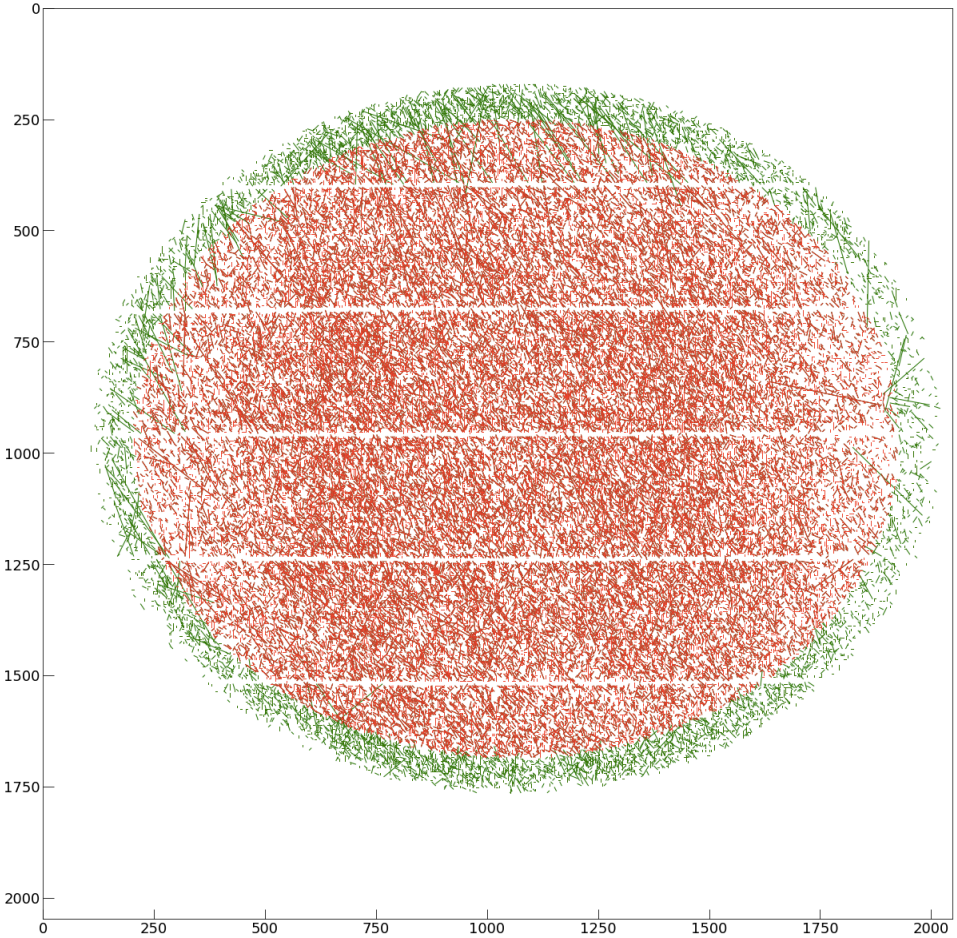
NNC clustering mean cluster position

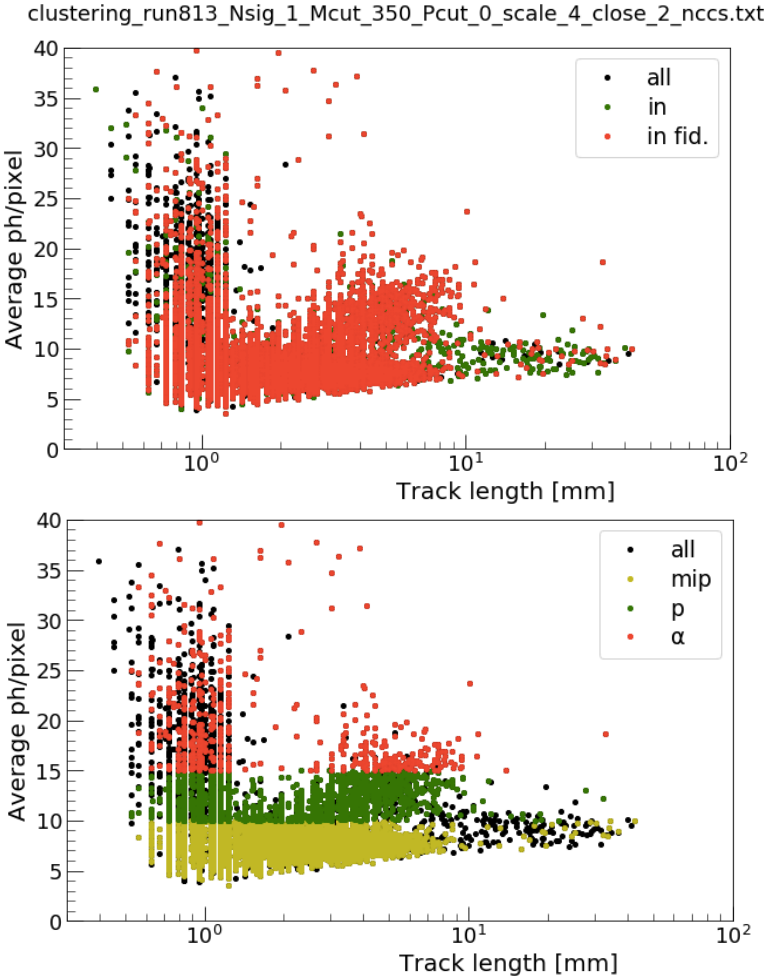
FNG-RUN813-2/440V/0.6kV/0.1s



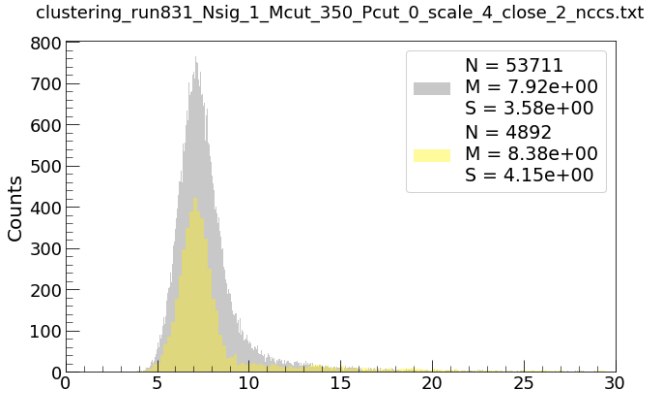


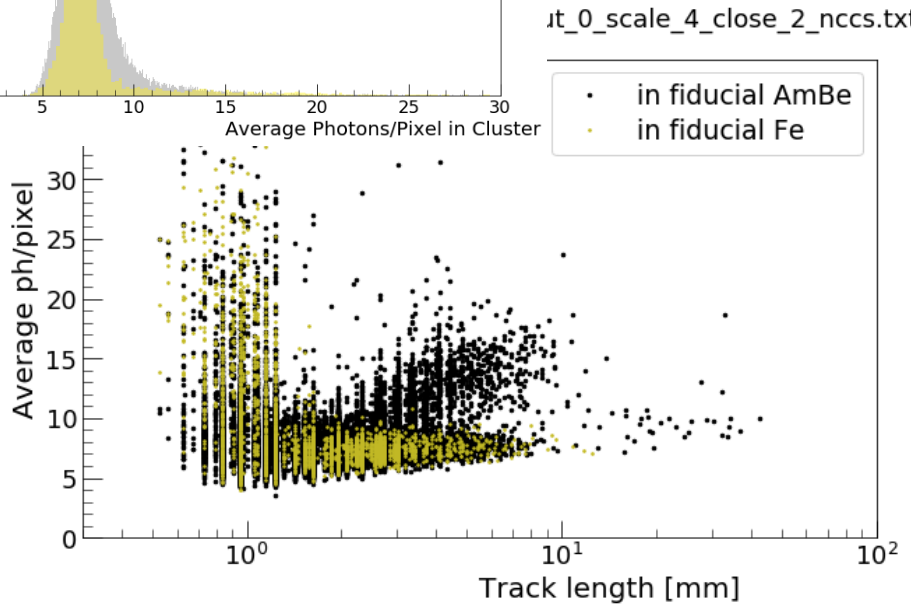
FNG-RUN813-2/440V/0.6kV/0.1s

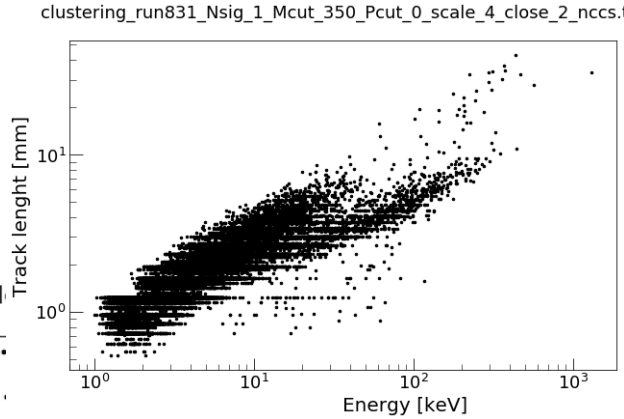


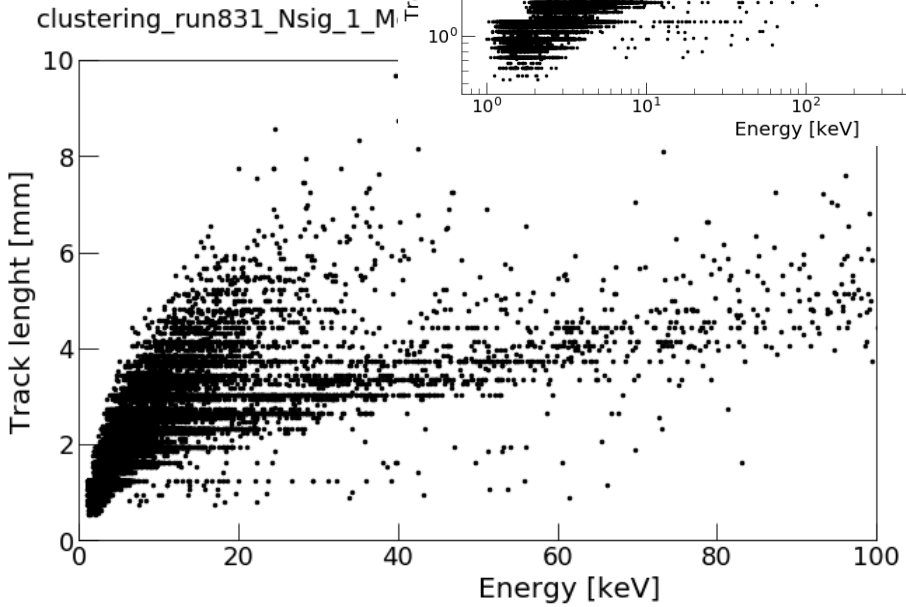


FNG (Fe)



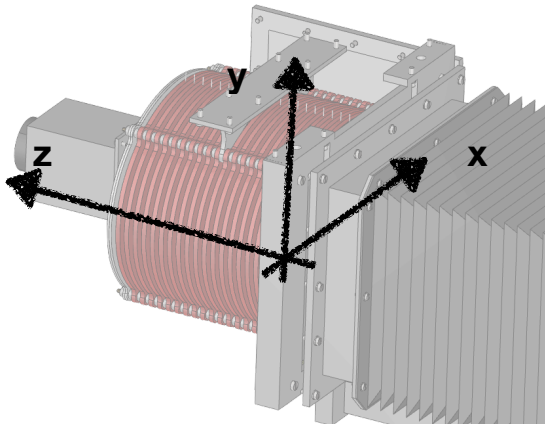


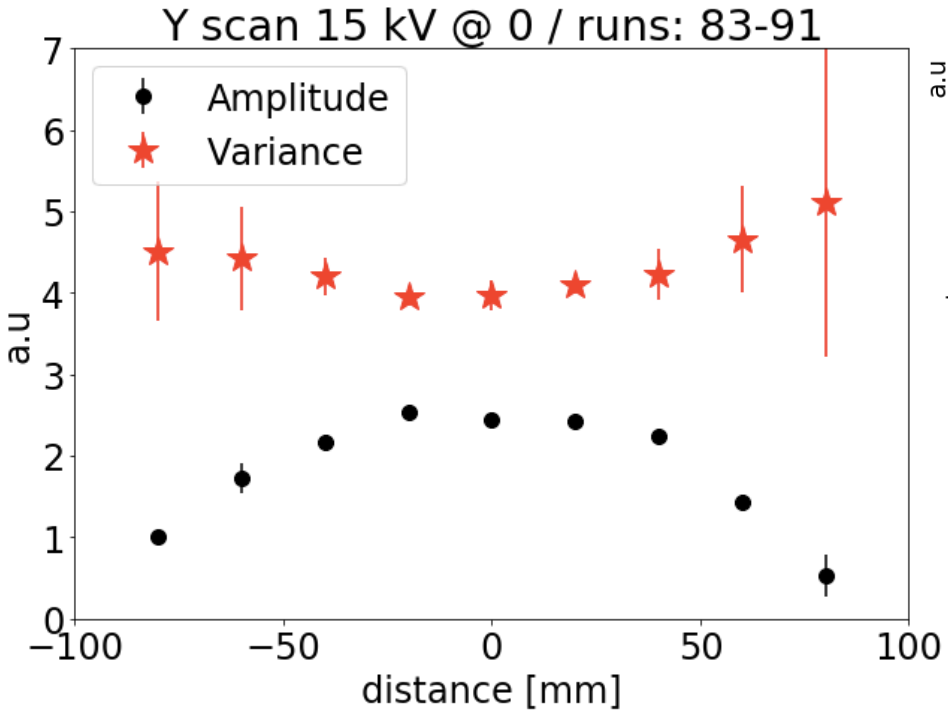


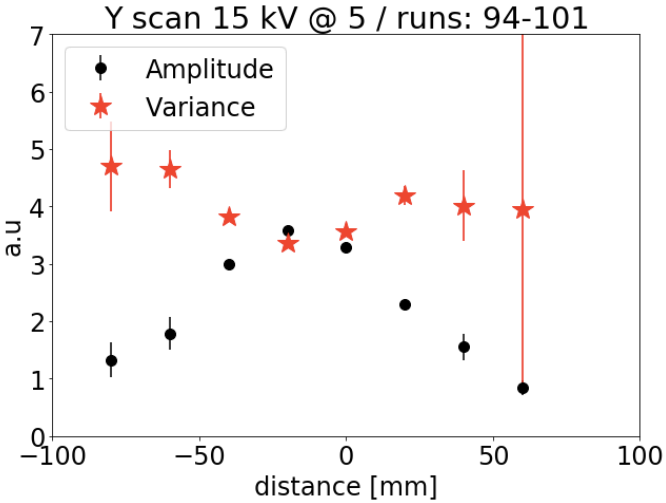


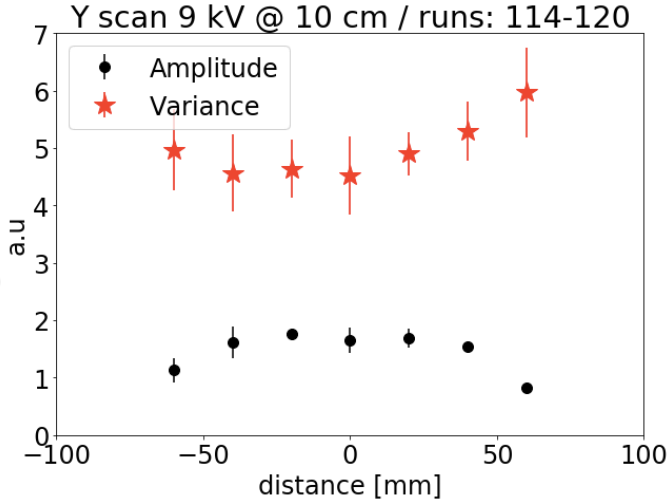
overexposing run 831 (Fe @ 440) on run 813 (FNG @ 440)

450 e- @ BTF FC goodness



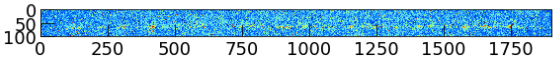




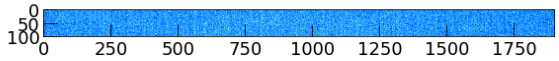


example: 450e- RUN87-5, 2/455V/0.6kV/0.01s

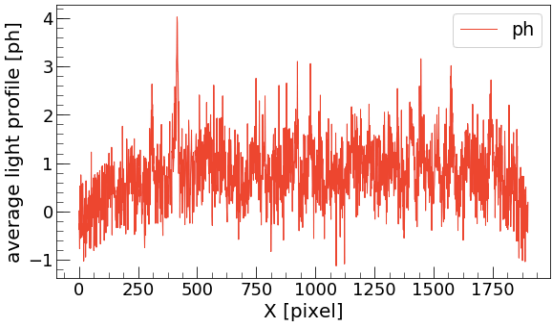
track

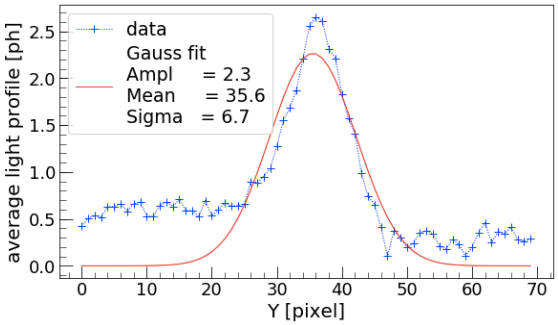


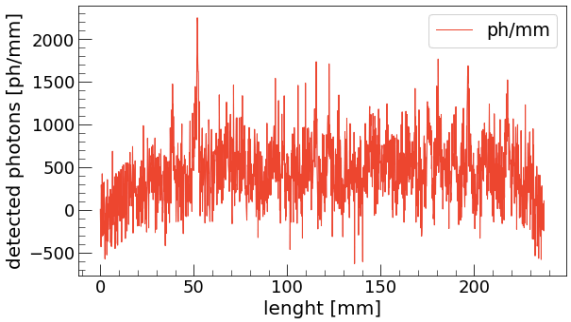
background

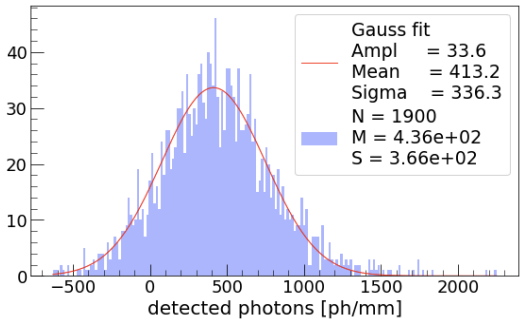


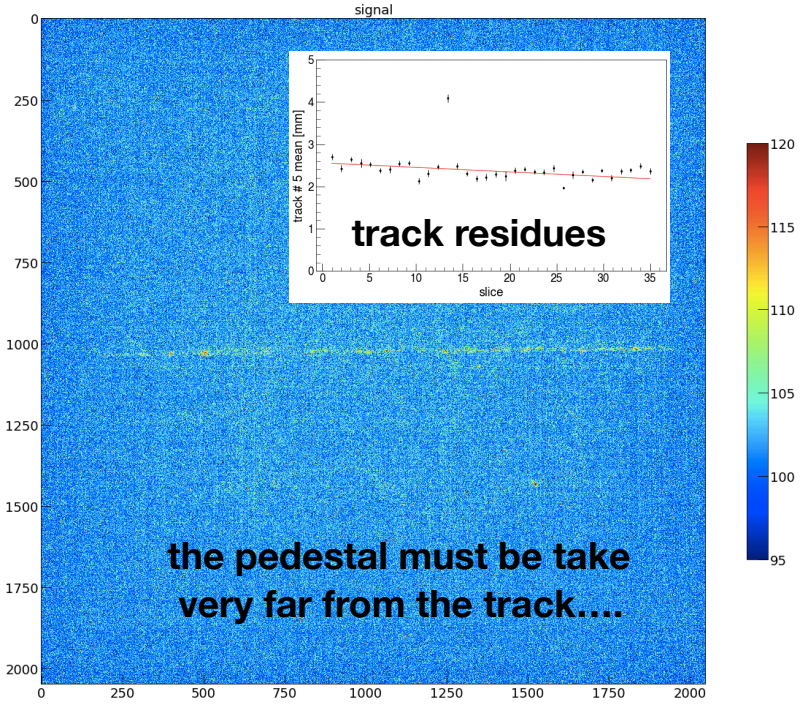
```
Pedestal mean: 101.78, sigma: 1.03, over th. (120) 143
Sigma mean: 2.67, sigma: 2.13, over th. (50) 12

Th mean = 104.34, sigma = 2.15
Signal: 127185 photons 1156.23 keV !!!
assuming Fe normalisation 0.11ph/eV at 455
```



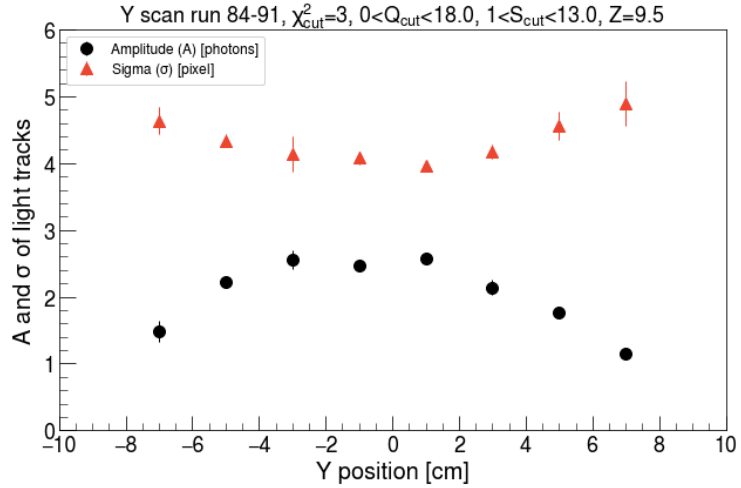


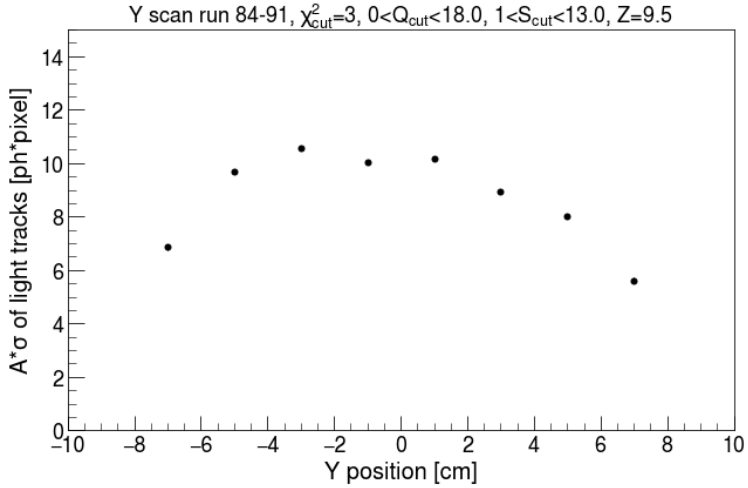


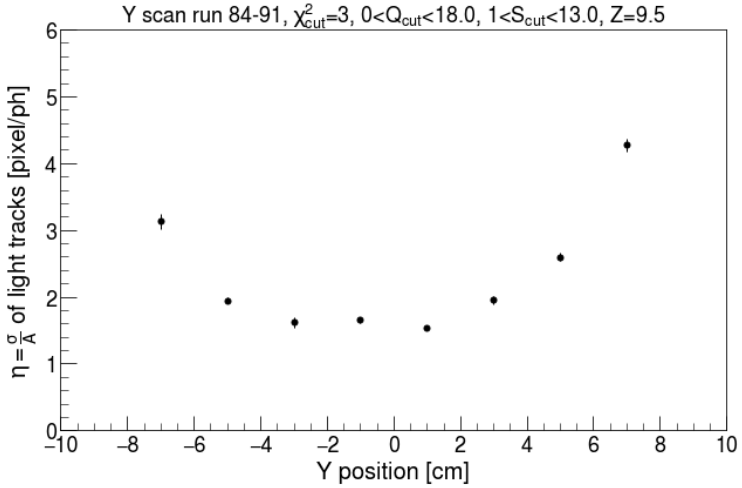


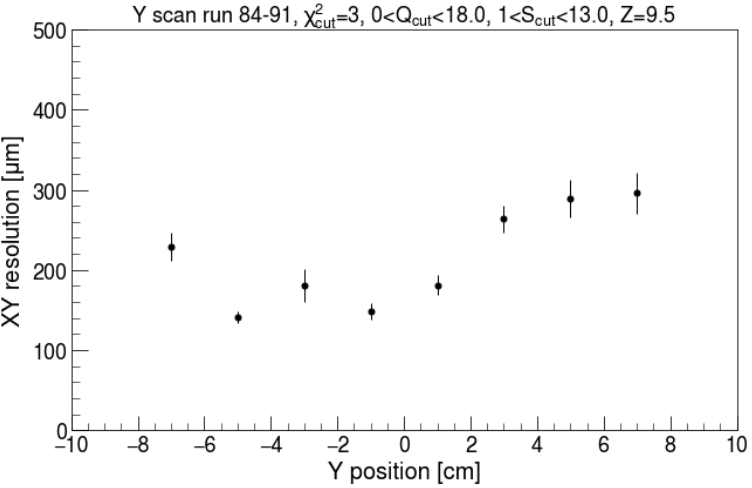


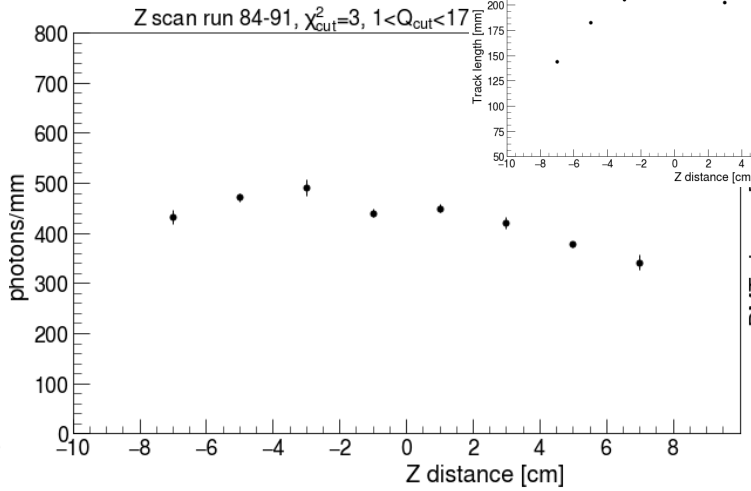
Y scan detail at Z=10 (center)

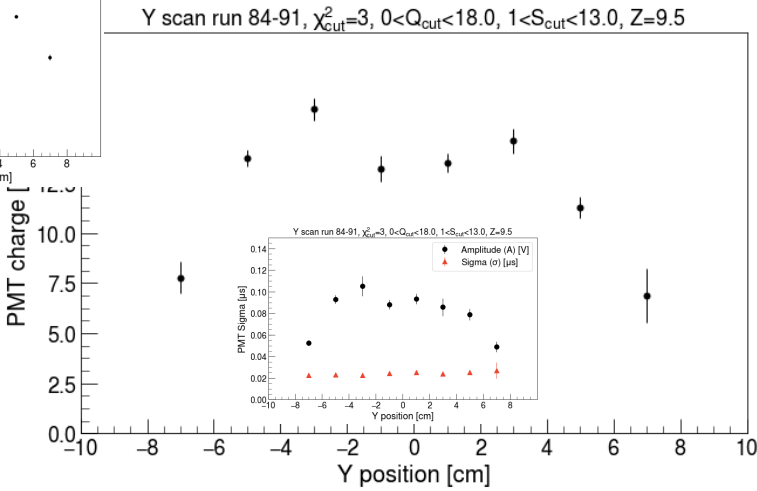




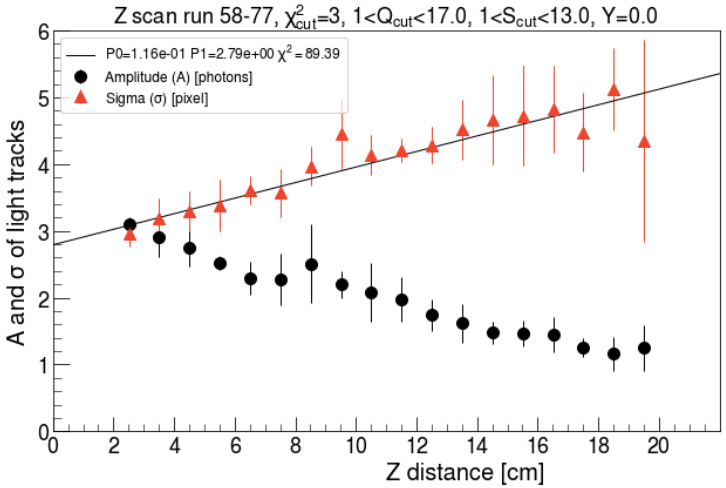


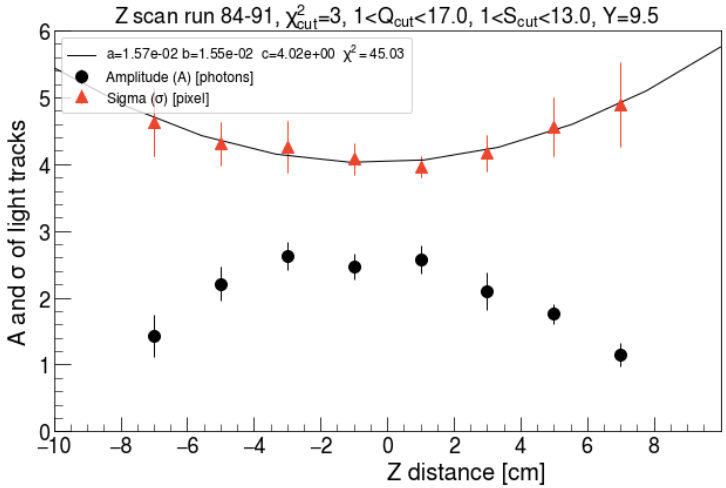


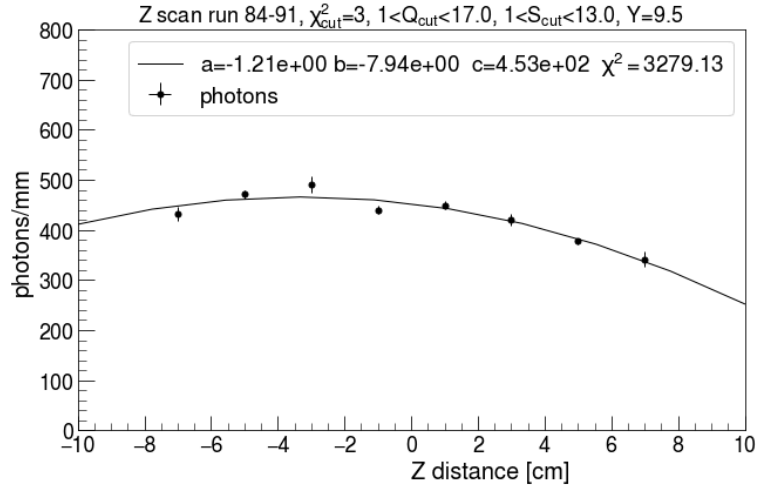




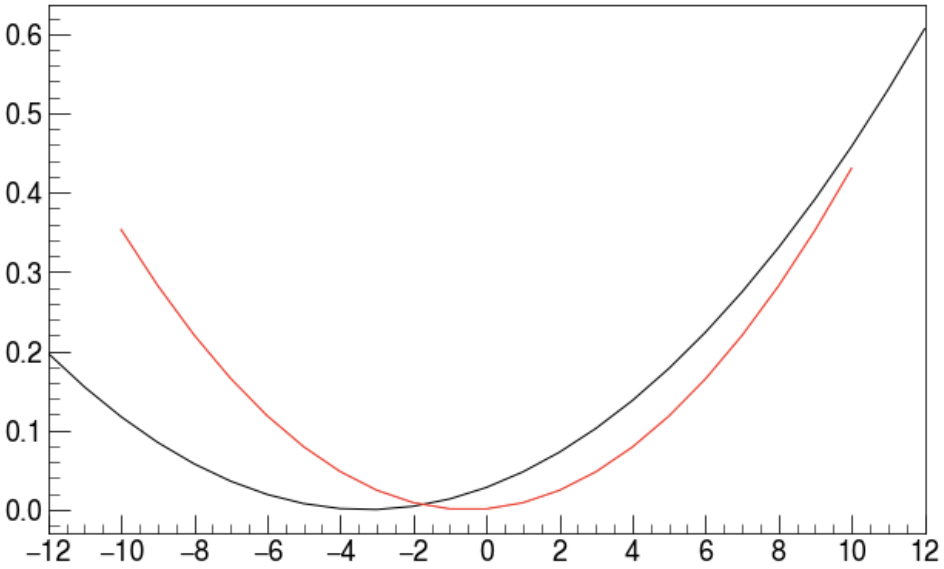
field map

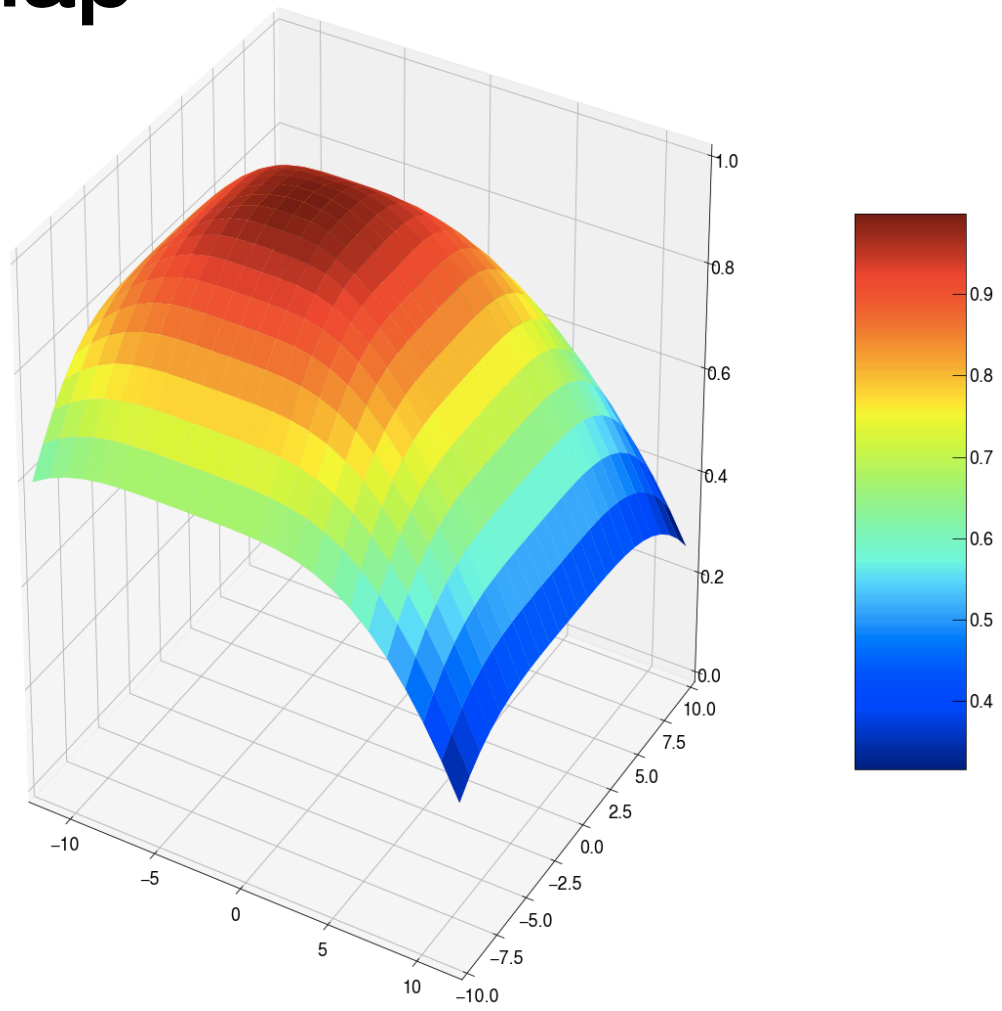

Z scan run 58-77, χ^2_{cut}=3, 1<Q_{cut}<17.0, 1<S_{cut}<13.0, Y=0.0
P0=1.16e-01 P1=2.79e+00 χ^2 = 89.39
Amplitude (A) [photons]
Sigma (σ) [pixel]
A and σ of light tracks
Z distance [cm]


Z scan run 84-91, χ^2_{cut}=3, 1<Q_{cut}<17.0, 1<S_{cut}<13.0, Y=9.5
a=1.57e-02 b=1.55e-02 c=4.02e+00 χ^2 = 45.03
Amplitude (A) [photons]
Sigma (σ) [pixel]
A and σ of light tracks
Z distance [cm]


Z scan run 84-91, χ^2_{cut}=3, 1<Q_{cut}<17.0, 1<S_{cut}<13.0, Y=9.5
a=-1.21e+00 b=-7.94e+00 c=4.53e+02 χ^2 = 3279.13
photons
photons/mm
Z distance [cm]

field map

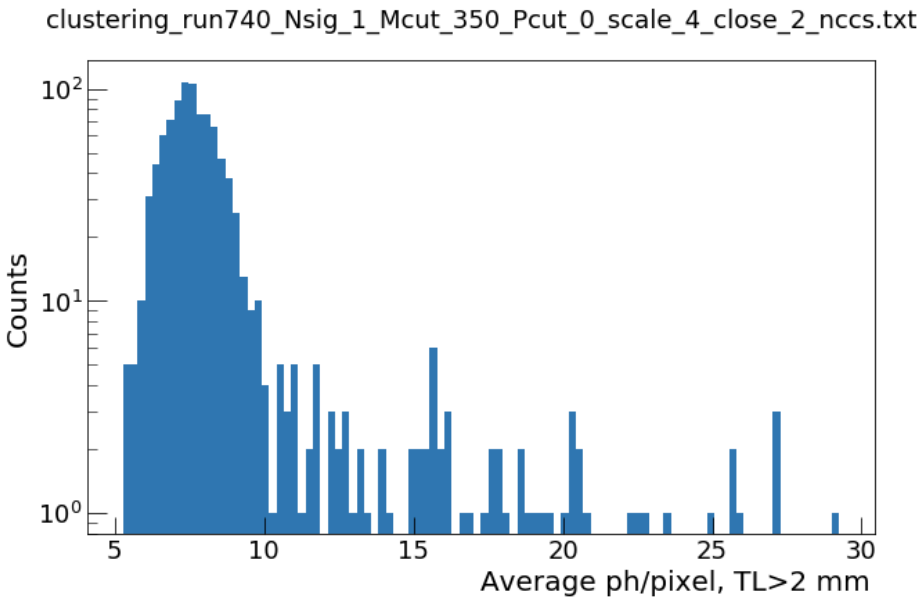

0.6
0.5
0.4
0.3
0.2
0.1
0.0
−12 −10 −8 −6 −4 −2 0 2 4 6 8 10 12

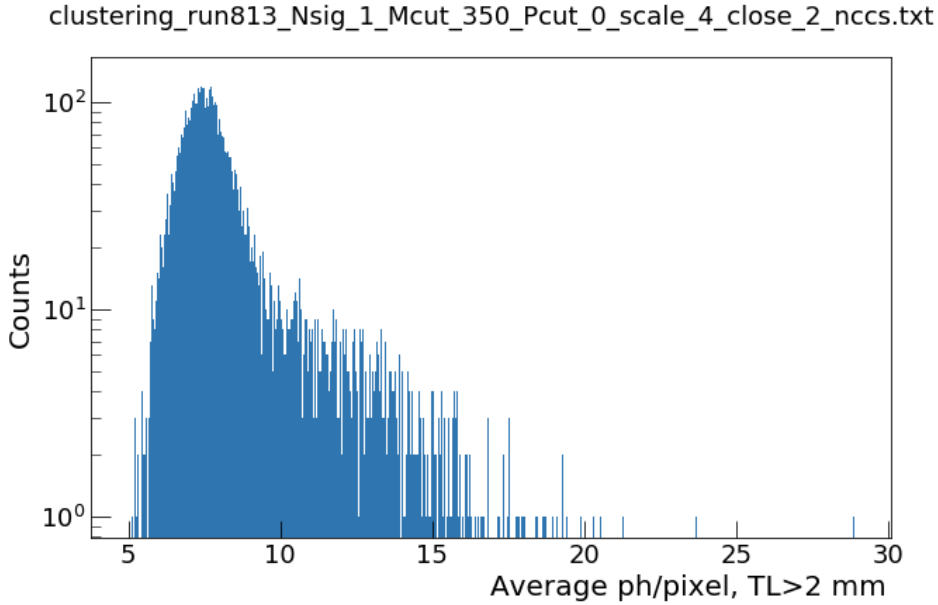

1.0
0.8
0.6
0.4
0.2
0.0
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
−10
−5
0
5
10
0.9
0.8
0.7
0.6
0.5
0.4

e daje!

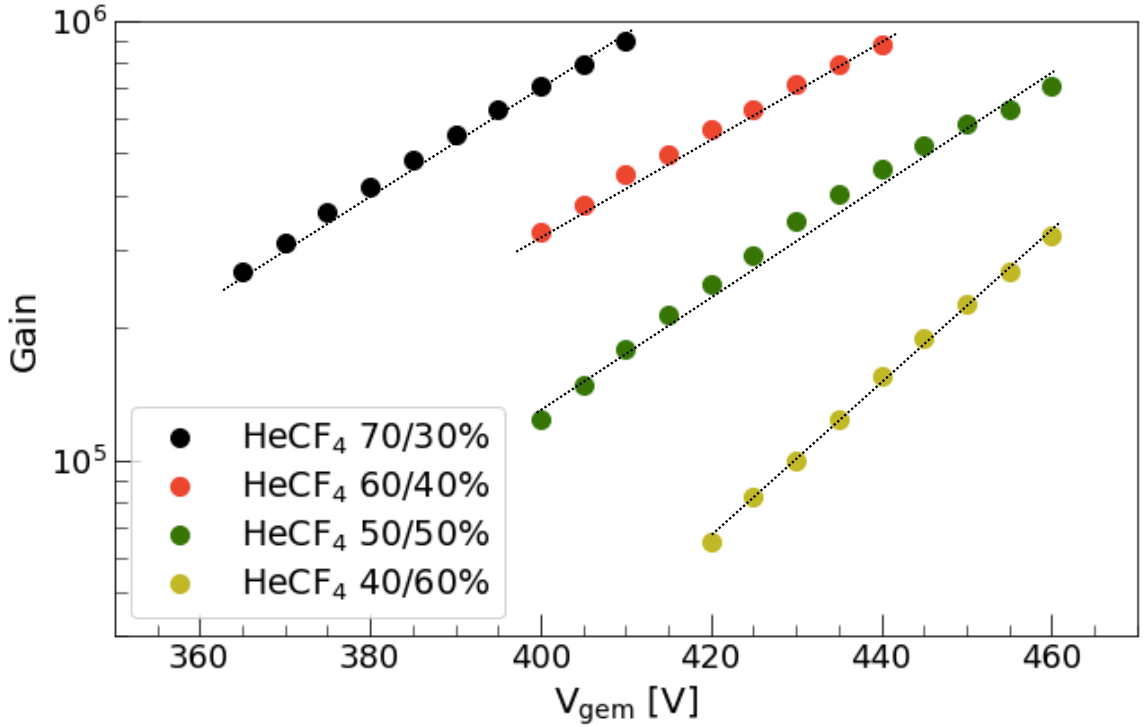
spare slides…

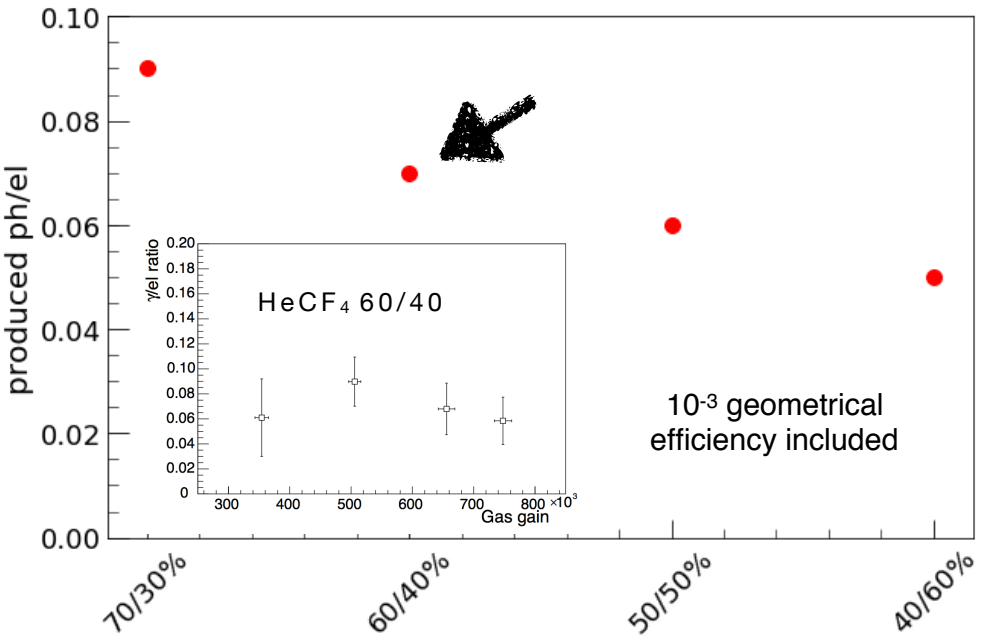
AmBe/FNG long track ionisation distribution fiducialized





$HeCF_4$ Gain and photons efficiency



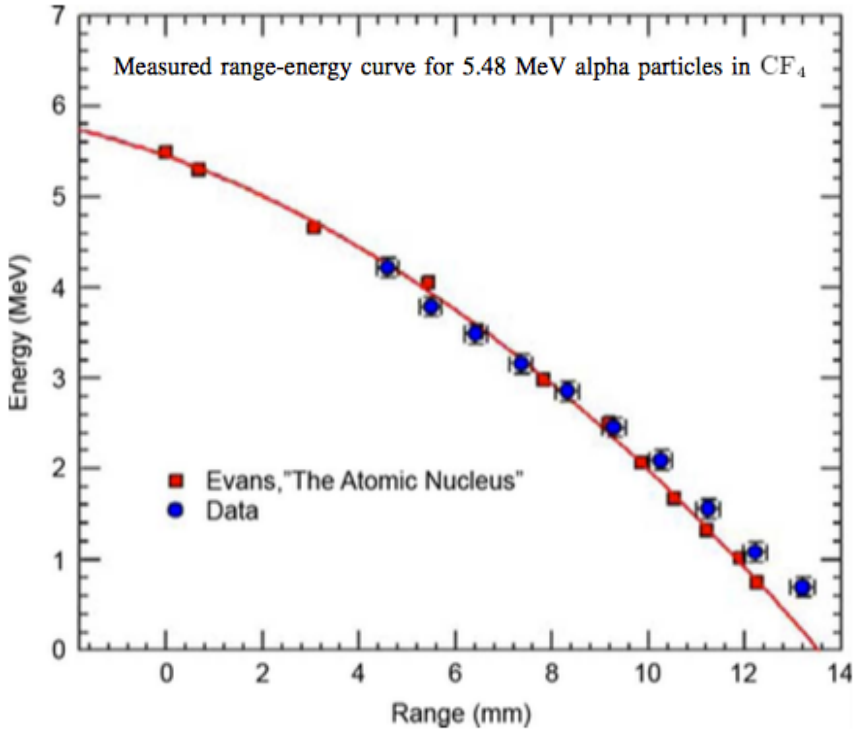


about 0.07 photons produced by secondary electron in the GEM shower

alpha range

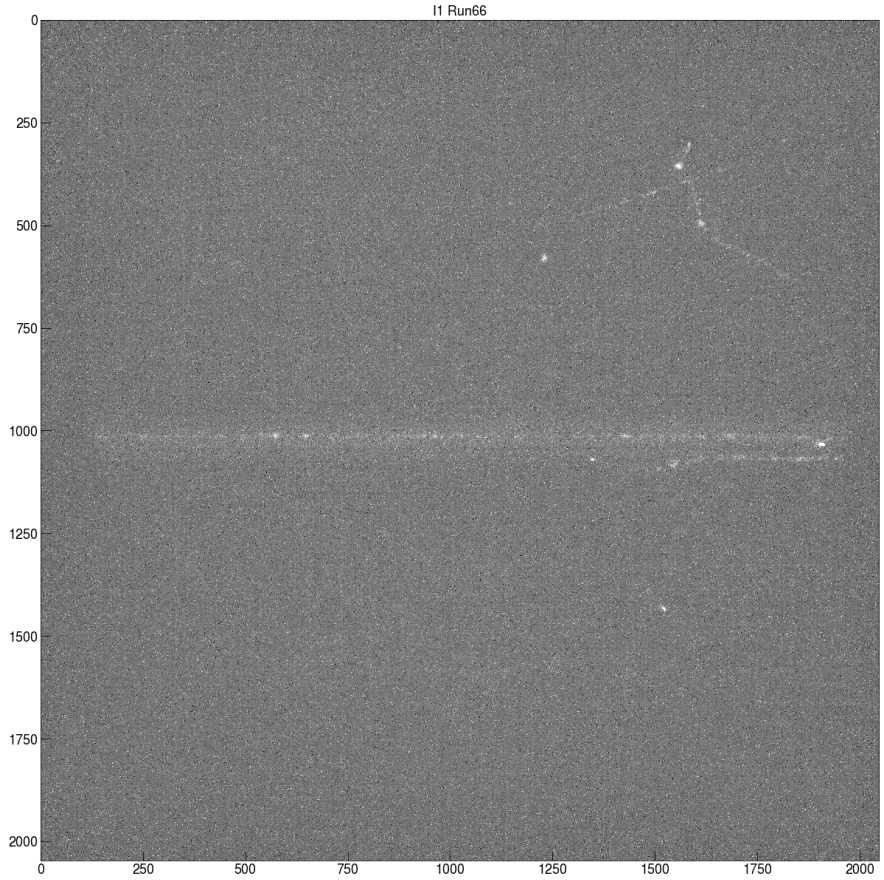
5.48 MeV alpha particles have a range of 13 mm in pure CF_4; 13/0.4 —> 3.5

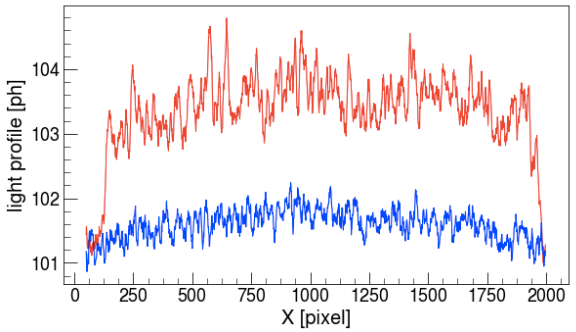
(0.4 percentage of CF4 in the gas mixture)

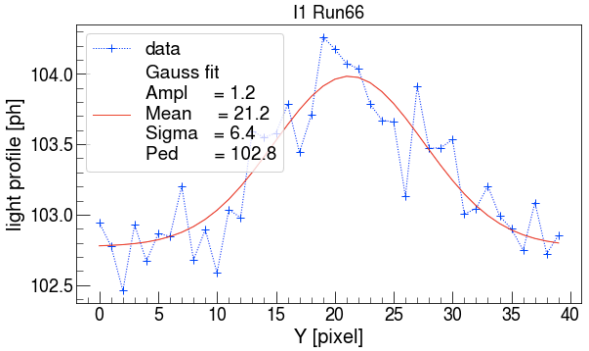


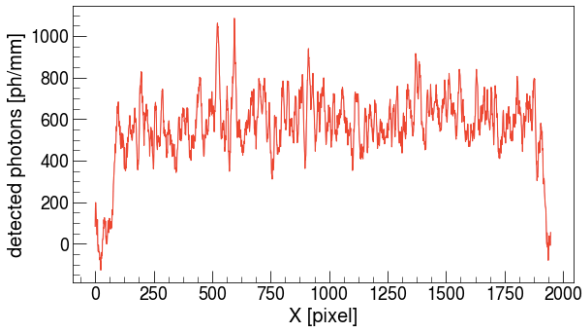
B. AZMOUN ET AL., 2010, IEEE TNS, VOL. 57, NO 4.

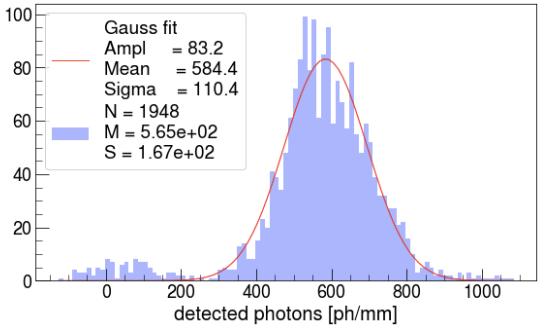
MIP LEMON
GEM 455V/2kVcm - drift 0.6kV/cm - 30 ms



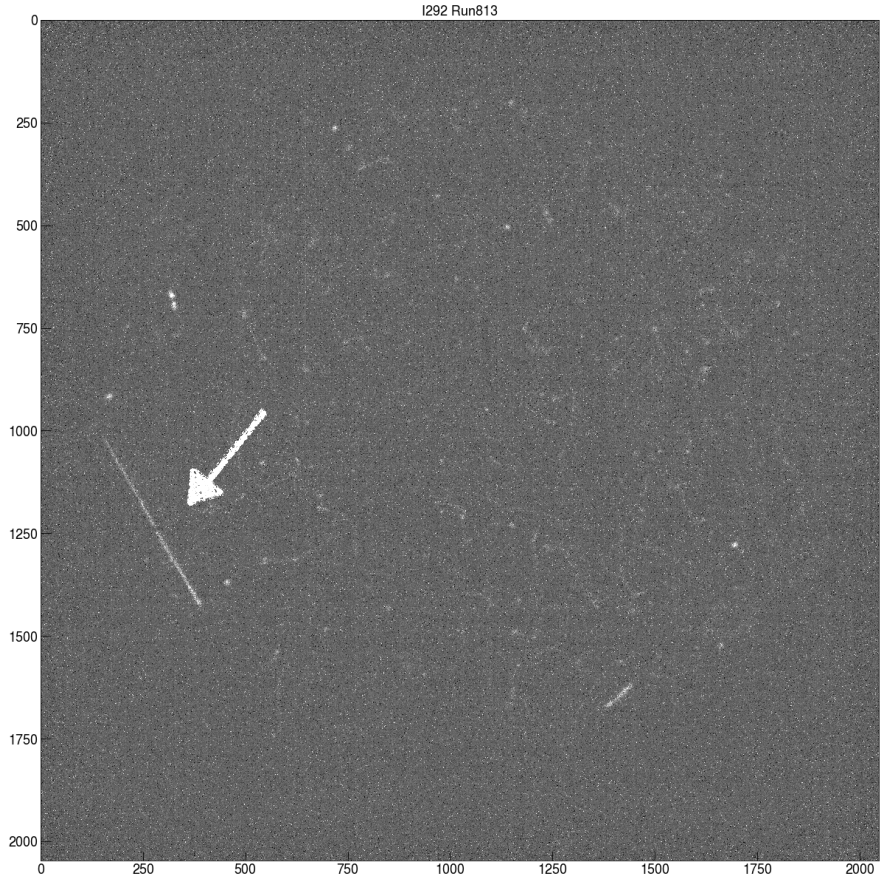


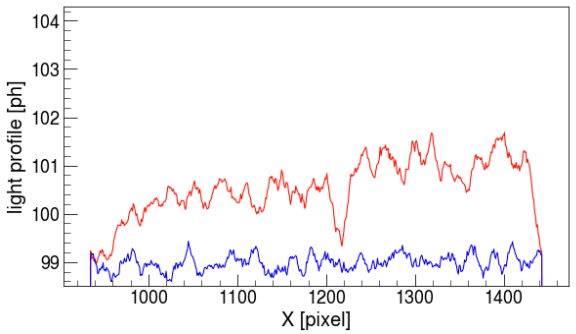


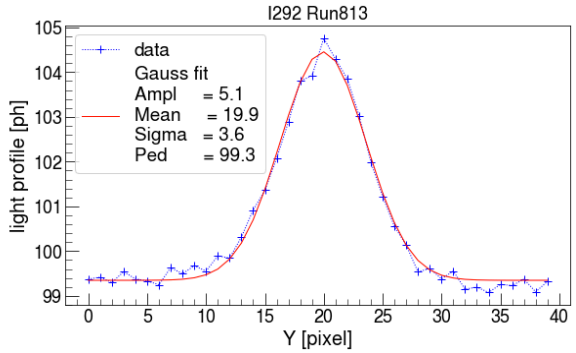


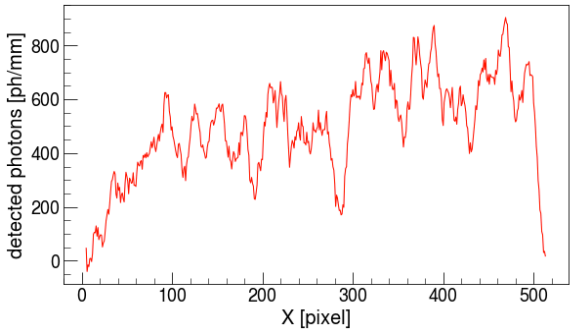


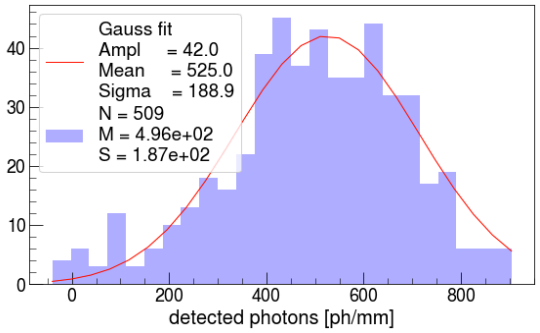
FNG LEMON
GEM 440V/2kVcm - drift 0.6kV/cm - 100 ms



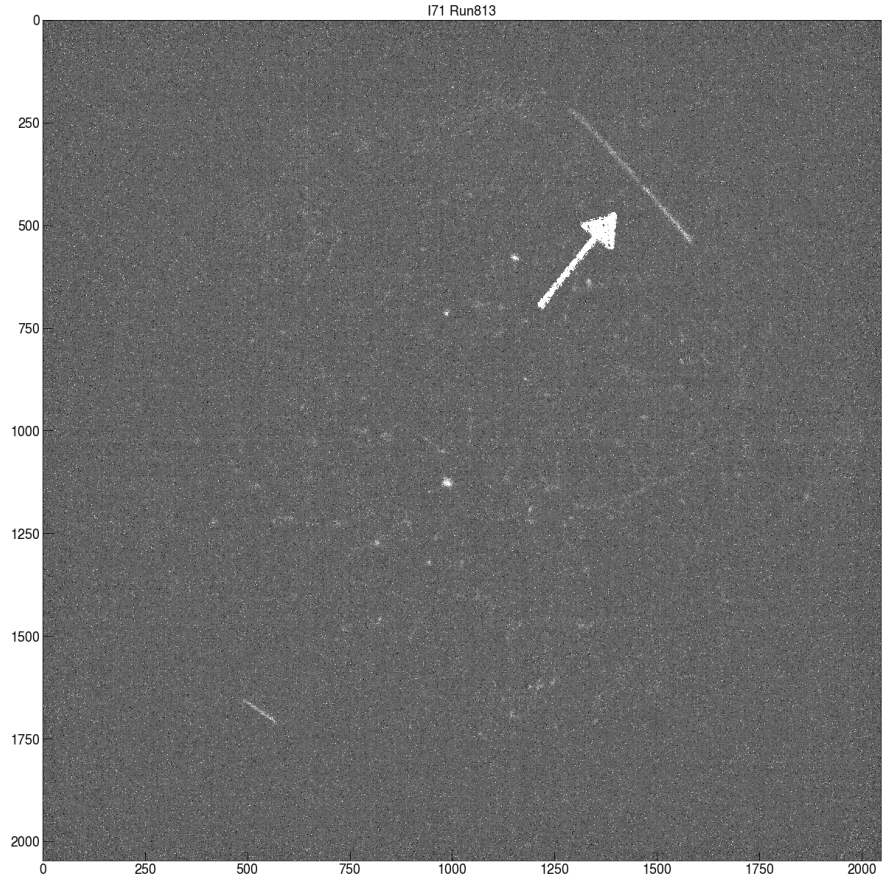


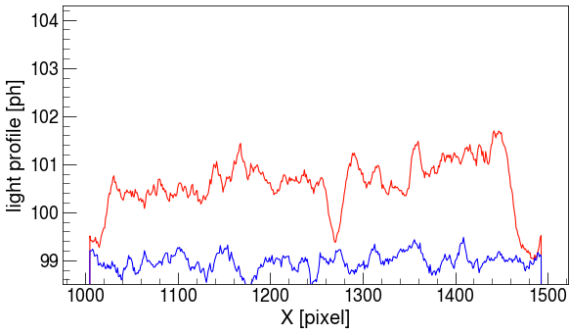


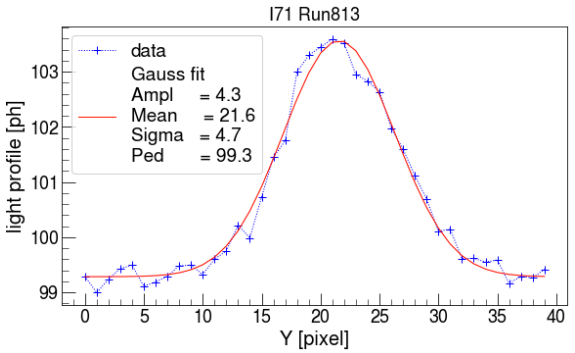


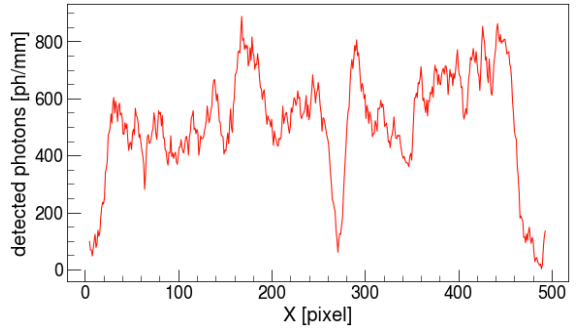


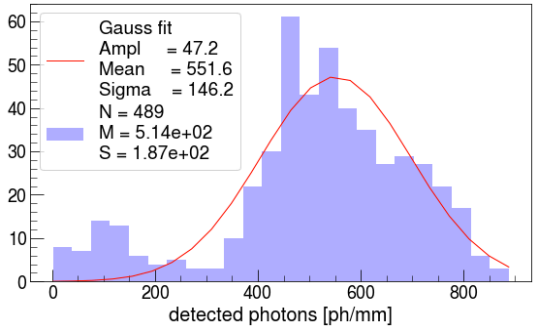
FNG LEMON
GEM 440V/2kVcm - drift 0.6kV/cm - 100 ms











550 [ph/mm] / 0.12 [ph/eV] —> 4.6 keV/mm (125 µm resolution)

AmBe energy spectra

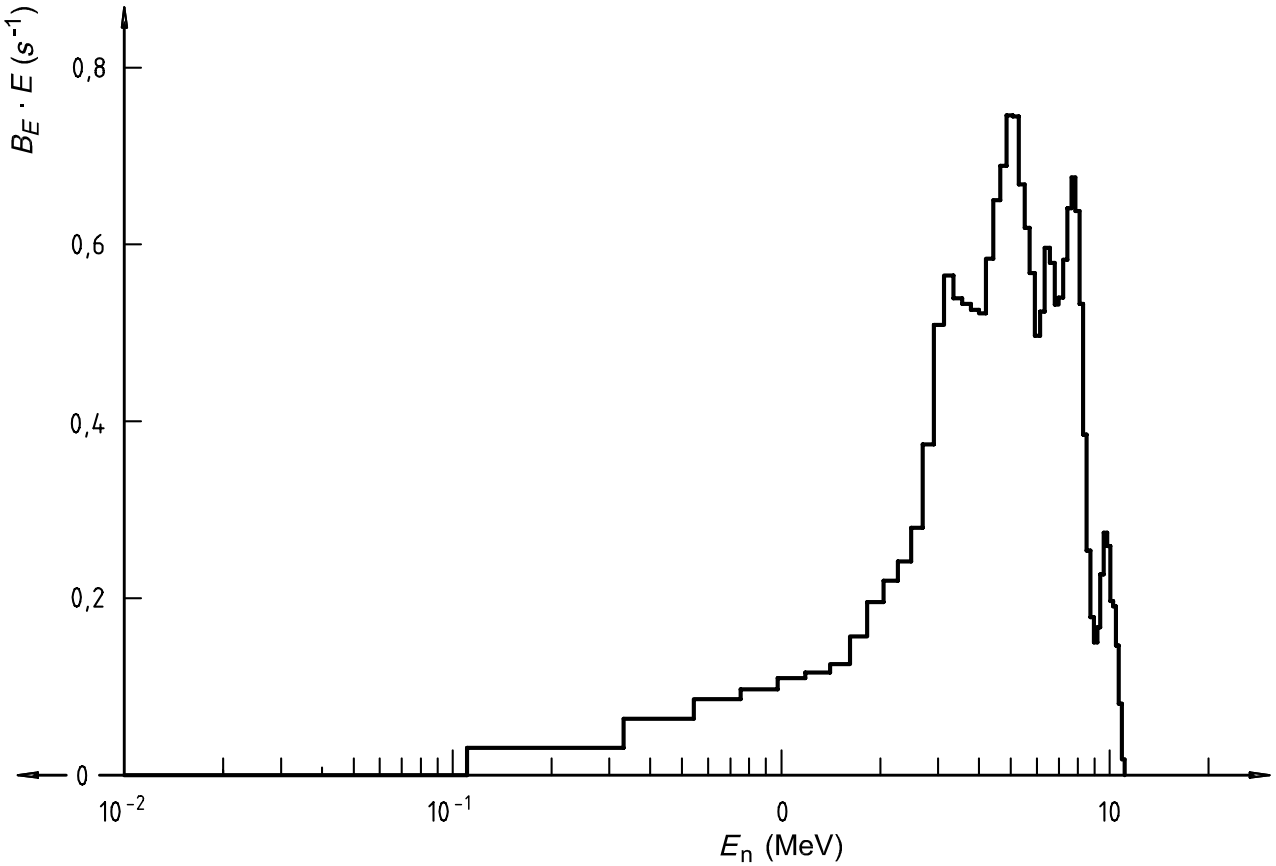
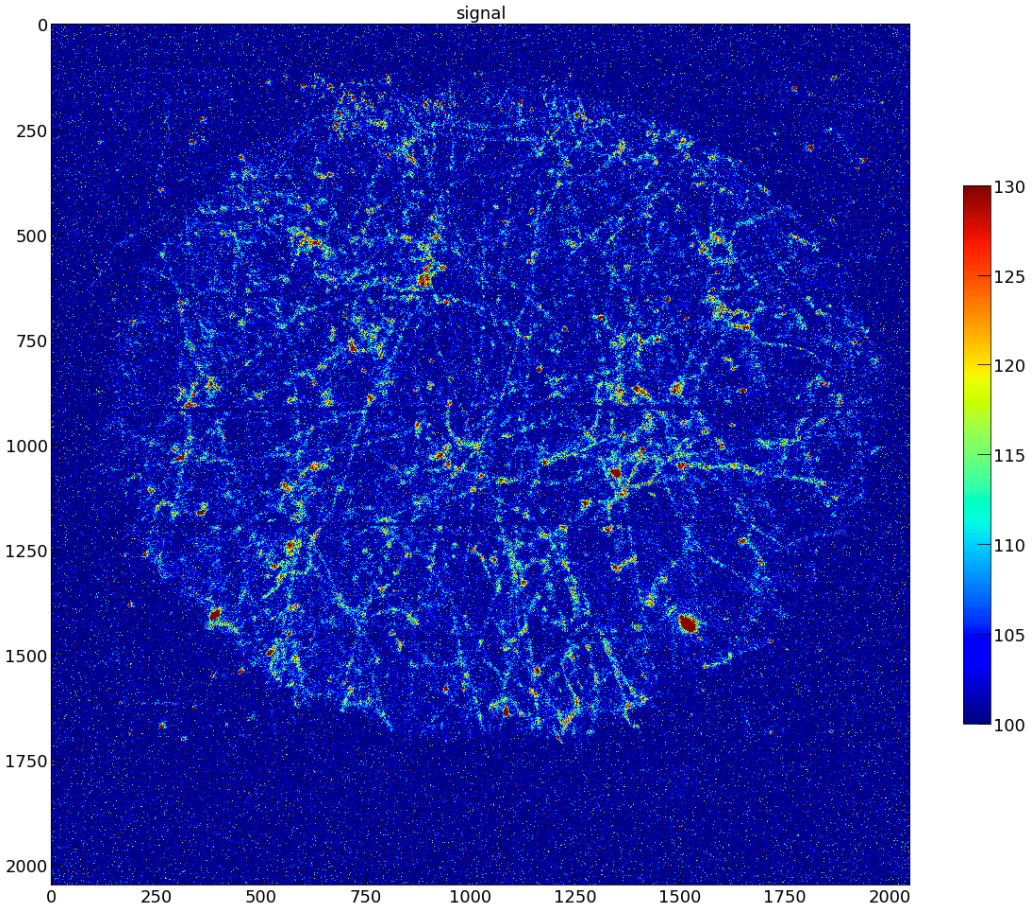


Figure A.4 — Neutron spectrum from a ^{241}Am-Be(α,n) source

Table A.4 — Values of group source strength for a ^{241}Am-Be(α,n) source

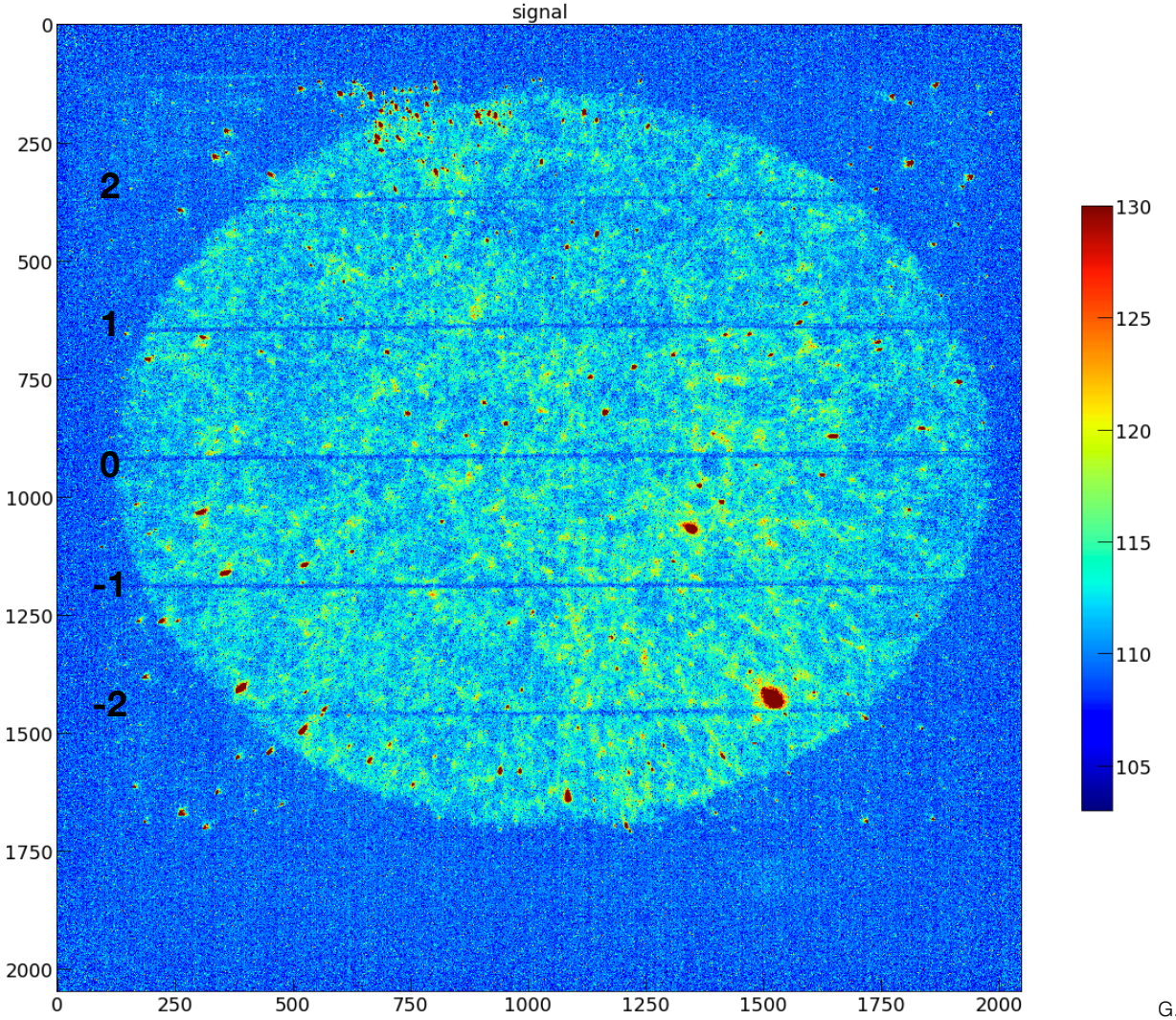
E_i(MeV)	B_i(s^{-1})	E_i(MeV)	B_i(s^{-1})
$4{,}14 \times 10^{-7}$	$1{,}44 \times 10^{-2}$	$5{,}68 \times 10^{0}$	$2{,}06 \times 10^{-2}$
$1{,}10 \times 10^{-1}$	$3{,}34 \times 10^{-2}$	$5{,}89 \times 10^{0}$	$1{,}82 \times 10^{-2}$
$3{,}30 \times 10^{-1}$	$3{,}13 \times 10^{-2}$	$6{,}11 \times 10^{0}$	$1{,}77 \times 10^{-2}$
$5{,}40 \times 10^{-1}$	$2{,}81 \times 10^{-2}$	$6{,}32 \times 10^{0}$	$2{,}04 \times 10^{-2}$
$7{,}50 \times 10^{-1}$	$2{,}50 \times 10^{-2}$	$6{,}54 \times 10^{0}$	$1{,}83 \times 10^{-2}$
$9{,}70 \times 10^{-1}$	$2{,}14 \times 10^{-2}$	$6{,}75 \times 10^{0}$	$1{,}63 \times 10^{-2}$
$1{,}18 \times 10^{0}$	$1{,}98 \times 10^{-2}$	$6{,}96 \times 10^{0}$	$1{,}68 \times 10^{-2}$
$1{,}40 \times 10^{0}$	$1{,}75 \times 10^{-2}$	$7{,}18 \times 10^{0}$	$1{,}68 \times 10^{-2}$
$1{,}61 \times 10^{0}$	$1{,}92 \times 10^{-2}$	$7{,}39 \times 10^{0}$	$1{,}88 \times 10^{-2}$
$1{,}82 \times 10^{0}$	$2{,}23 \times 10^{-2}$	$7{,}61 \times 10^{0}$	$1{,}84 \times 10^{-2}$
$2{,}04 \times 10^{0}$	$2{,}15 \times 10^{-2}$	$7{,}82 \times 10^{0}$	$1{,}69 \times 10^{-2}$
$2{,}25 \times 10^{0}$	$2{,}25 \times 10^{-2}$	$8{,}03 \times 10^{0}$	$1{,}44 \times 10^{-2}$
$2{,}47 \times 10^{0}$	$2{,}28 \times 10^{-2}$	$8{,}25 \times 10^{0}$	$9{,}68 \times 10^{-3}$
$2{,}68 \times 10^{0}$	$2{,}95 \times 10^{-2}$	$8{,}46 \times 10^{0}$	$6{,}52 \times 10^{-3}$
$2{,}90 \times 10^{0}$	$3{,}56 \times 10^{-2}$	$8{,}68 \times 10^{0}$	$4{,}26 \times 10^{-3}$
$3{,}11 \times 10^{0}$	$3{,}69 \times 10^{-2}$	$8{,}89 \times 10^{0}$	$3{,}67 \times 10^{-3}$
$3{,}32 \times 10^{0}$	$3{,}46 \times 10^{-2}$	$9{,}11 \times 10^{0}$	$3{,}81 \times 10^{-3}$
$3{,}54 \times 10^{0}$	$3{,}07 \times 10^{-2}$	$9{,}32 \times 10^{0}$	$5{,}06 \times 10^{-3}$
$3{,}75 \times 10^{0}$	$3{,}00 \times 10^{-2}$	$9{,}53 \times 10^{0}$	$6{,}25 \times 10^{-3}$
$3{,}97 \times 10^{0}$	$2{,}69 \times 10^{-2}$	$9{,}75 \times 10^{0}$	$5{,}52 \times 10^{-3}$
$4{,}18 \times 10^{0}$	$2{,}86 \times 10^{-2}$	$9{,}96 \times 10^{0}$	$4{,}68 \times 10^{-3}$
$4{,}39 \times 10^{0}$	$3{,}18 \times 10^{-2}$	$1{,}02 \times 10^{1}$	$3{,}70 \times 10^{-3}$
$4{,}61 \times 10^{0}$	$3{,}07 \times 10^{-2}$	$1{,}04 \times 10^{1}$	$2{,}78 \times 10^{-3}$
$4{,}82 \times 10^{0}$	$3{,}33 \times 10^{-2}$	$1{,}06 \times 10^{1}$	$1{,}51 \times 10^{-3}$
$5{,}04 \times 10^{0}$	$3{,}04 \times 10^{-2}$	$1{,}08 \times 10^{1}$	$3{,}63 \times 10^{-4}$
$5{,}25 \times 10^{0}$	$2{,}74 \times 10^{-2}$	$1{,}10 \times 10^{1}$	
$5{,}47 \times 10^{0}$	$2{,}33 \times 10^{-2}$		

OPT distortion



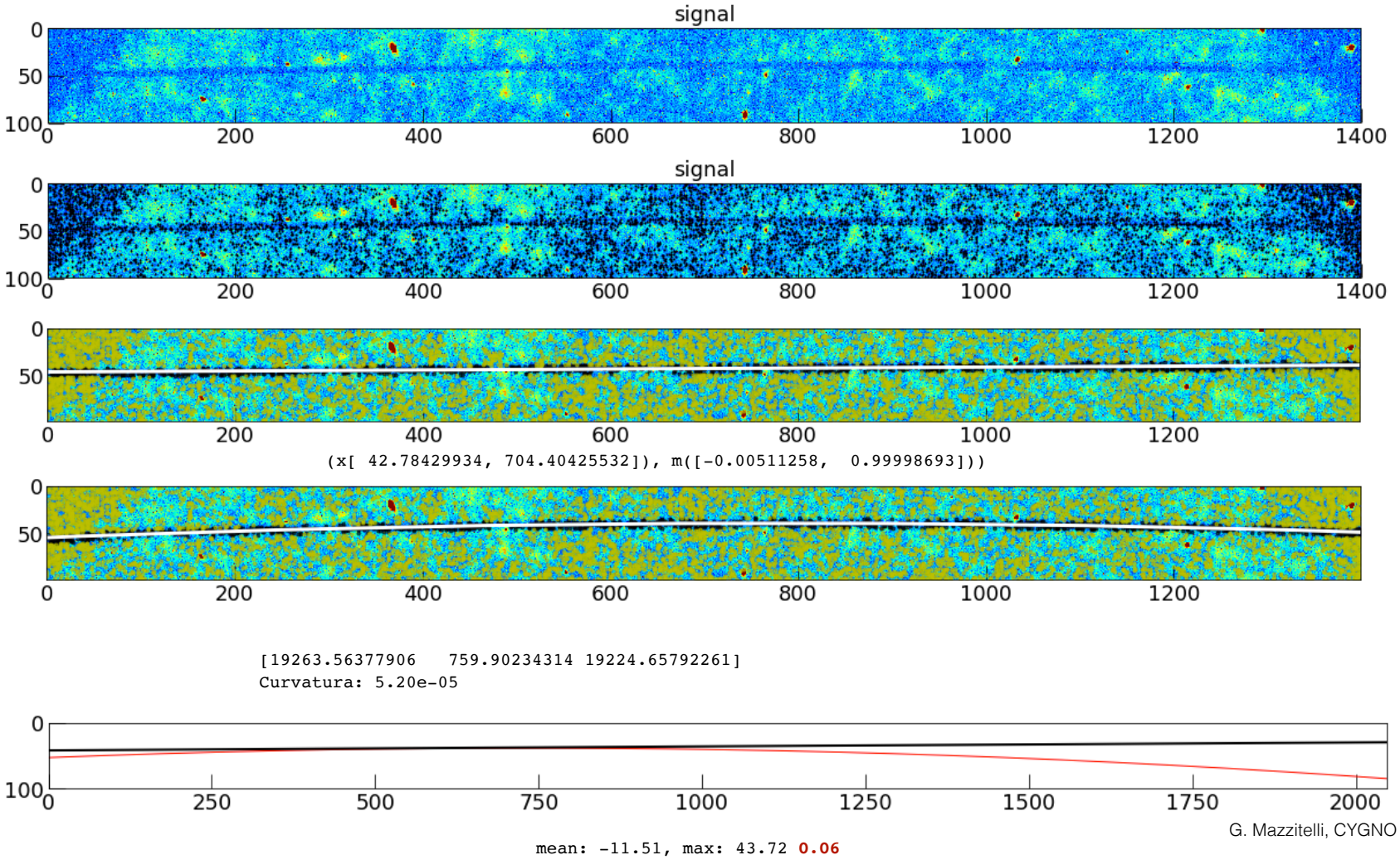
Gia d occhio si vede siamo furi centro tilt sinistra destra

BTF data (cosmic Calibration)

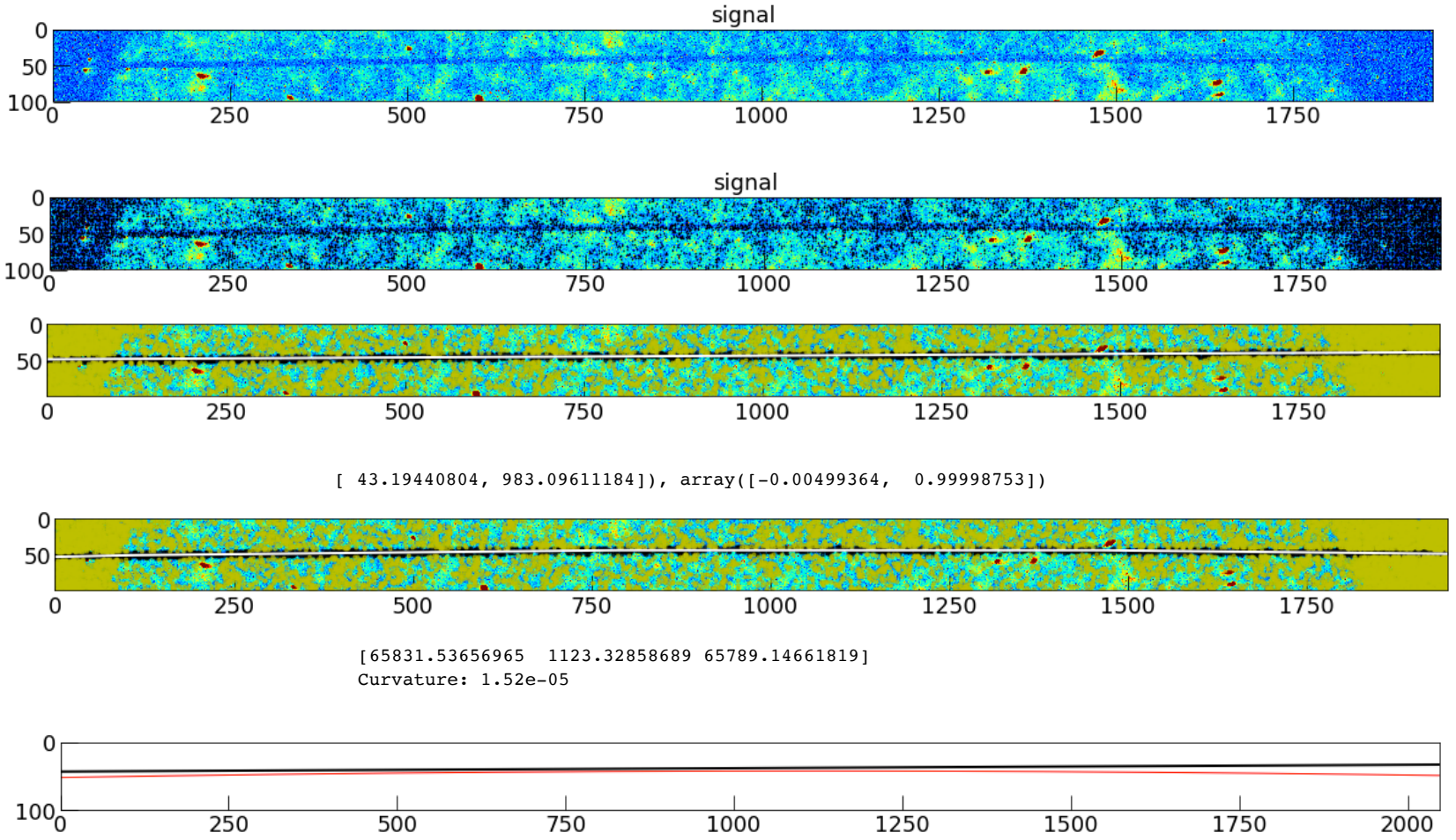


10 eventi,

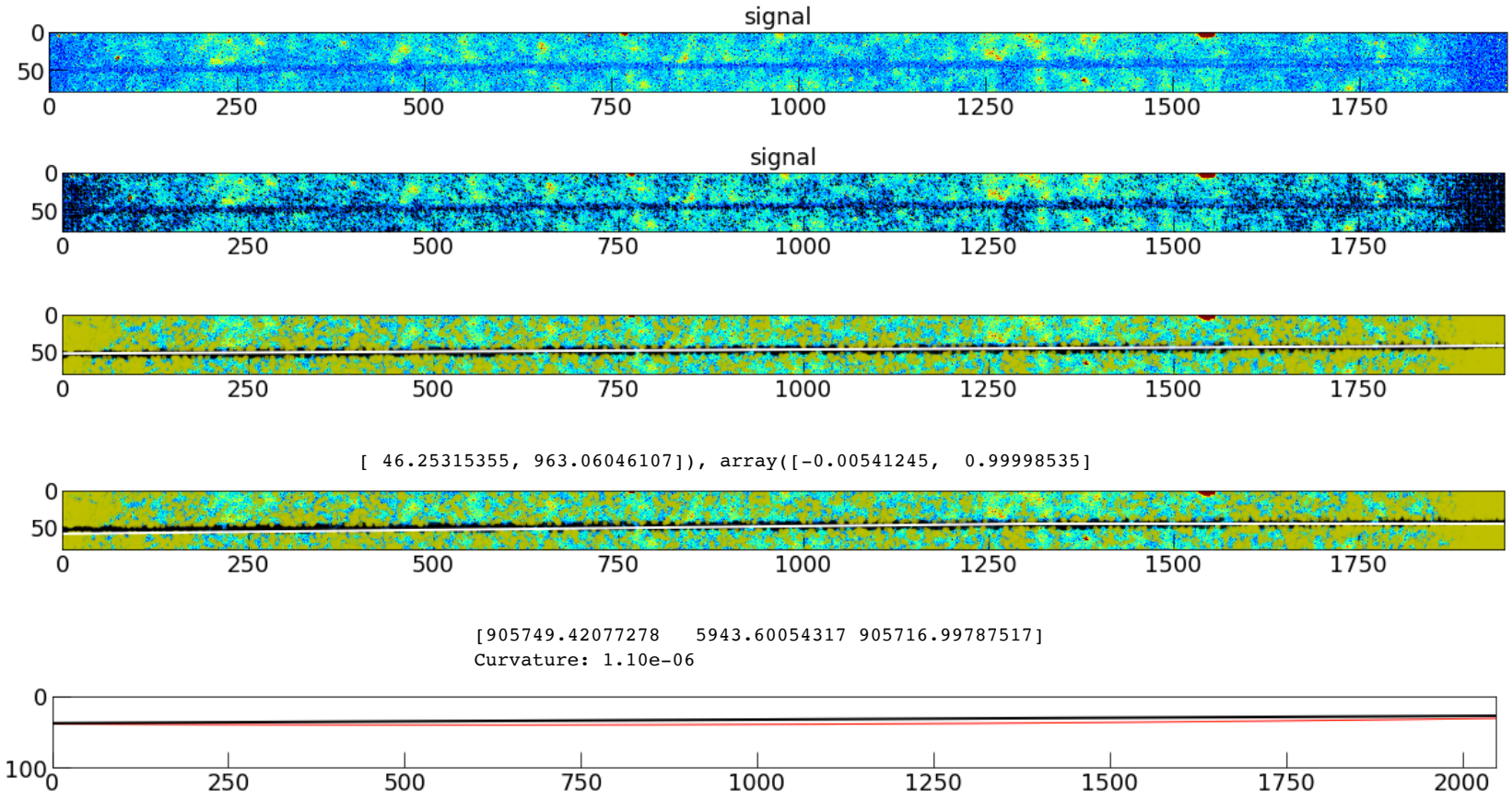
2 - BTF data (cosmic Calibration)



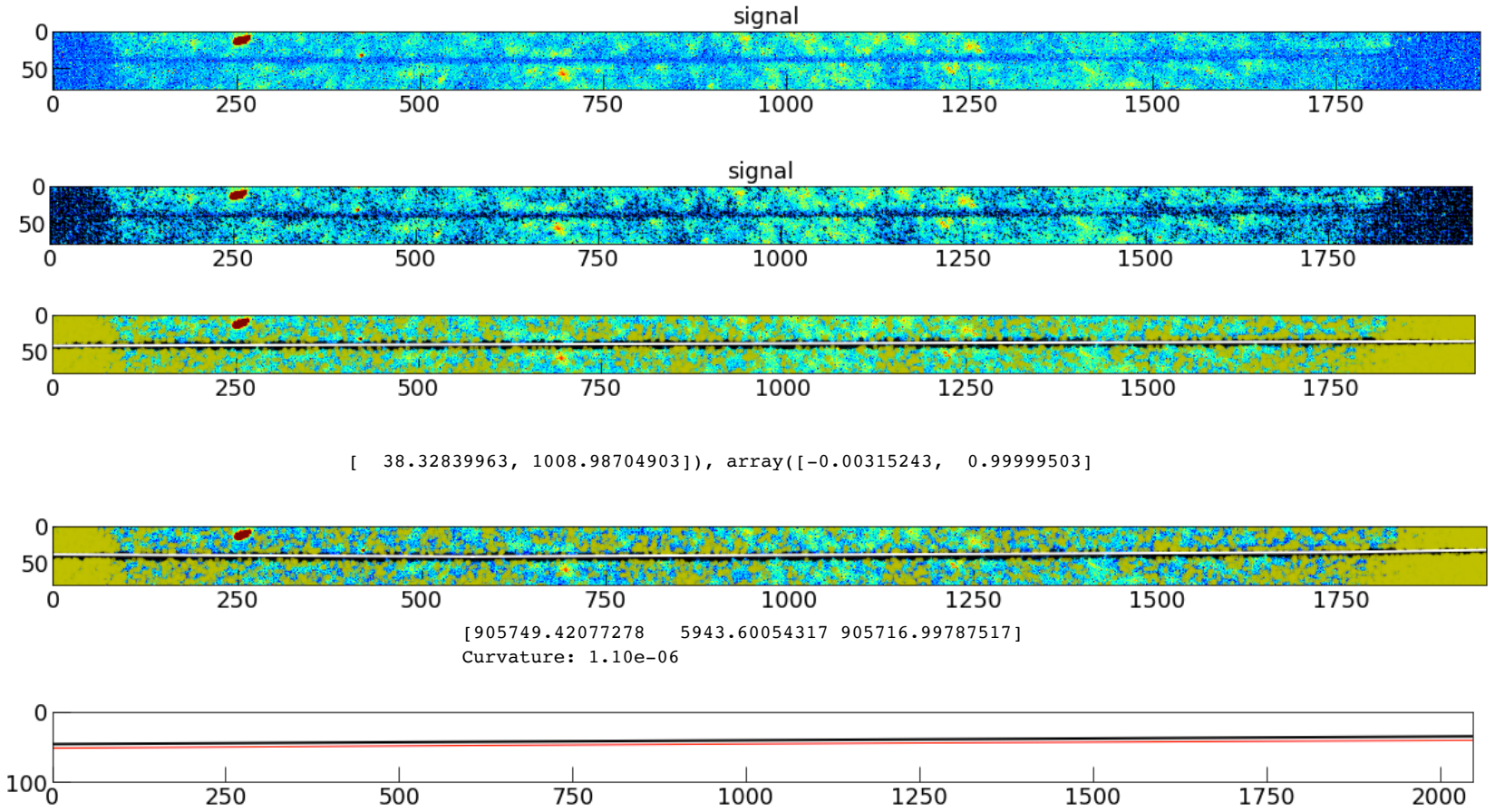
1 - BTF data (cosmic Calibration)



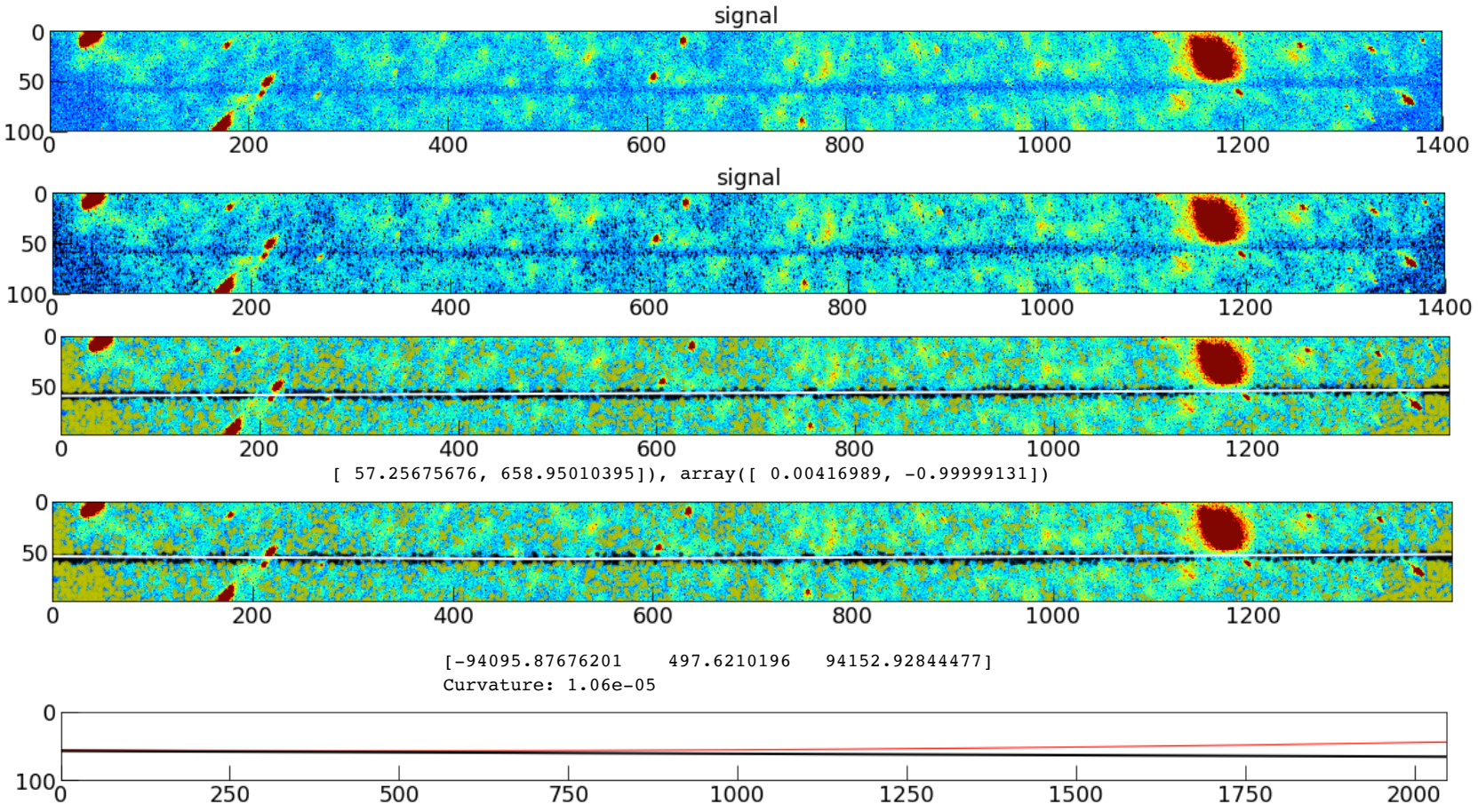
0 - BTF data (cosmic Calibration)

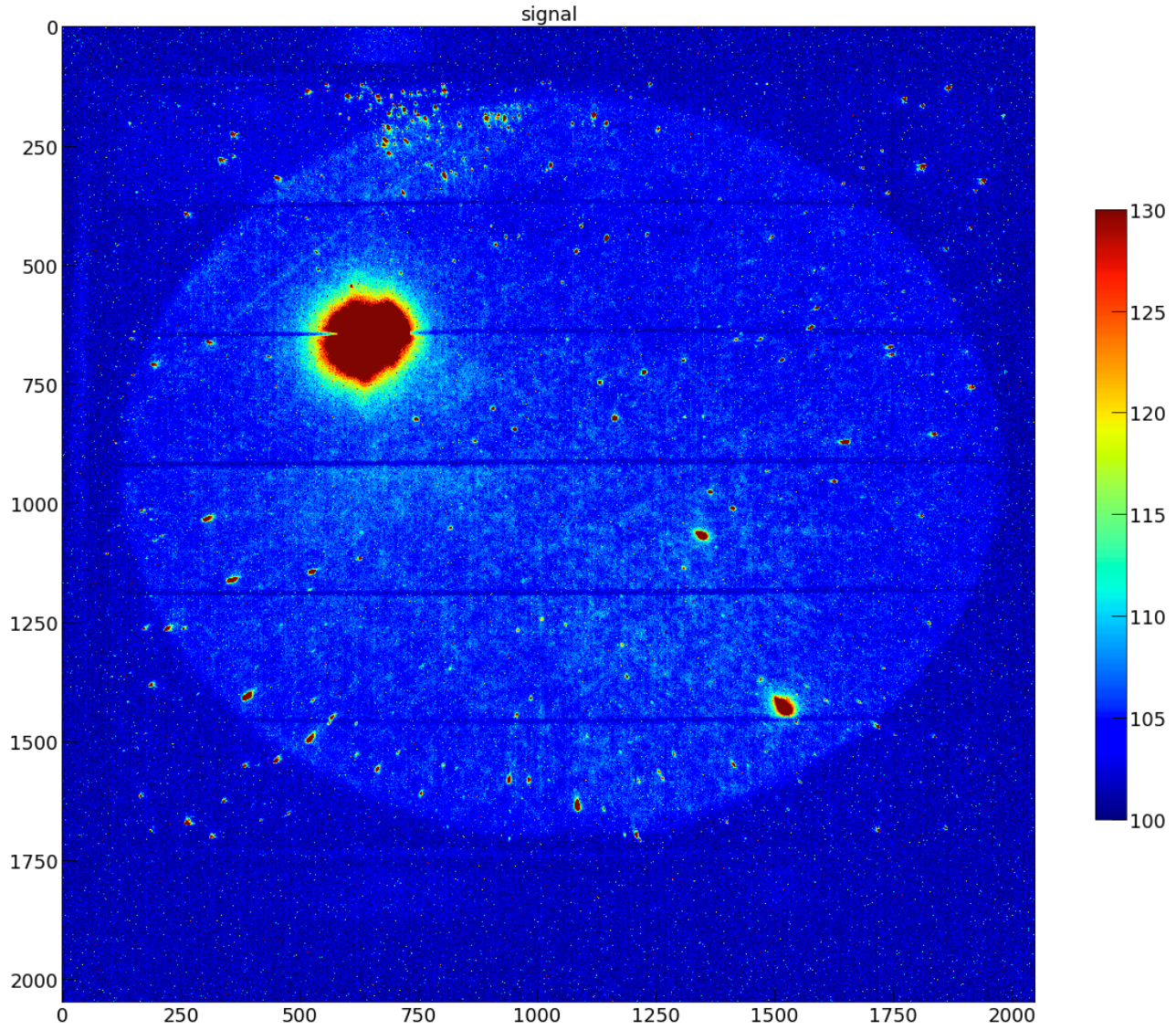


-1 - BTF data (cosmic Calibration)

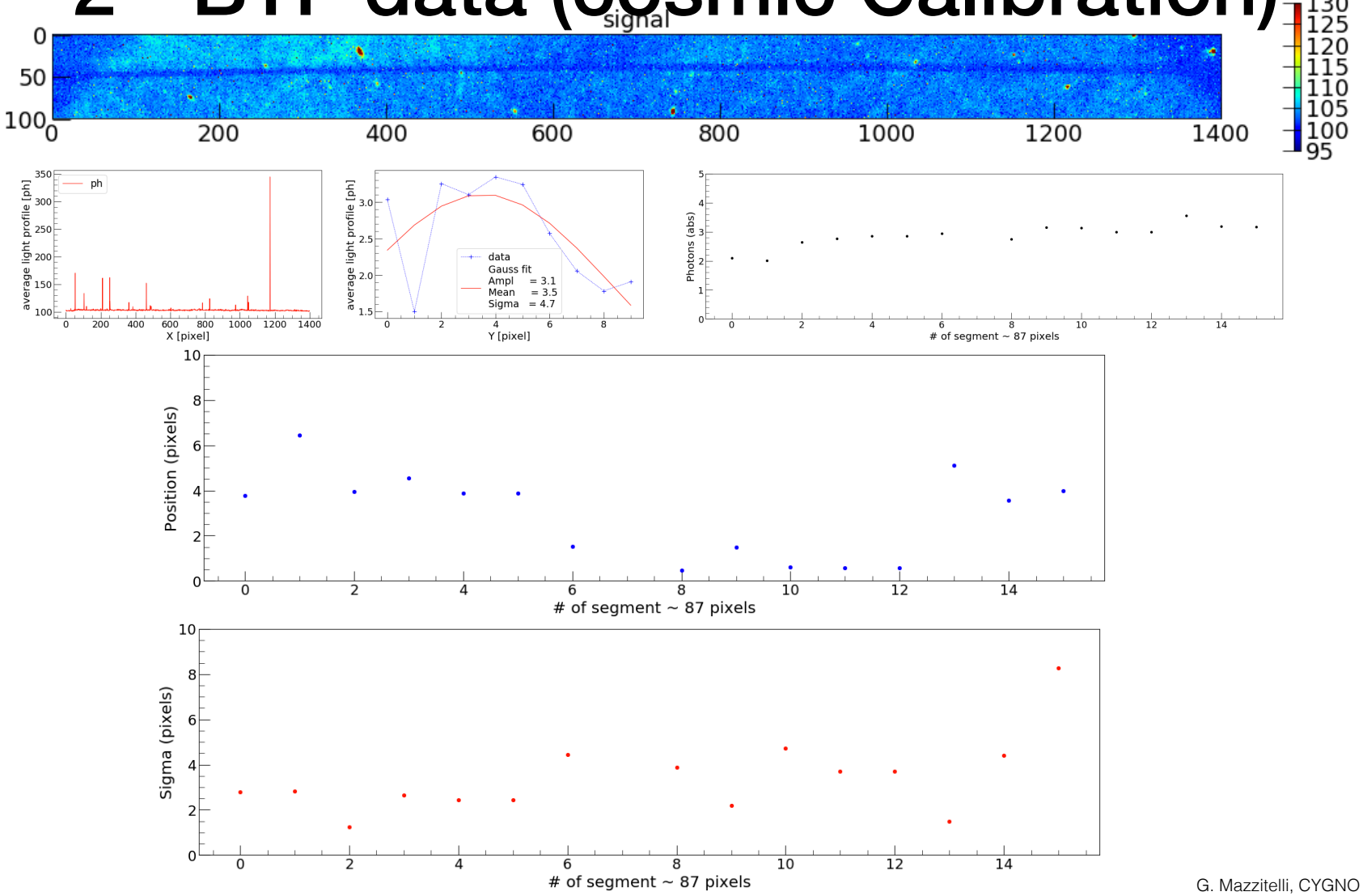


-2 - BTF data (cosmic Calibration)

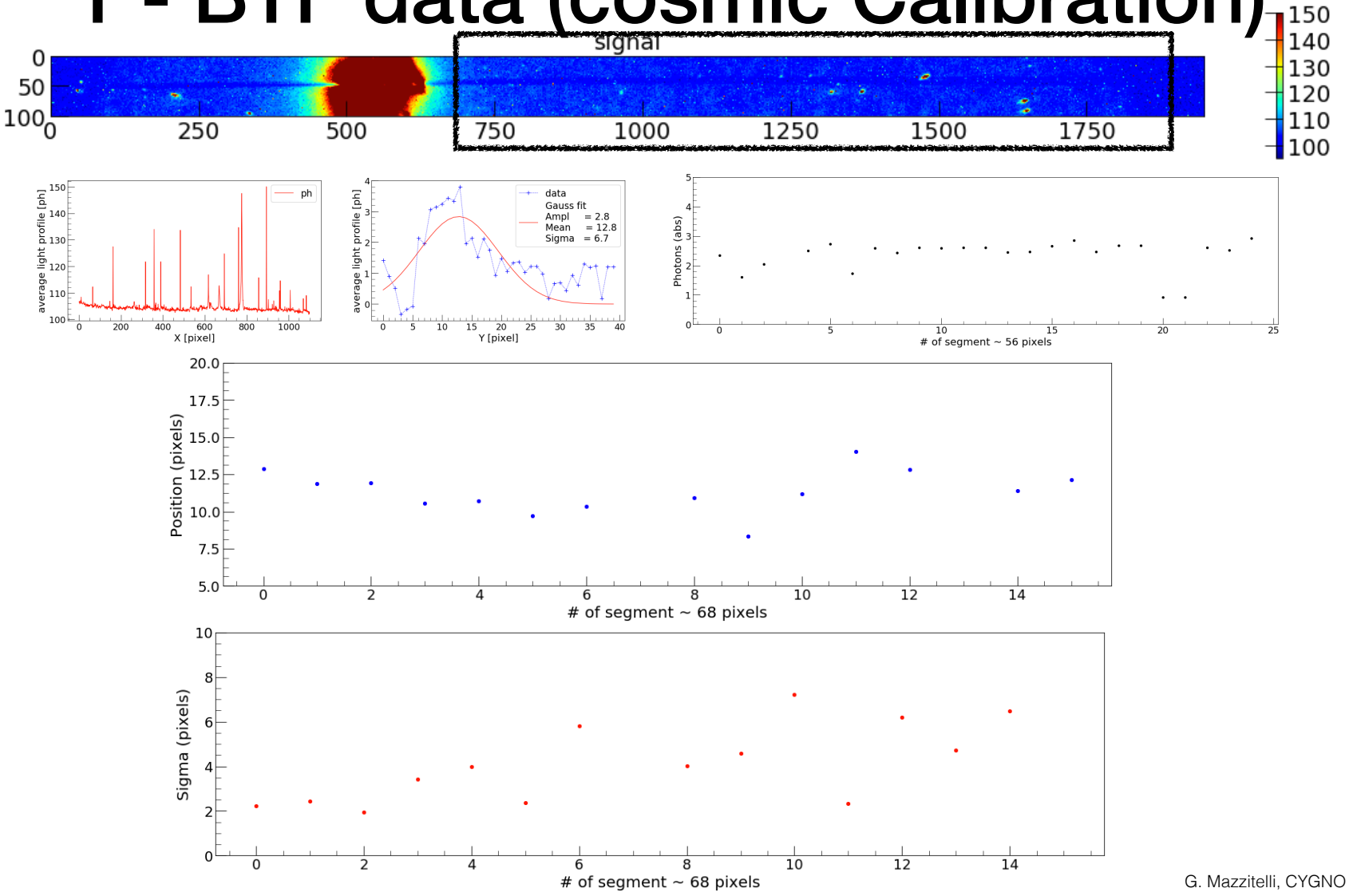



signal
0
250
500
750
1000
1250
1500
1750
2000
130
125
120
115
110
105
100

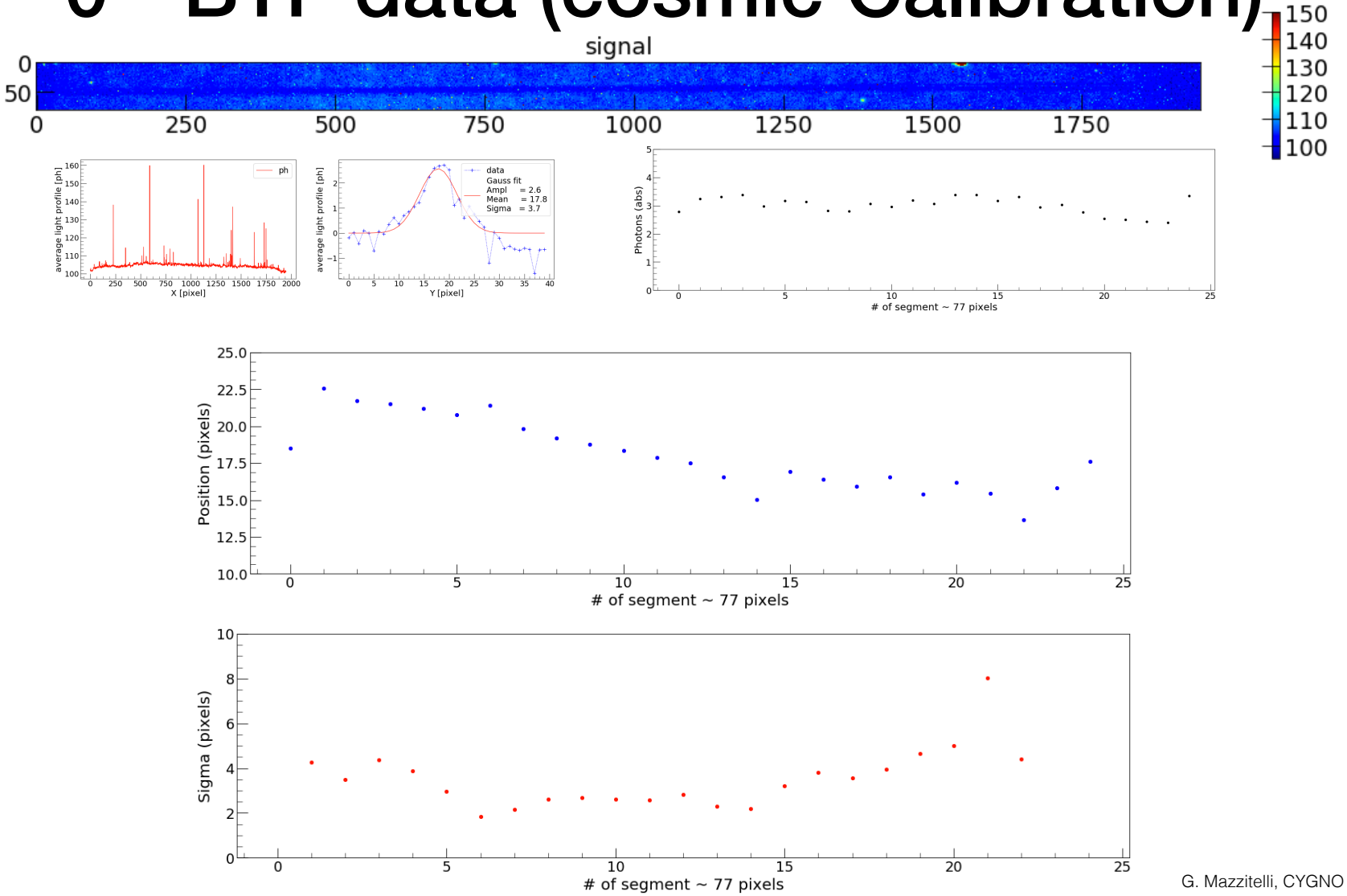
2 - BTF data (cosmic Calibration)



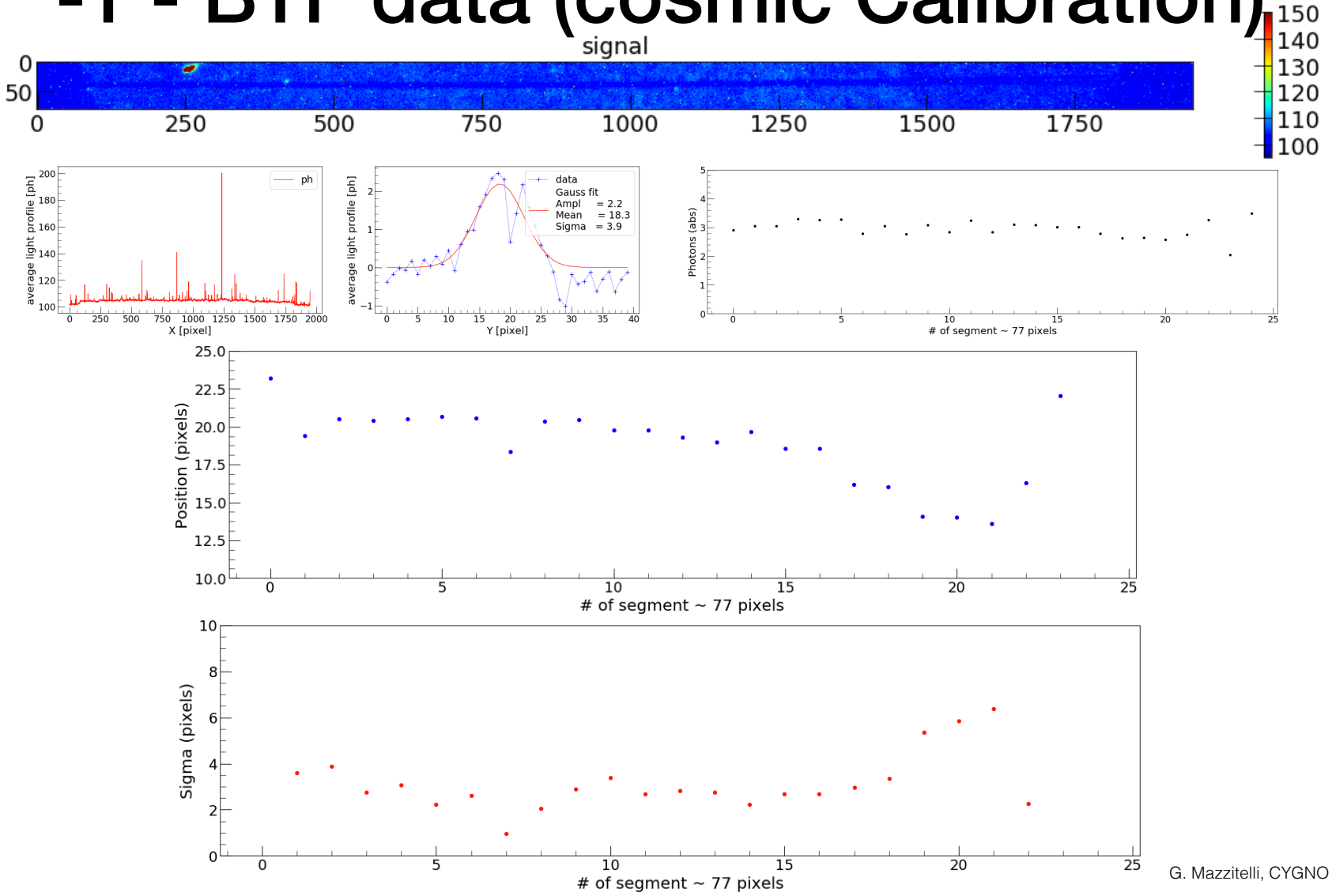
1 - BTF data (cosmic Calibration)



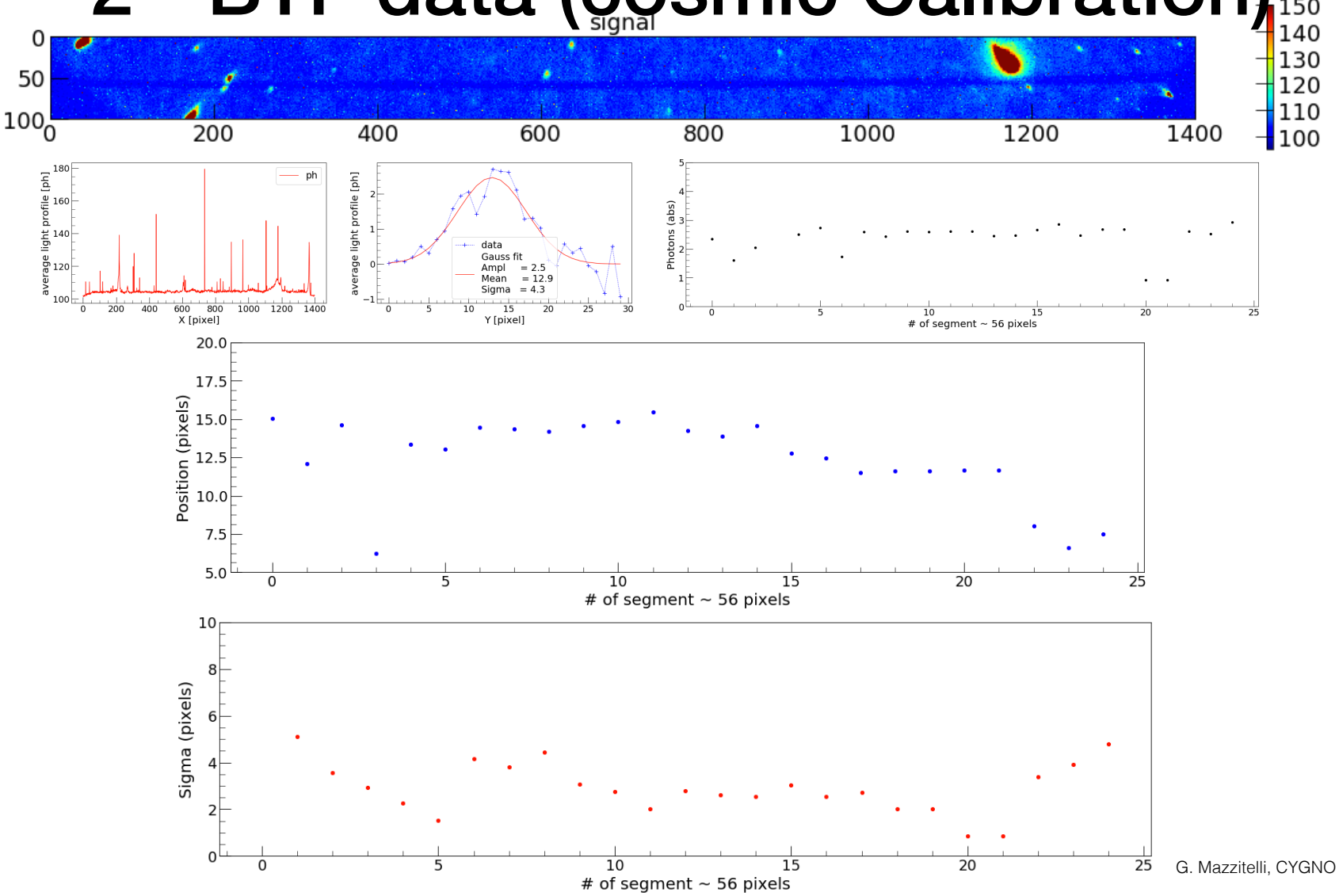
0 - BTF data (cosmic Calibration)



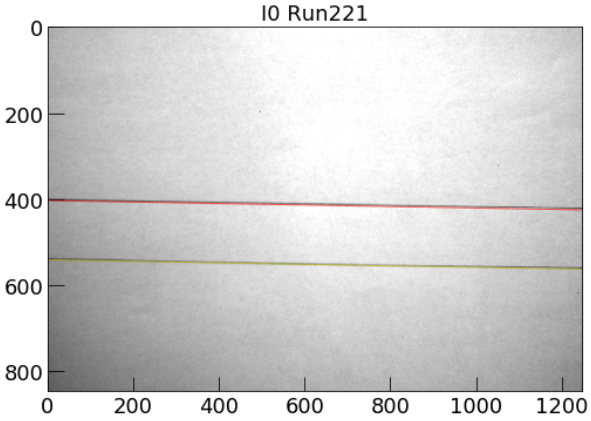
-1 - BTF data (cosmic Calibration)

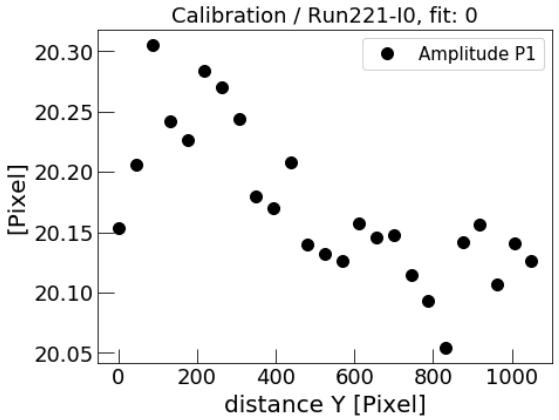


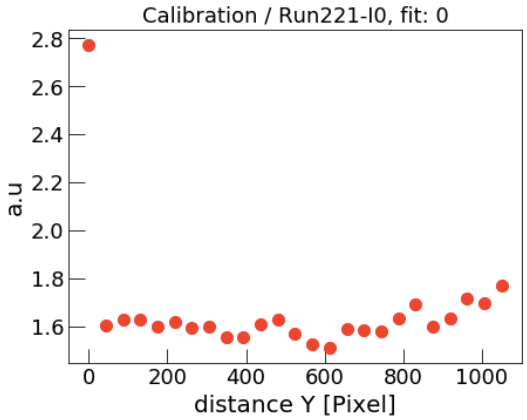
-2 - BTF data (cosmic Calibration)

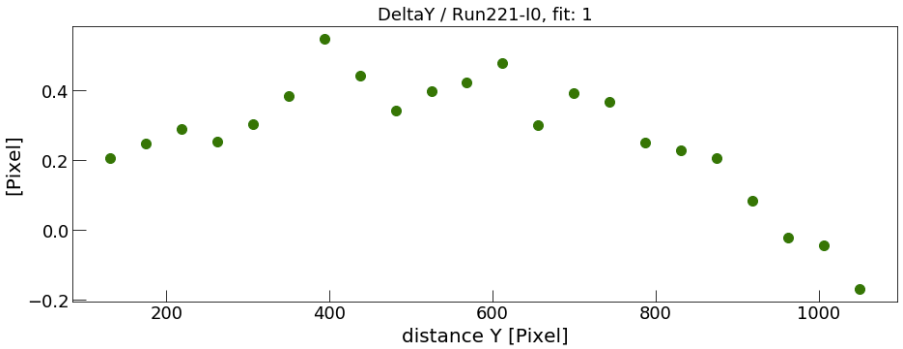


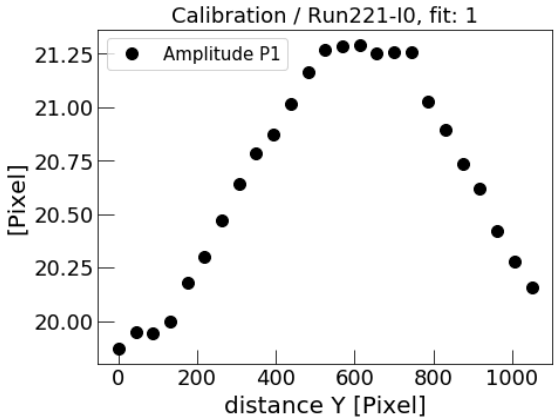
dry test

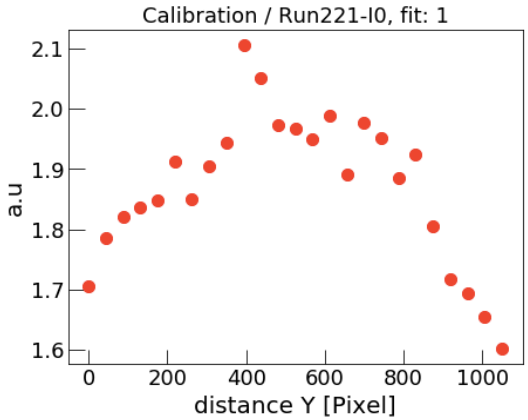

I0 Run221
0
200
400
600
800
0
200
400
600
800
1000
1200

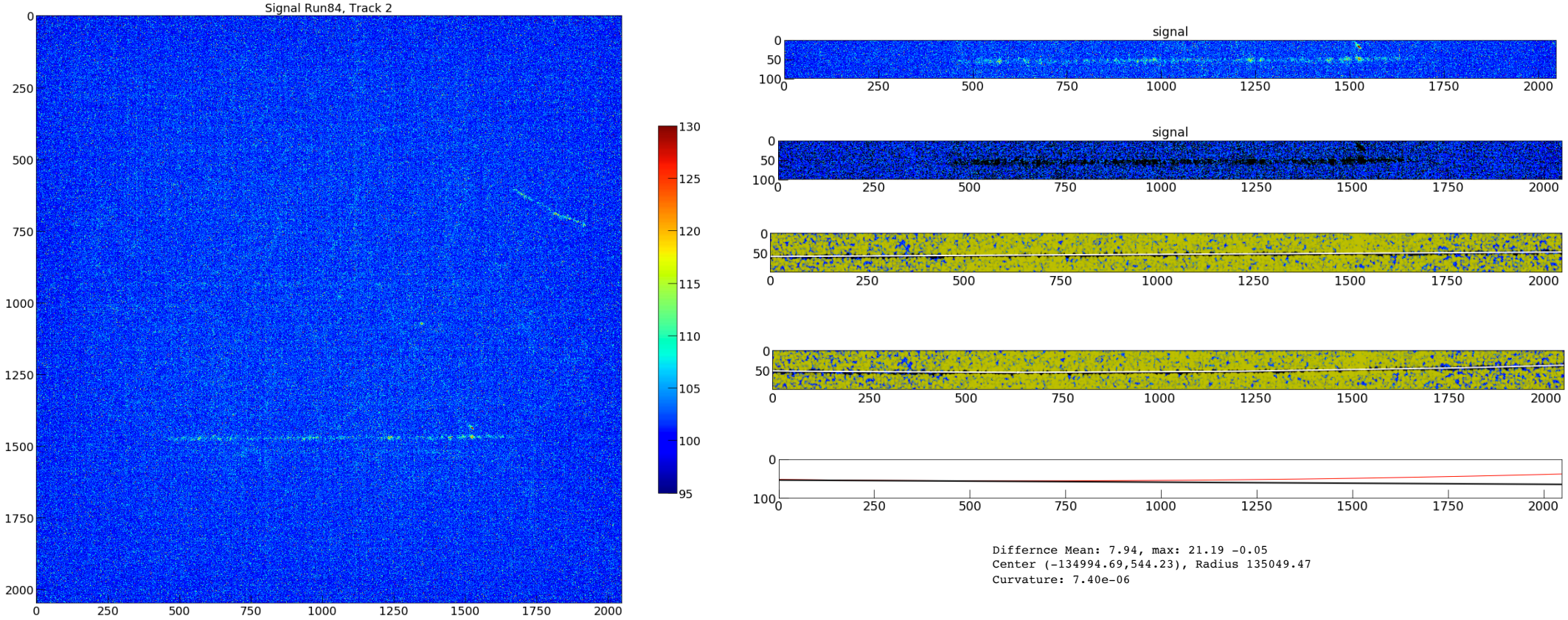

Calibration / Run221-I0, fit: 0
Amplitude P1
[Pixel]
20.30
20.25
20.20
20.15
20.10
20.05
0
200
400
600
800
1000
distance Y [Pixel]


Calibration / Run221-I0, fit: 0
a.u
2.8
2.6
2.4
2.2
2.0
1.8
1.6
0
200
400
600
800
1000
distance Y [Pixel]

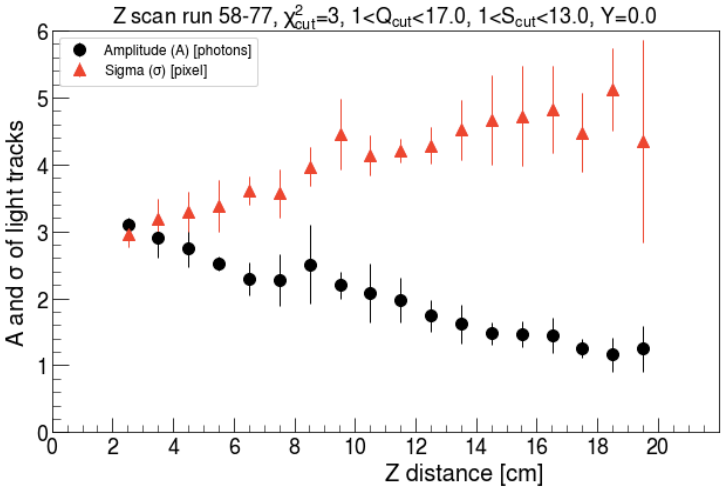

DeltaY / Run221-I0, fit: 1
[Pixel]
0.4
0.2
0.0
−0.2
200
400
600
800
1000
distance Y [Pixel]

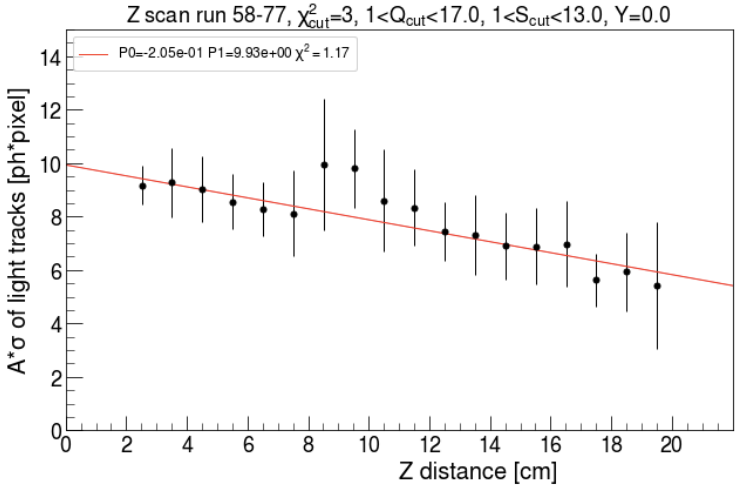

Calibration / Run221-I0, fit: 1
Amplitude P1
[Pixel]
21.25
21.00
20.75
20.50
20.25
20.00
0
200
400
600
800
1000
distance Y [Pixel]

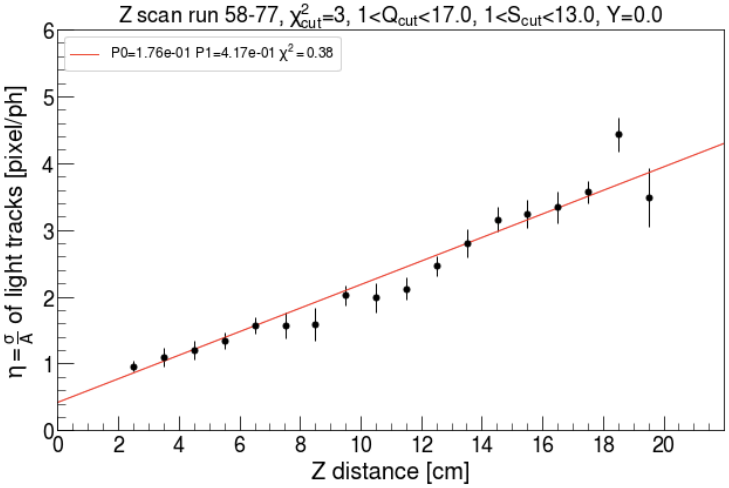

Calibration / Run221-I0, fit: 1
a.u
2.1
2.0
1.9
1.8
1.7
1.6
0
200
400
600
800
1000
distance Y [Pixel]

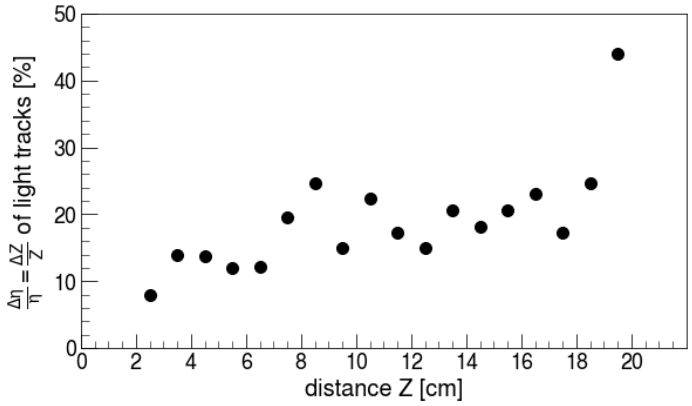

Signal Run84, Track 2
signal
signal
Differnce Mean: 7.94, max: 21.19 -0.05
Center (-134994.69,544.23), Radius 135049.47
Curvature: 7.40e-06

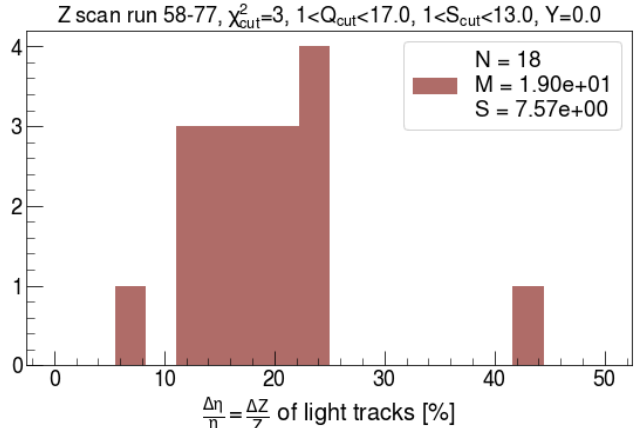
MIP 0.6kV/cm (1938 pixel)



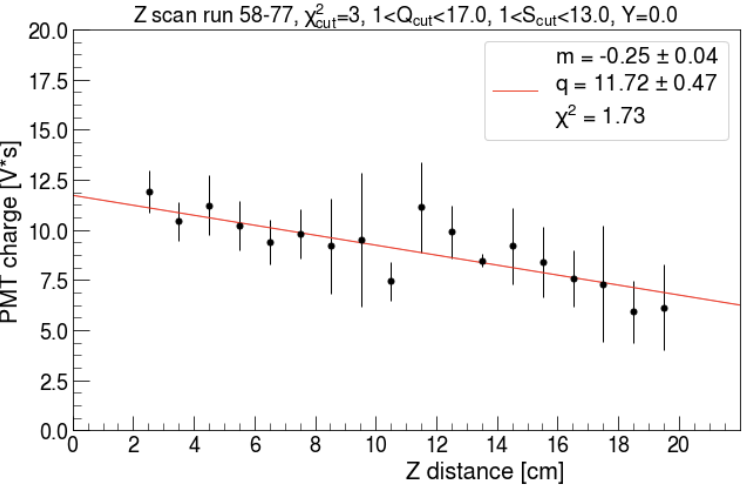


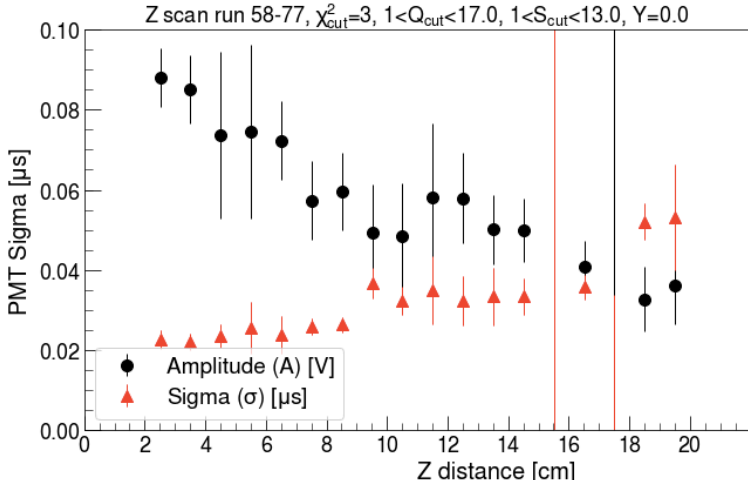


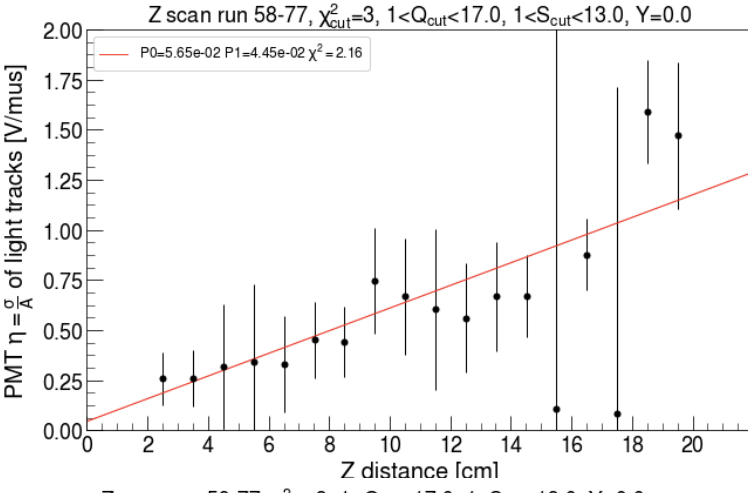


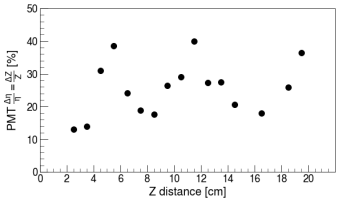


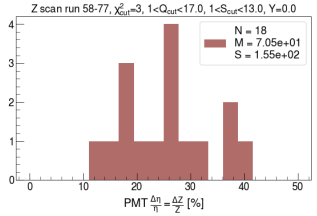
MIP 0.6kV/cm (34 segments)

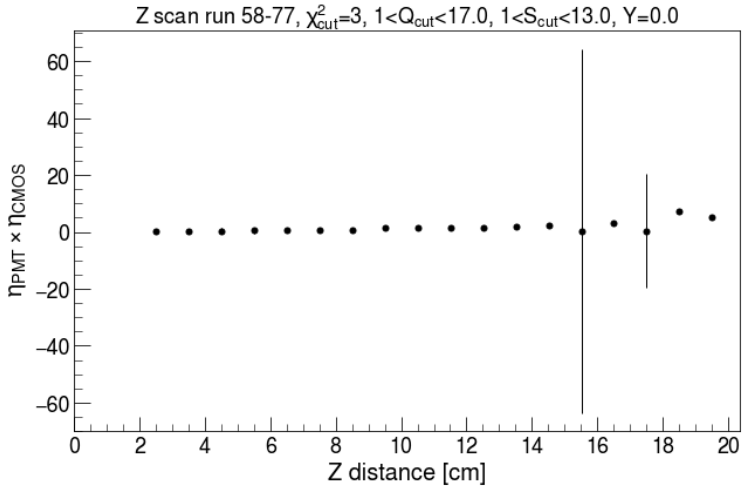


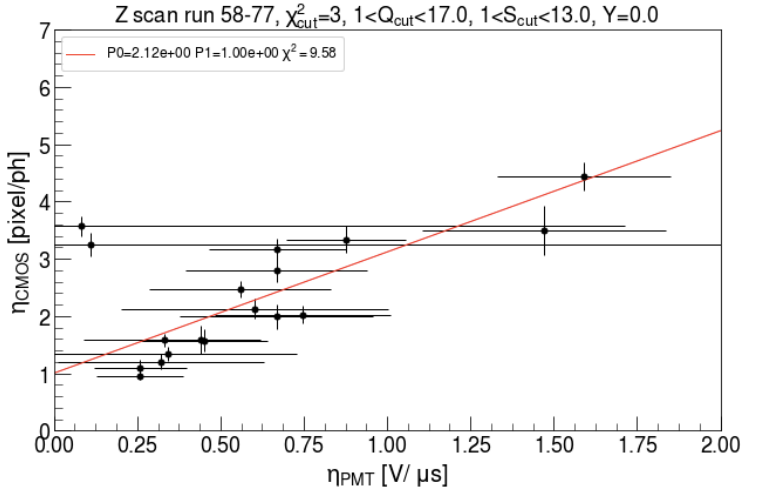




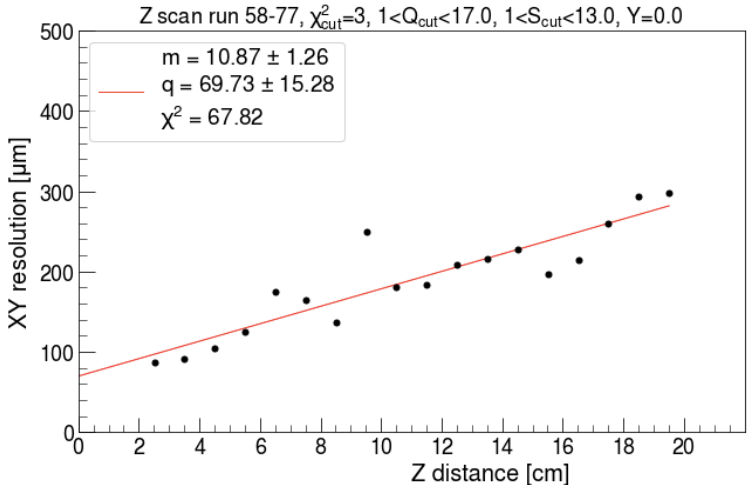


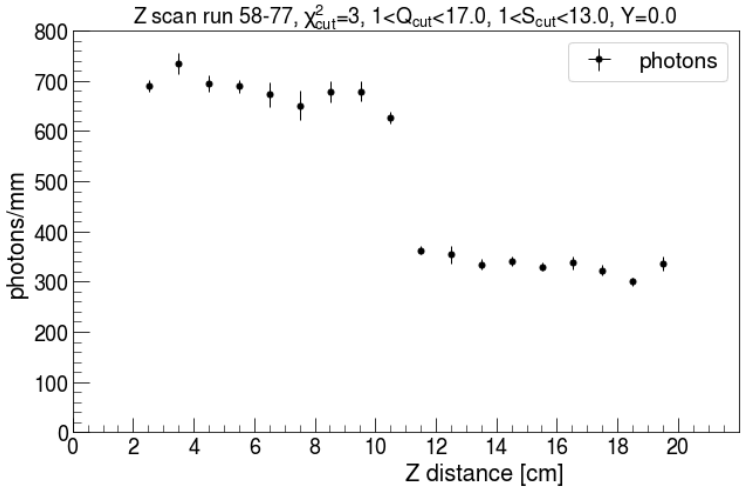


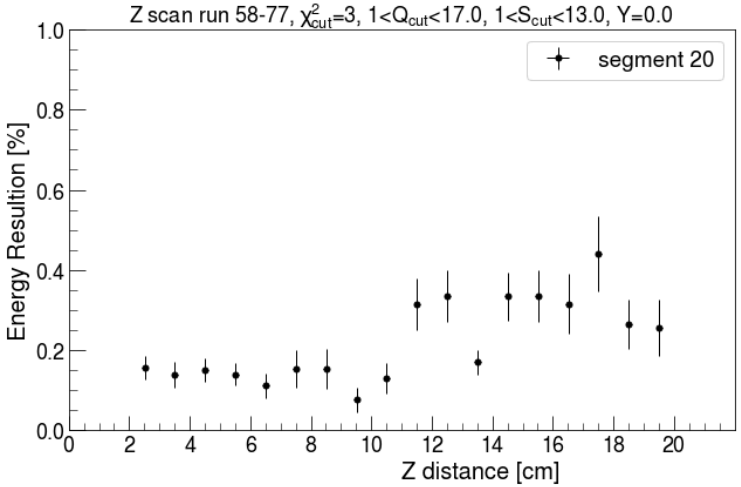


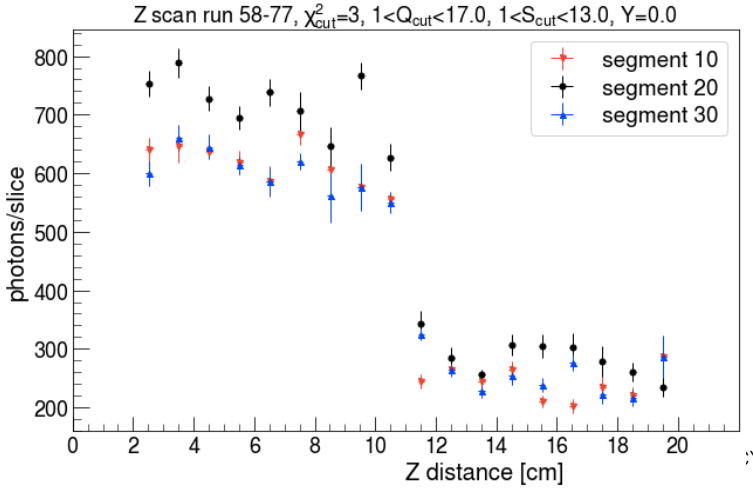


MIP 0.6kV/cm (34 segments)

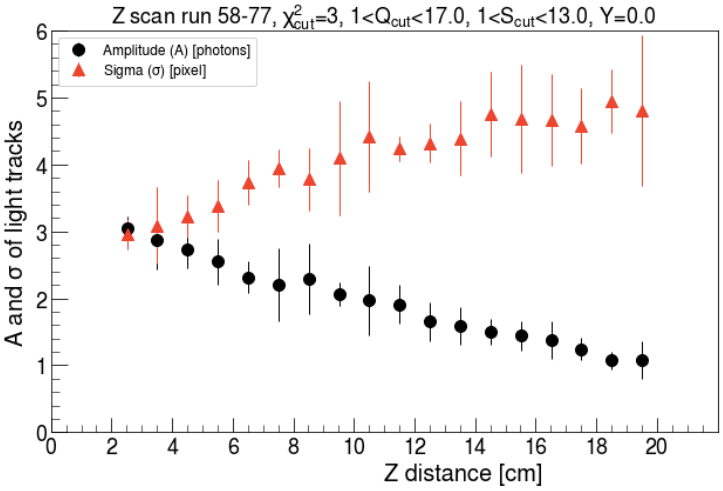


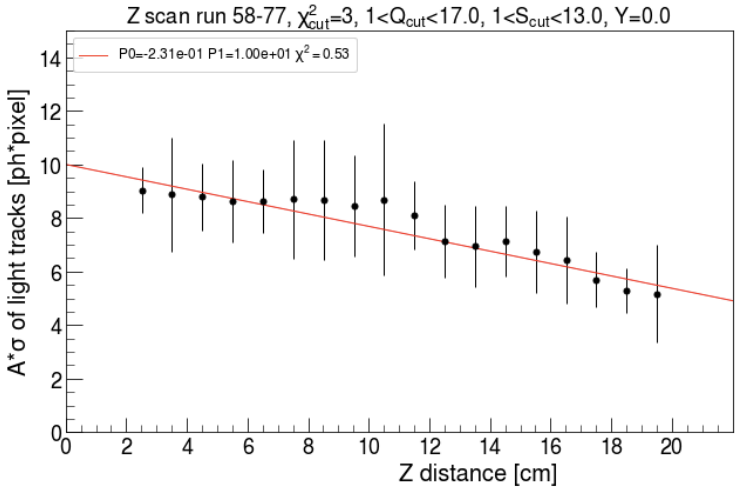


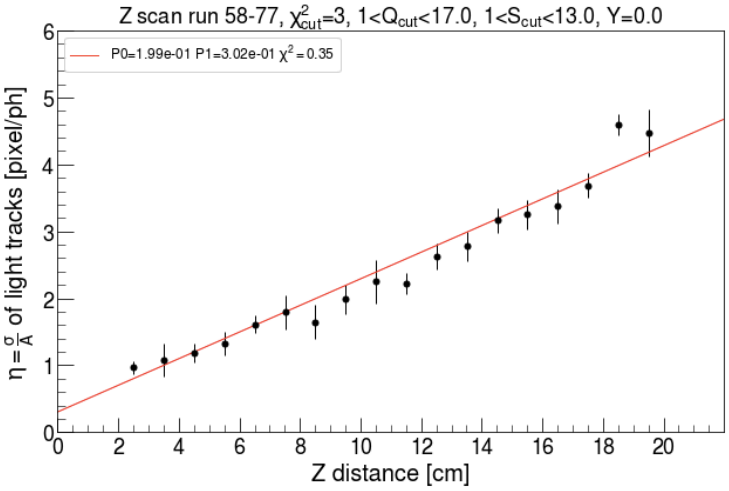


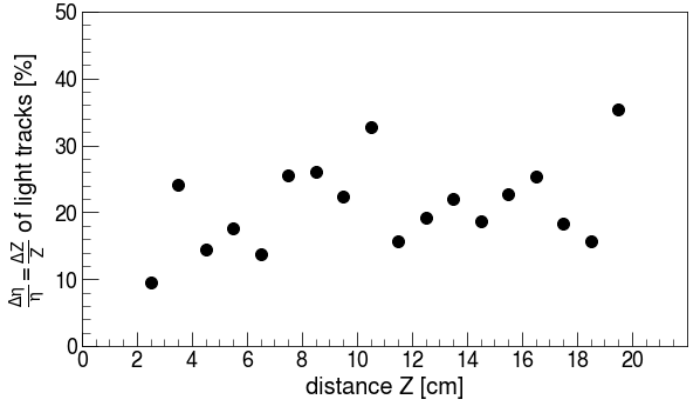


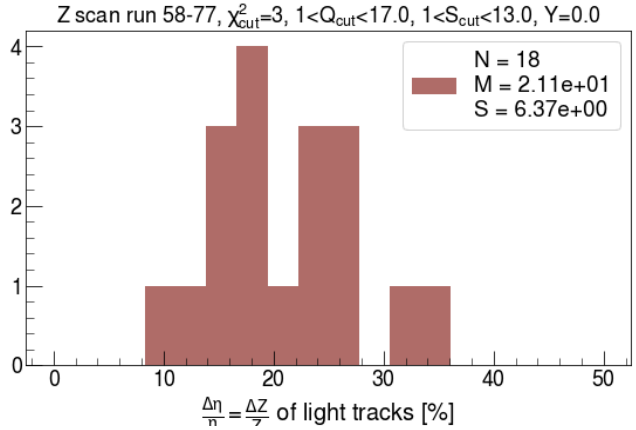
MIP 0.6kV/cm (568 pixel)



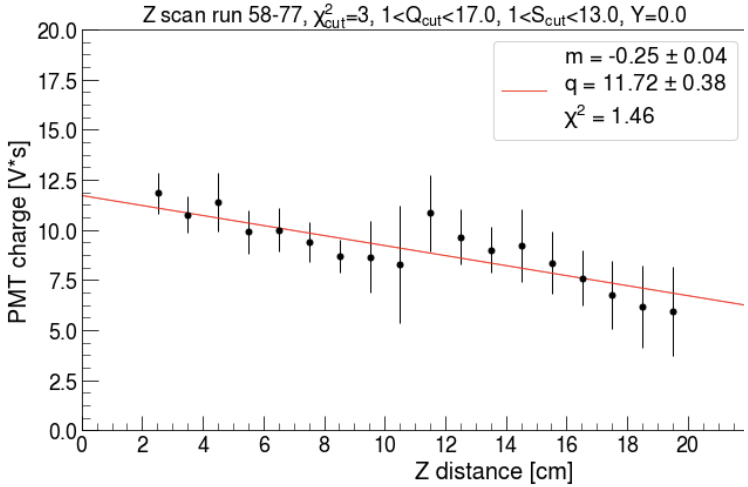


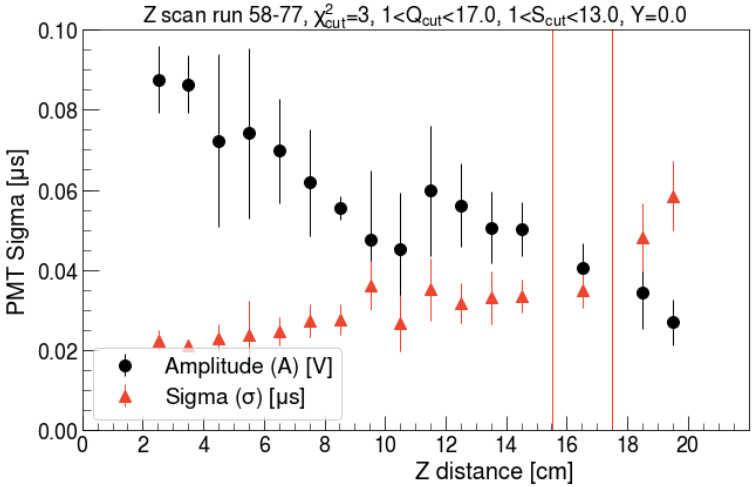


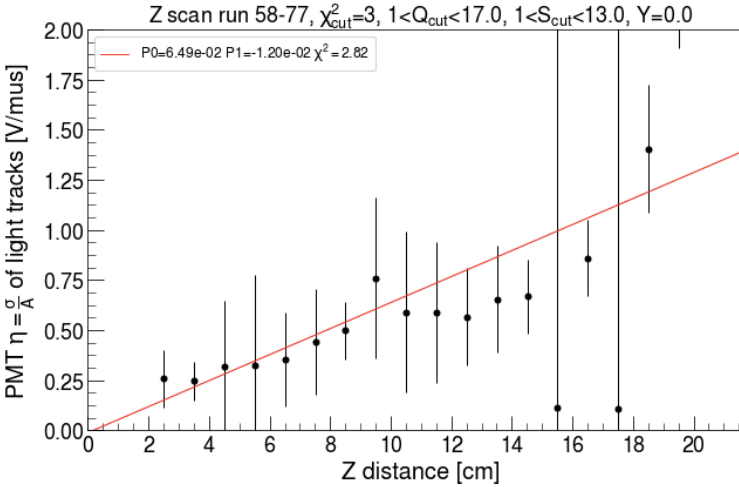


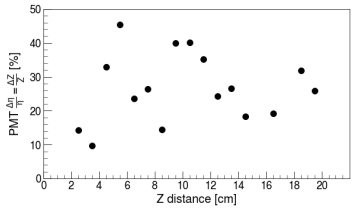


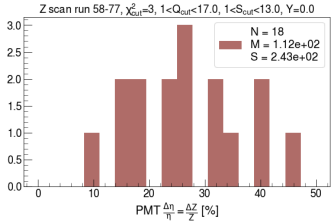
MIP 0.6kV/cm (10 segments)

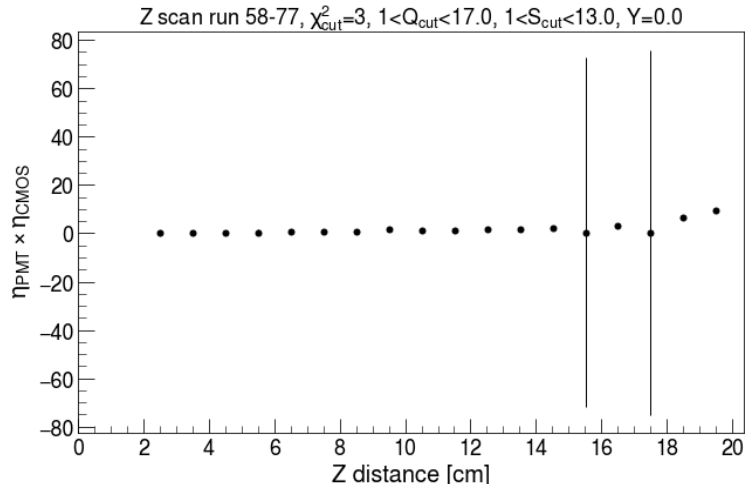


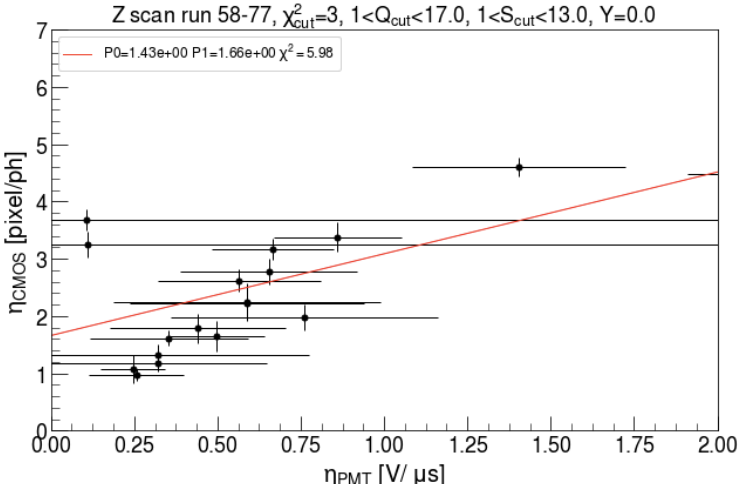




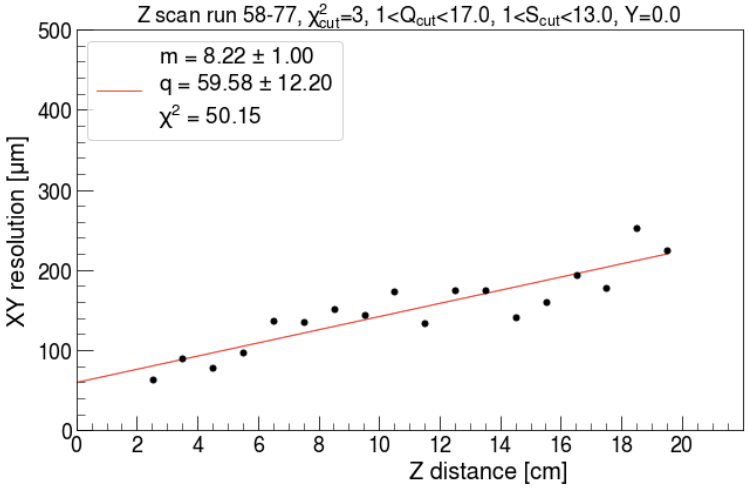


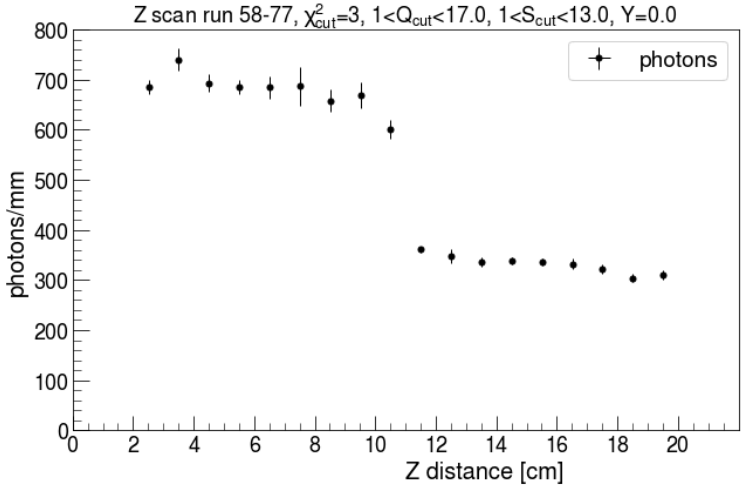


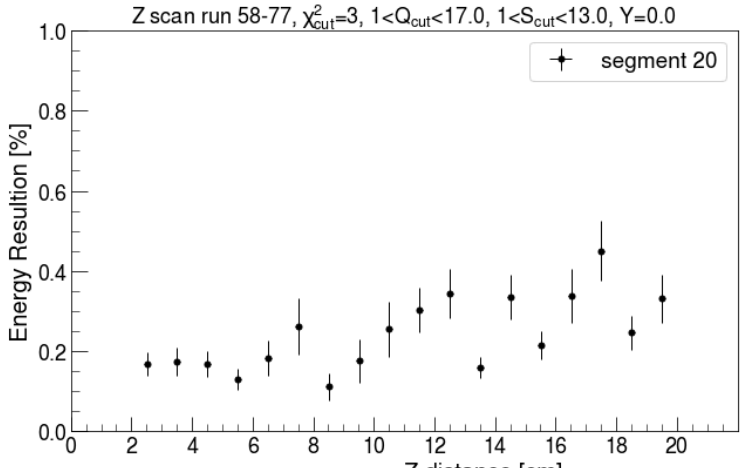


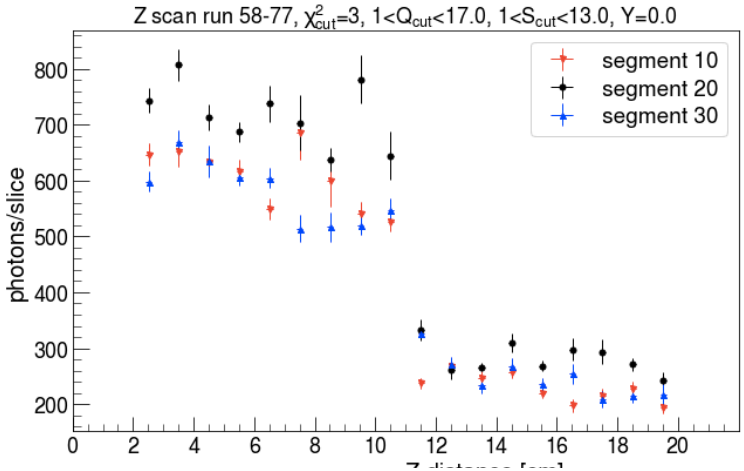


MIP 0.6kV/cm (10 segments)

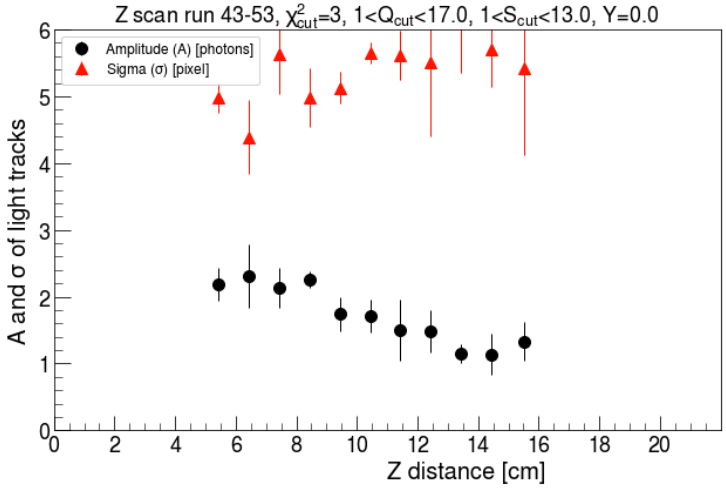


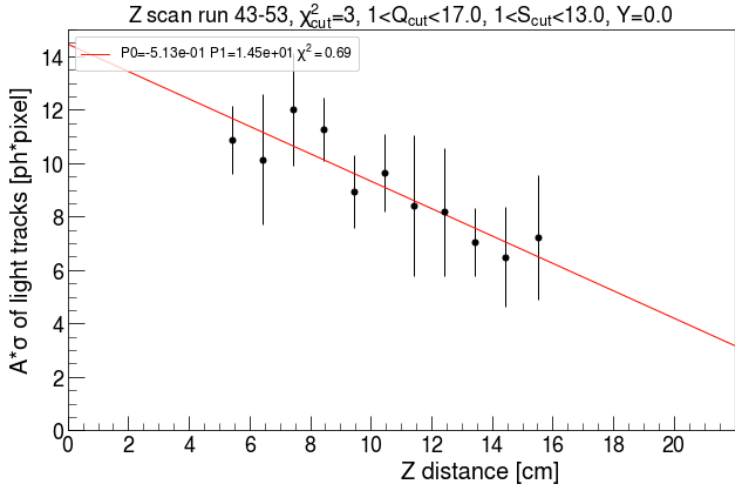


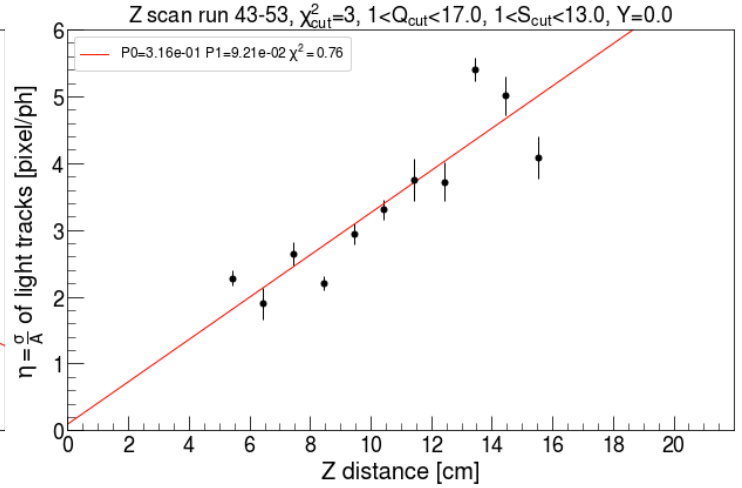


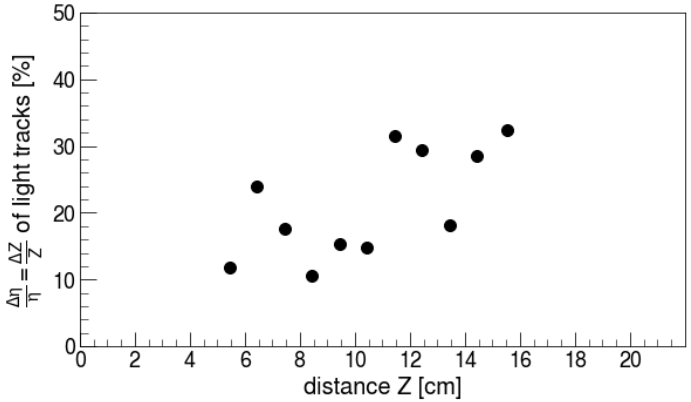


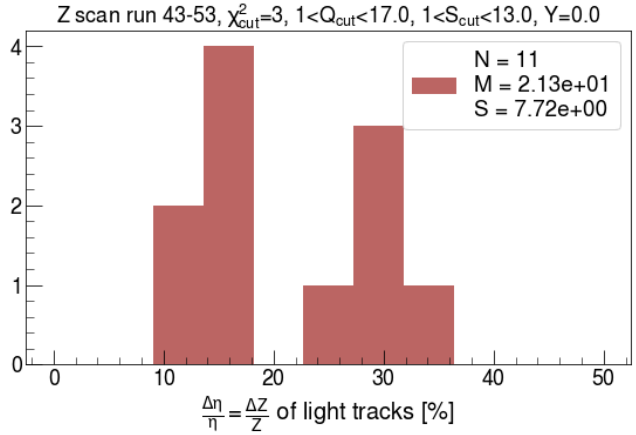
MIP 0.45kV/cm (34 segments)



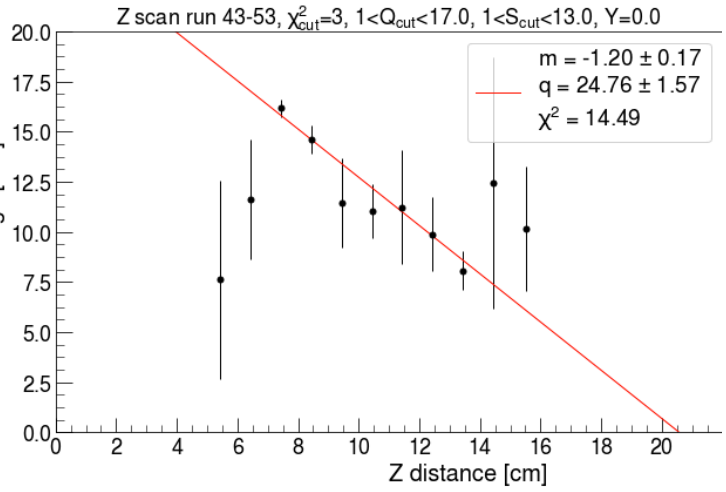


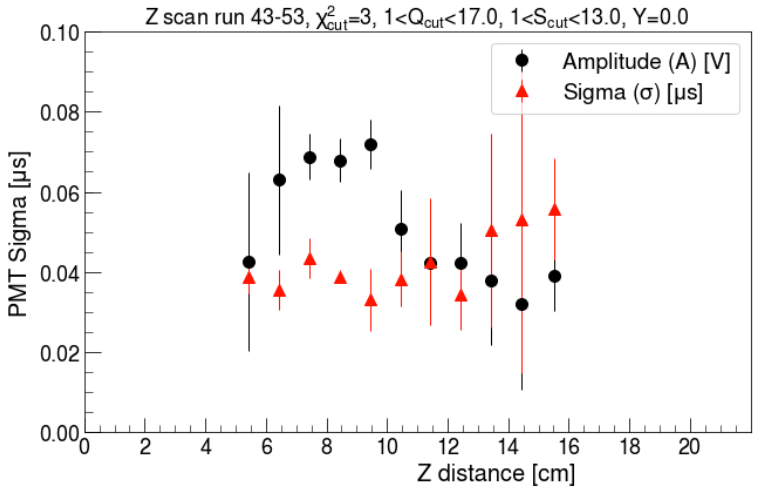


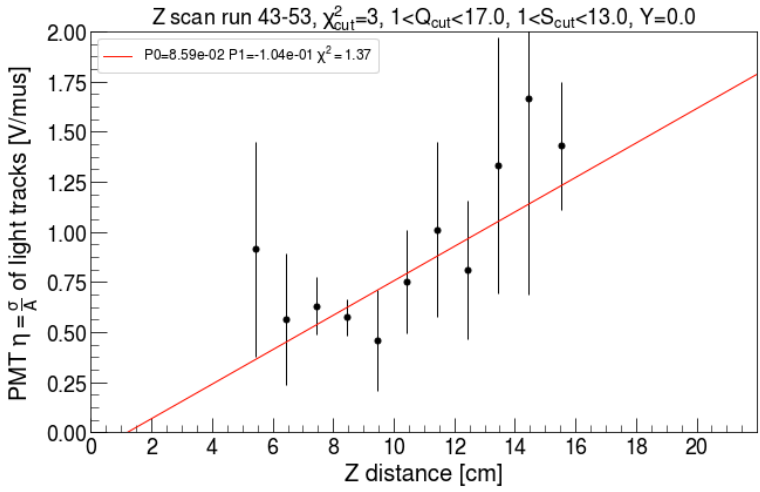


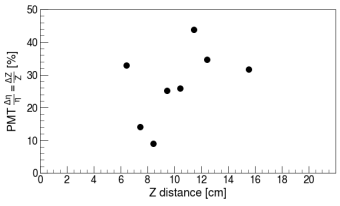


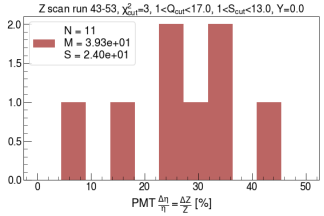
MIP 0.45kV/cm (34 segments)

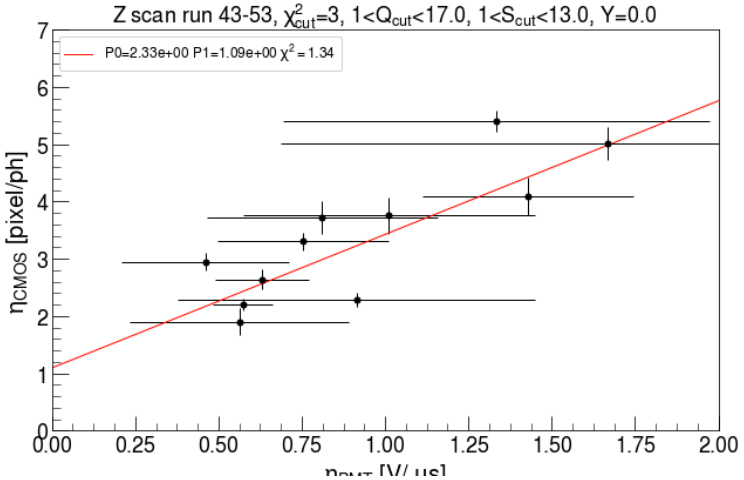


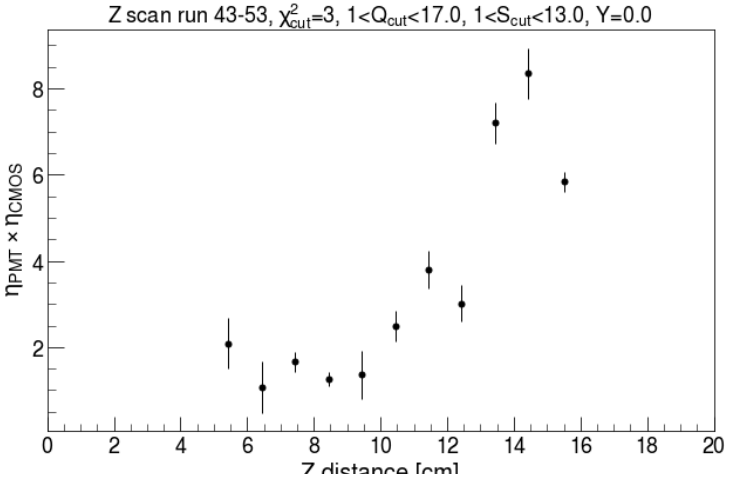




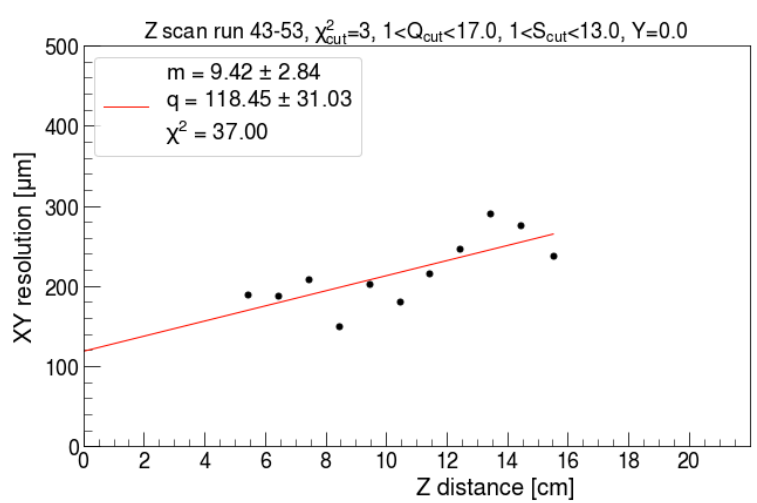


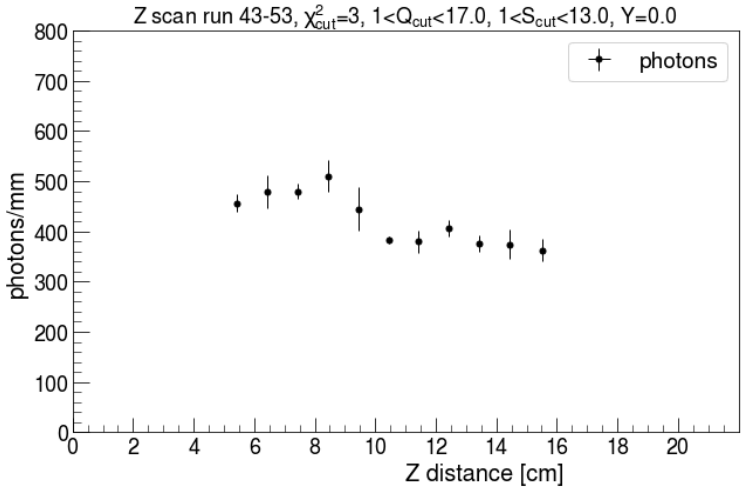


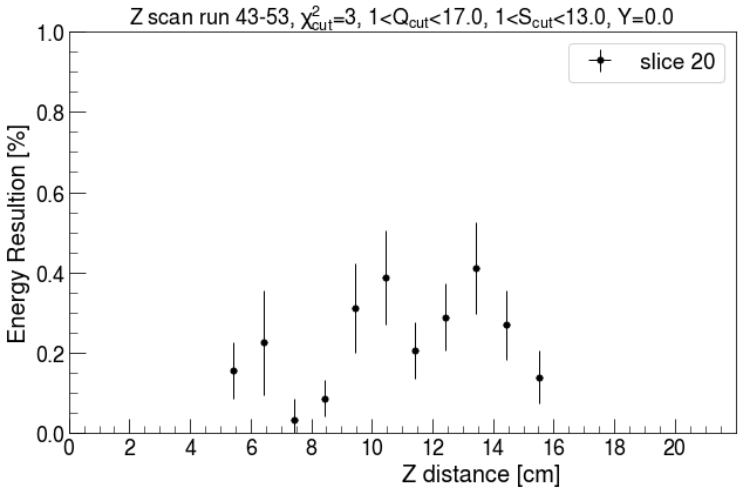


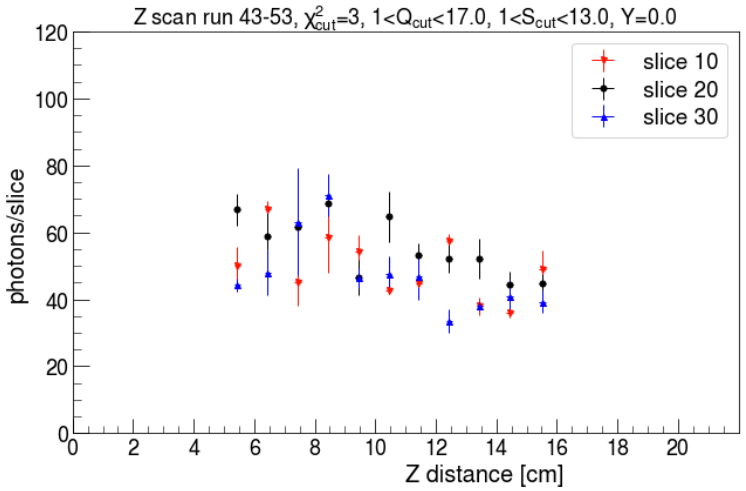


MIP 0.45kV/cm (34 segments)

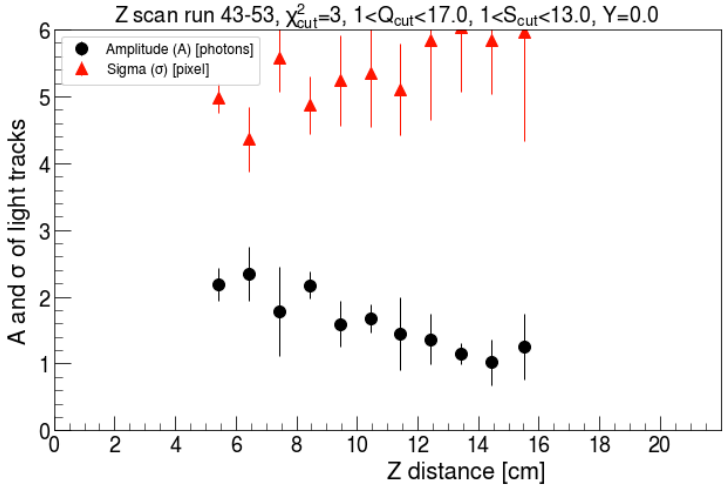


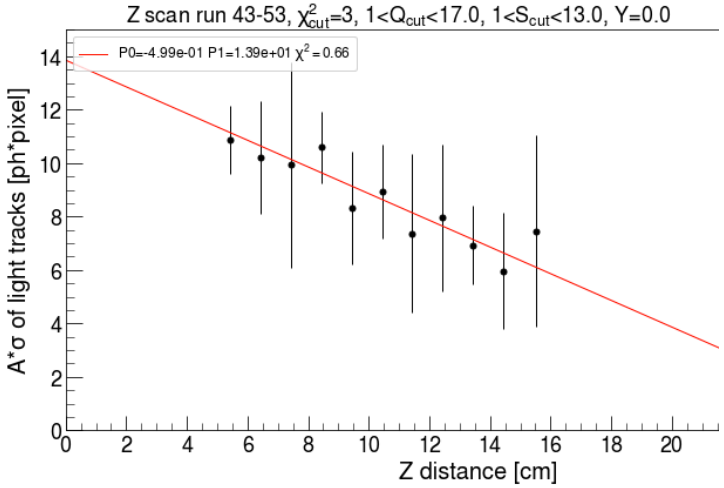


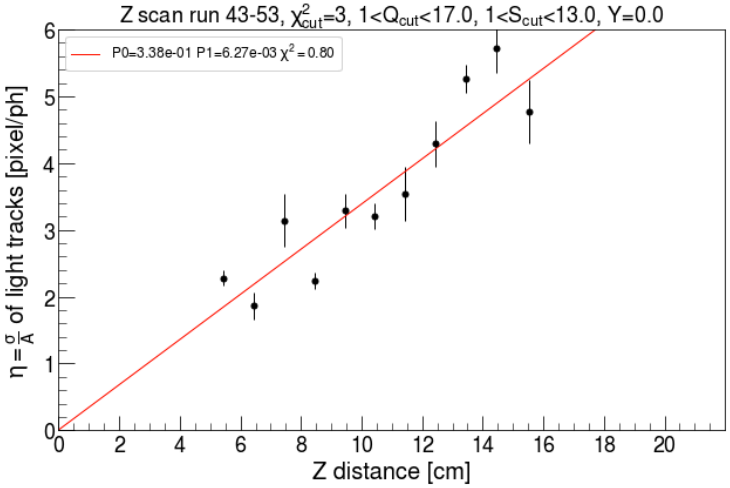


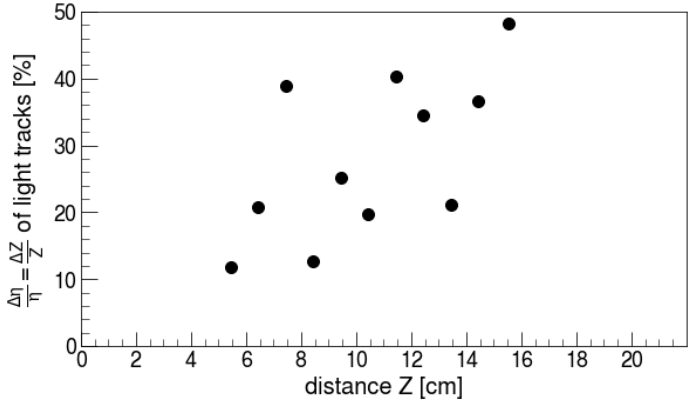


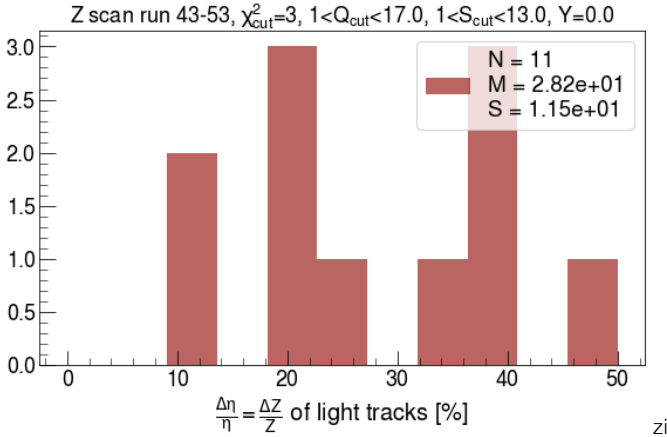
MIP 0.45kV/cm (10 segments)



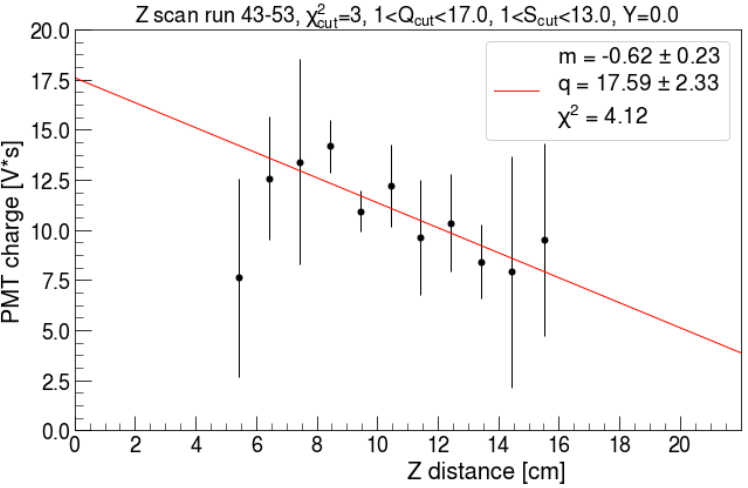


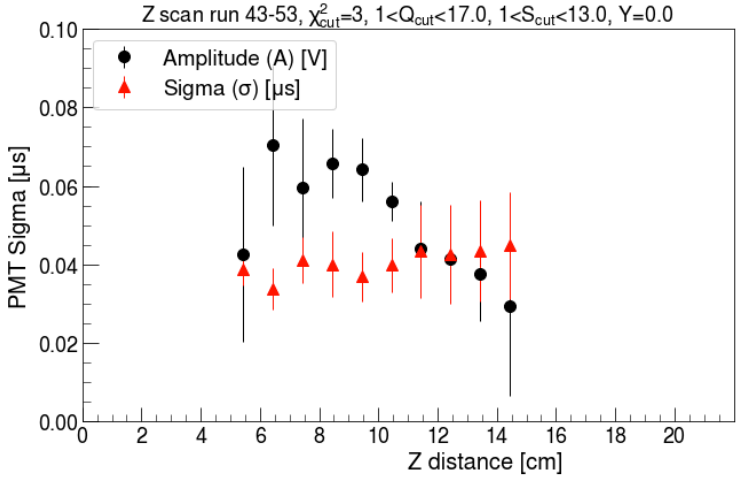


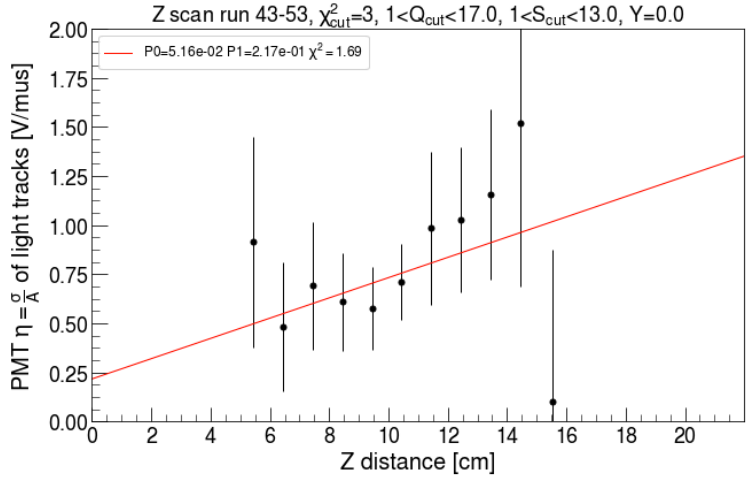


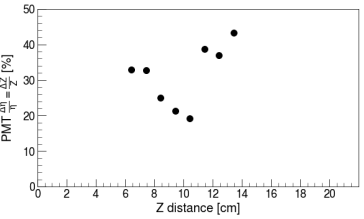


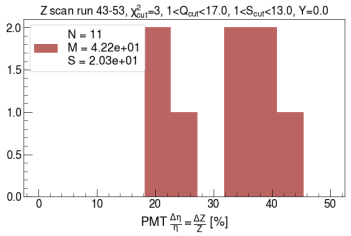
MIP 0.45kV/cm (10 segments)

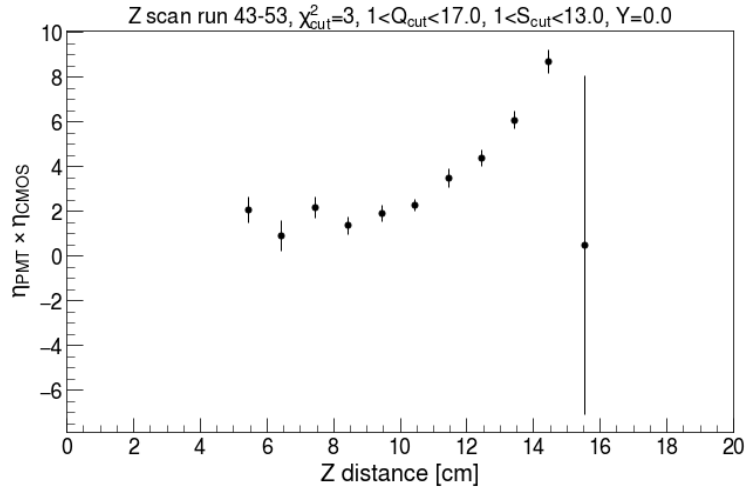


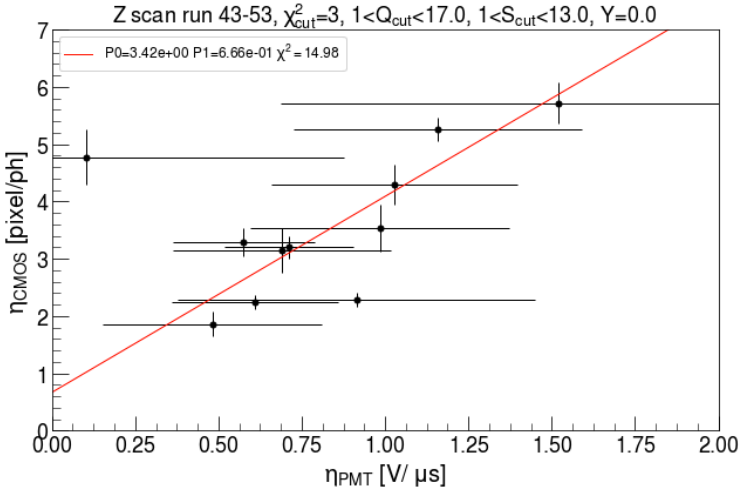




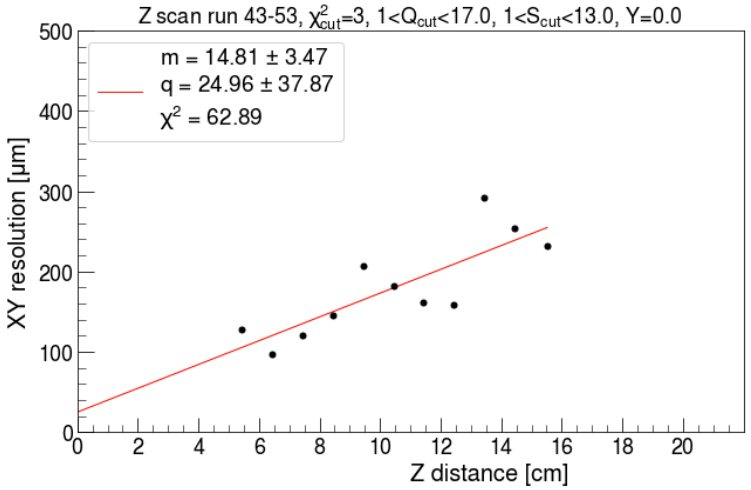


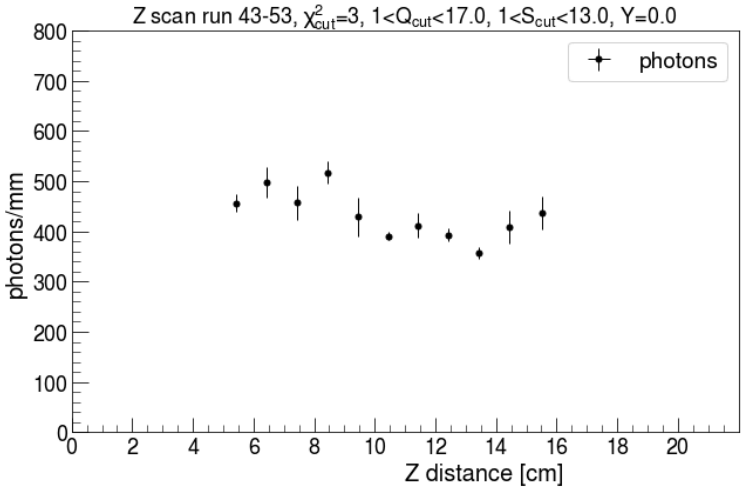


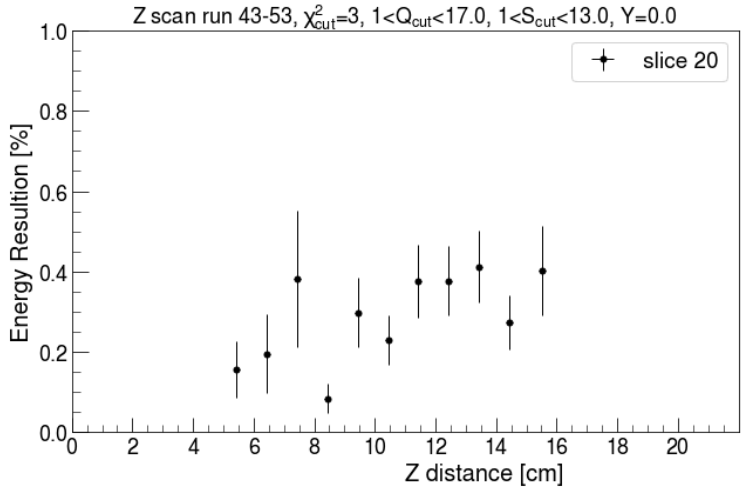


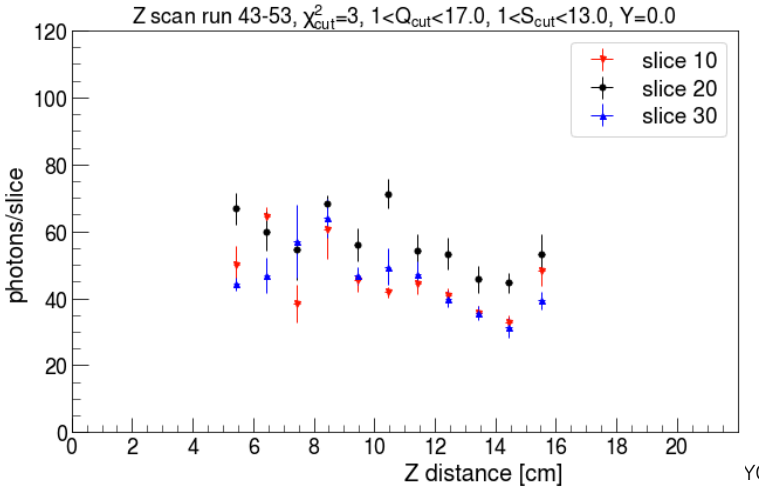


MIP 0.45kV/cm (10 segments)

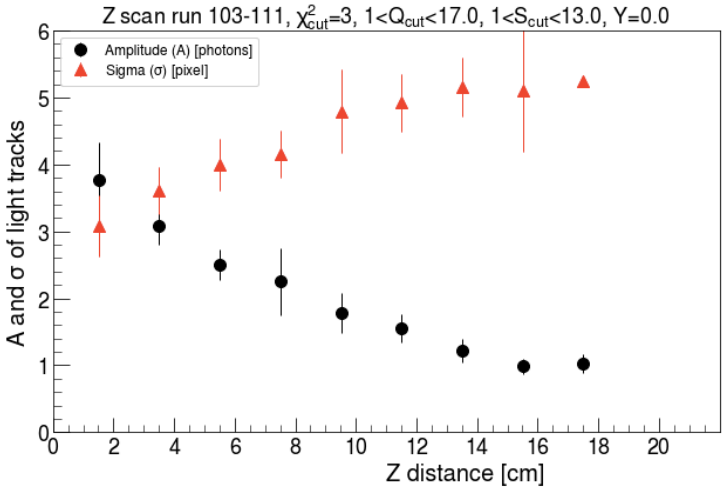


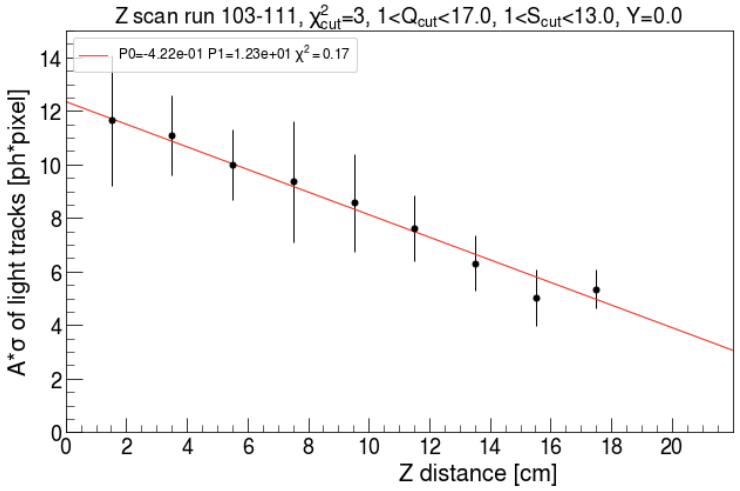


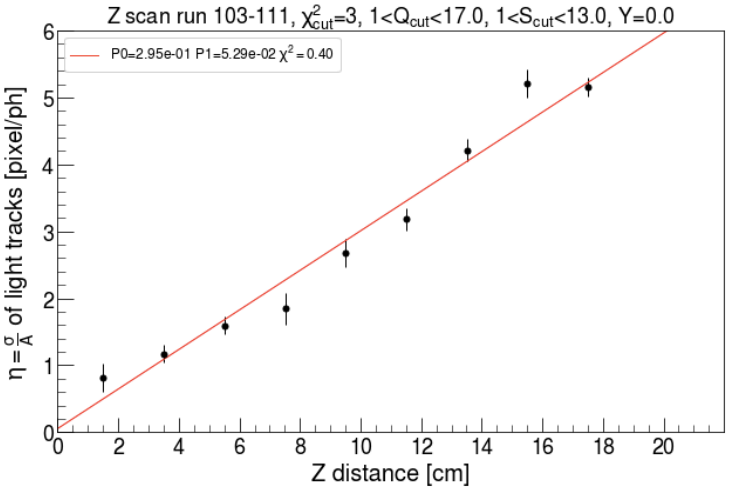


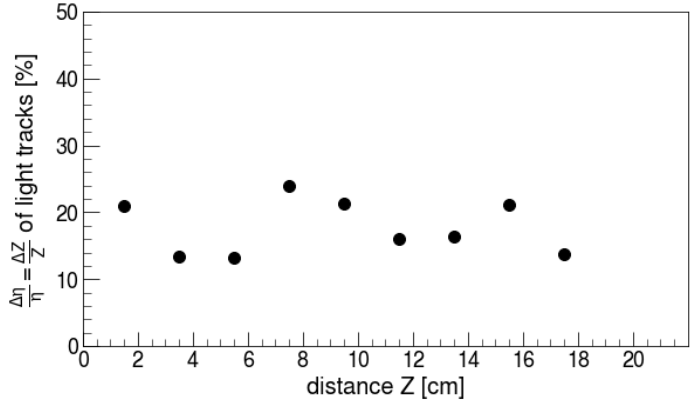


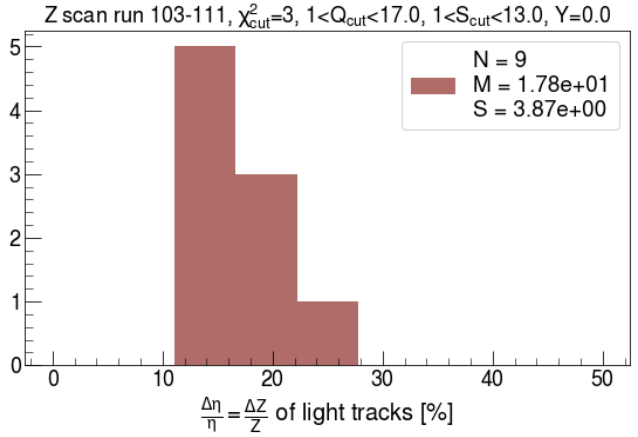
MIP 0.3kV/cm (34 segments)



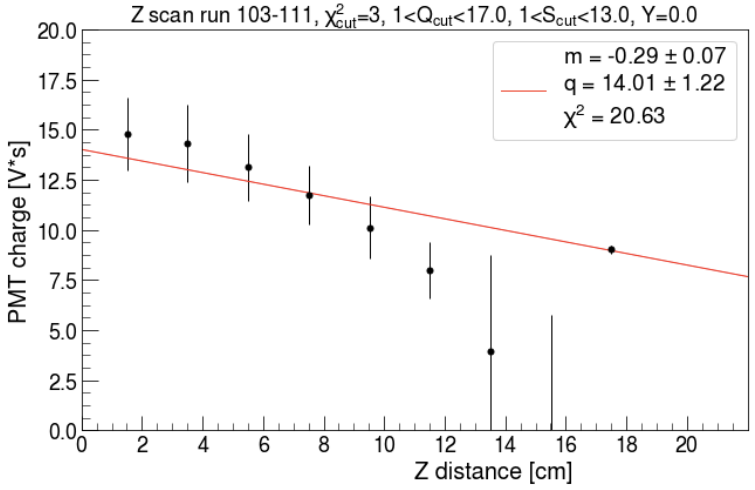


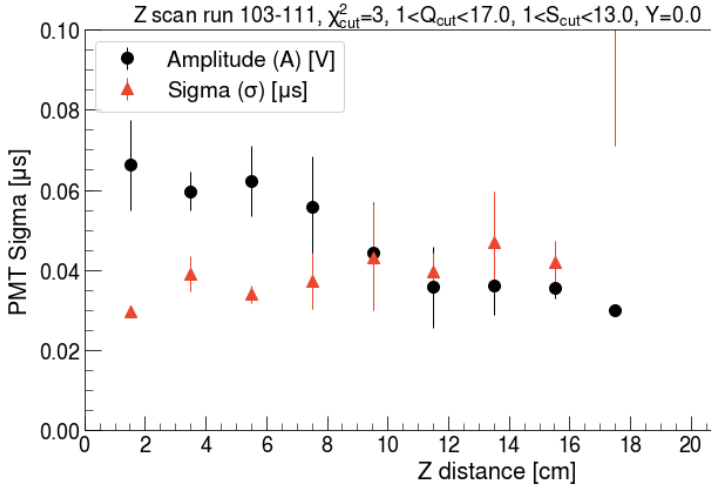


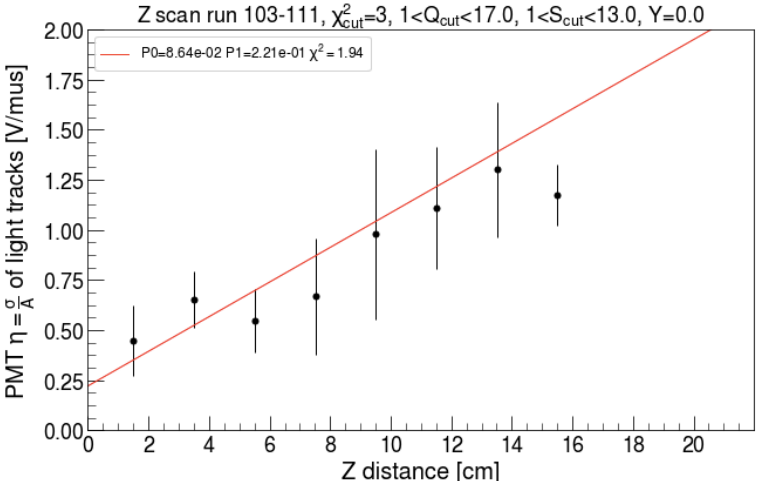


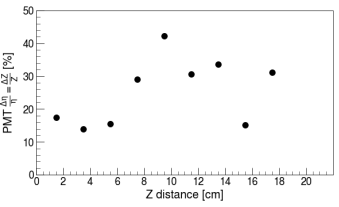


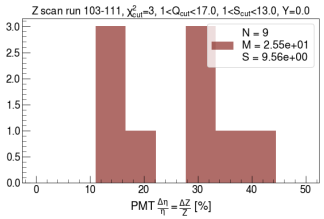
MIP 0.3kV/cm (34 segments)

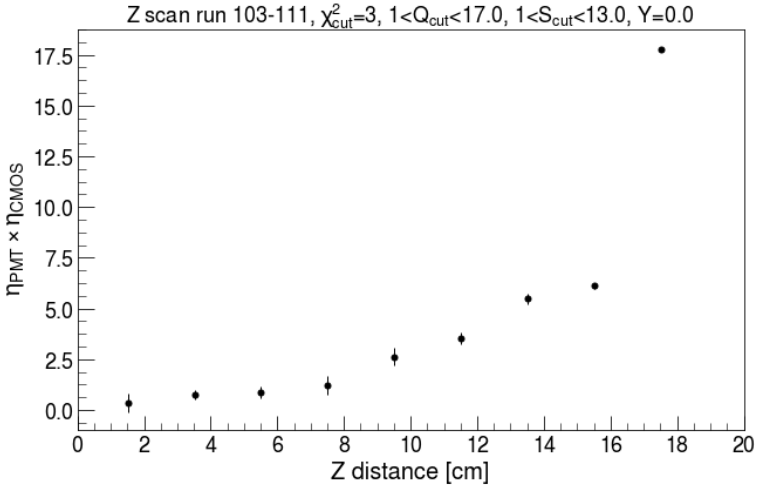


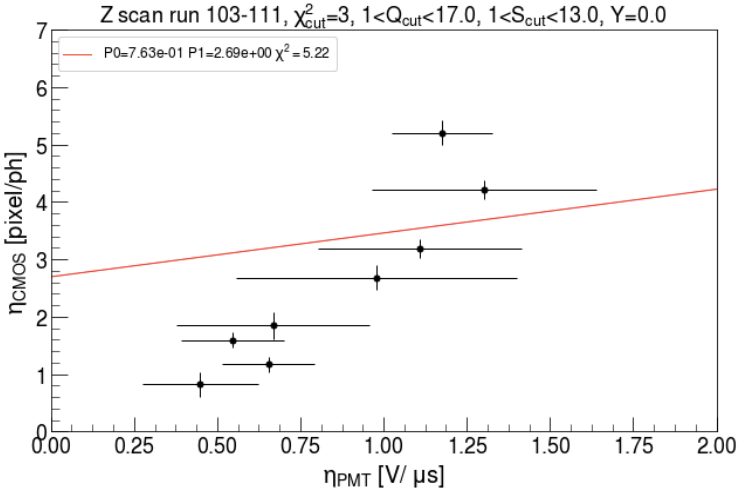




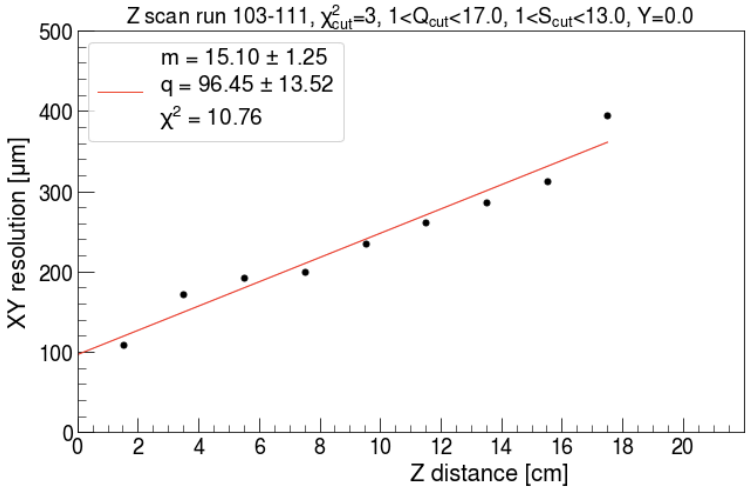


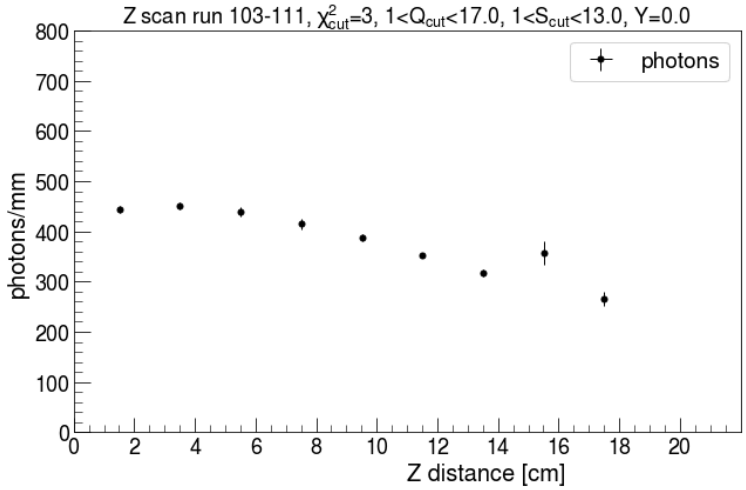


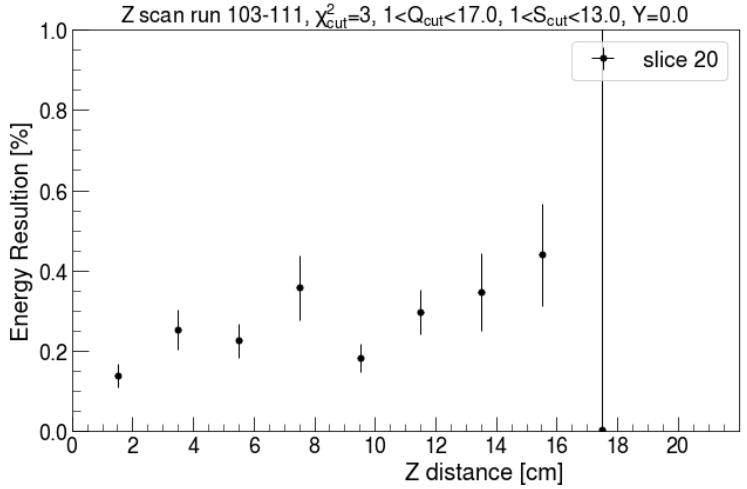


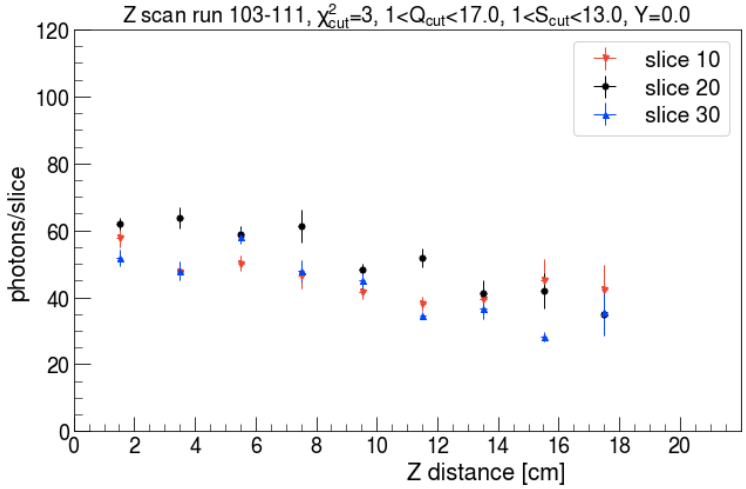


MIP 0.3kV/cm (34 segments)

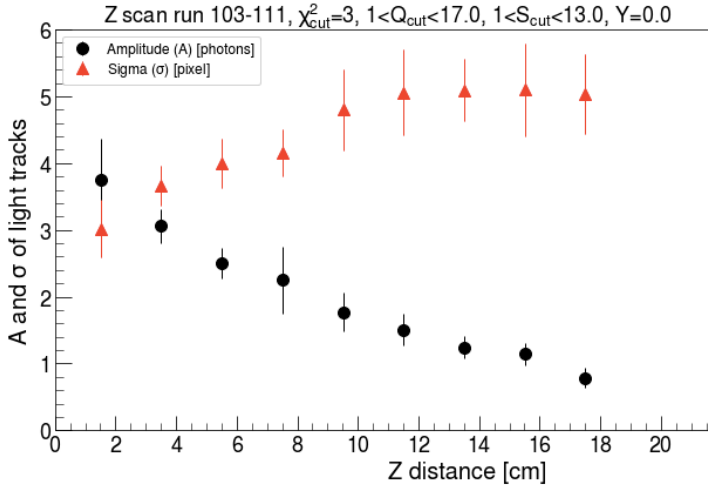


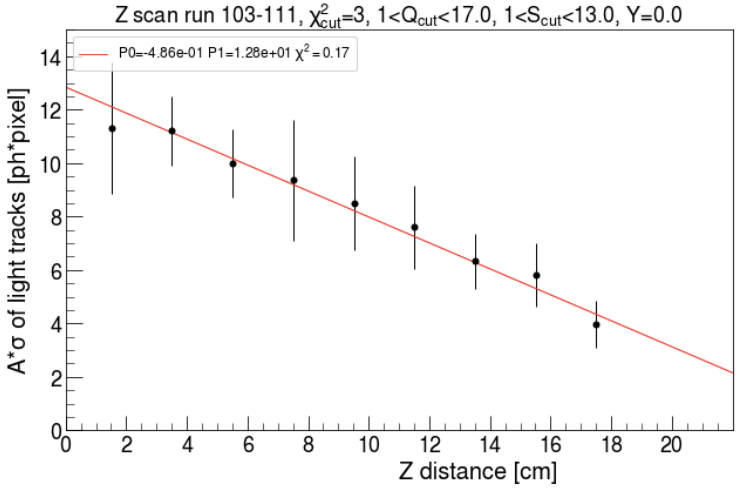


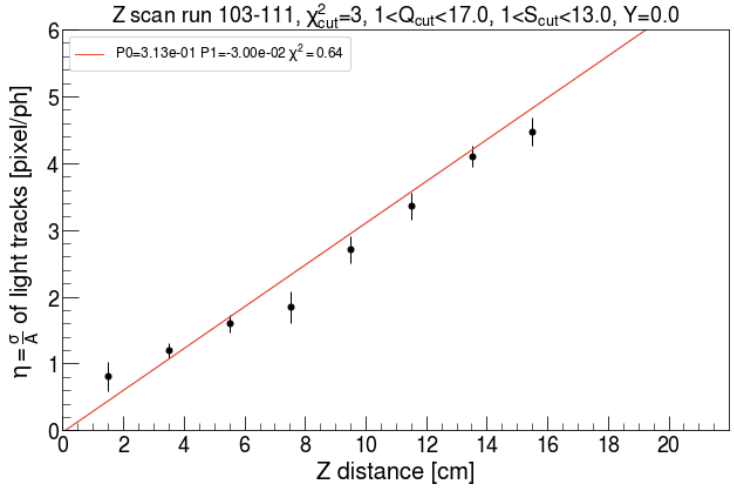


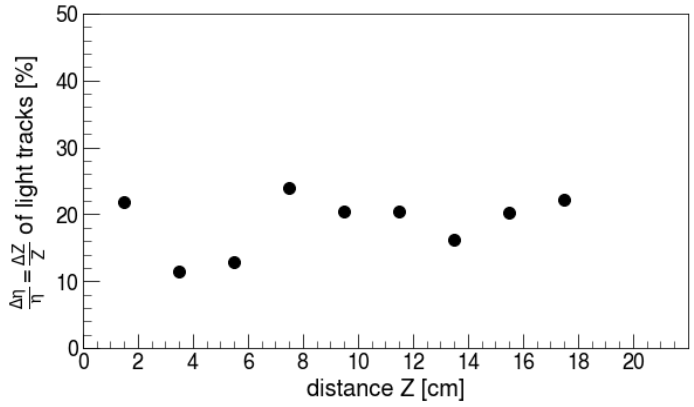


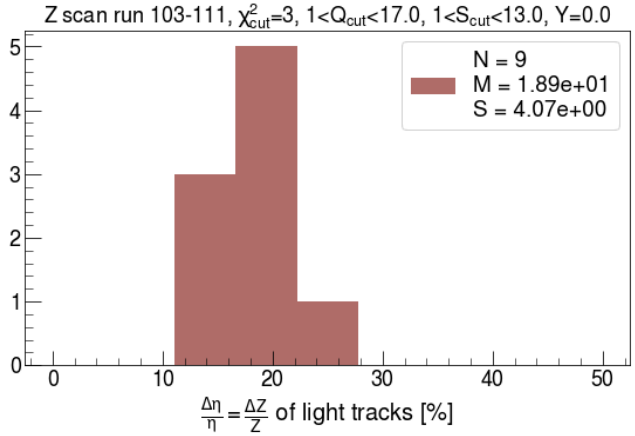
MIP 0.3kV/cm (10 segments)



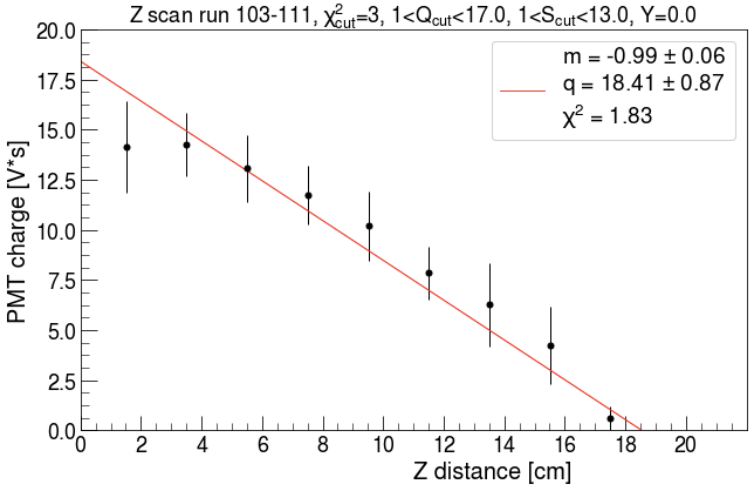


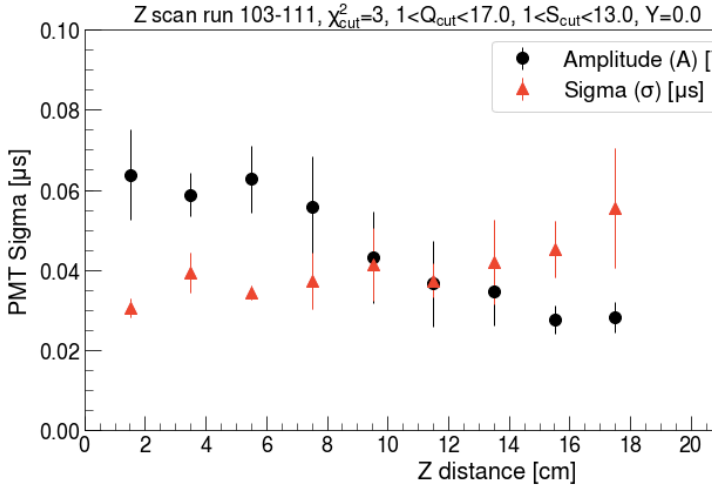


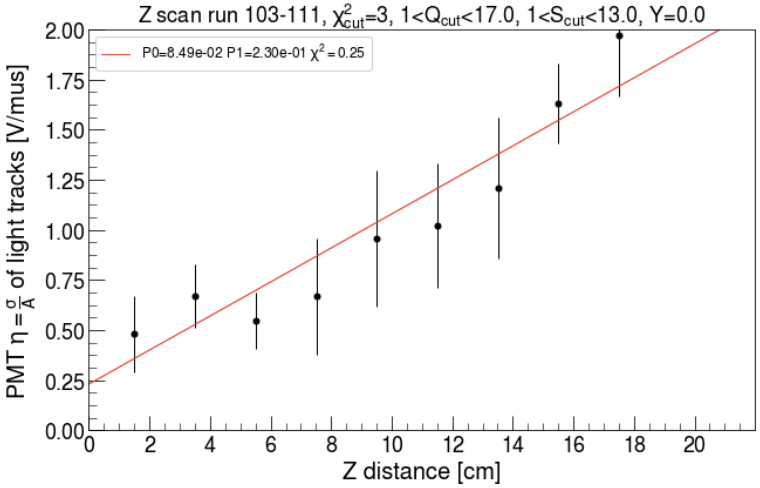


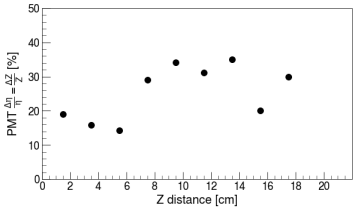


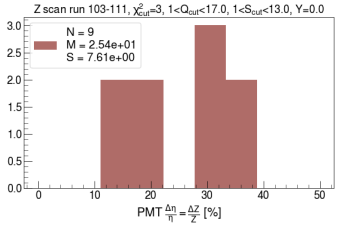
MIP 0.3kV/cm (10 segments)

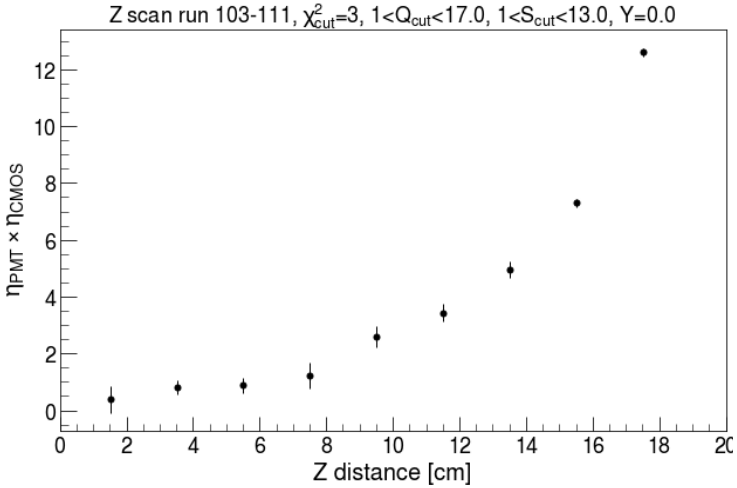


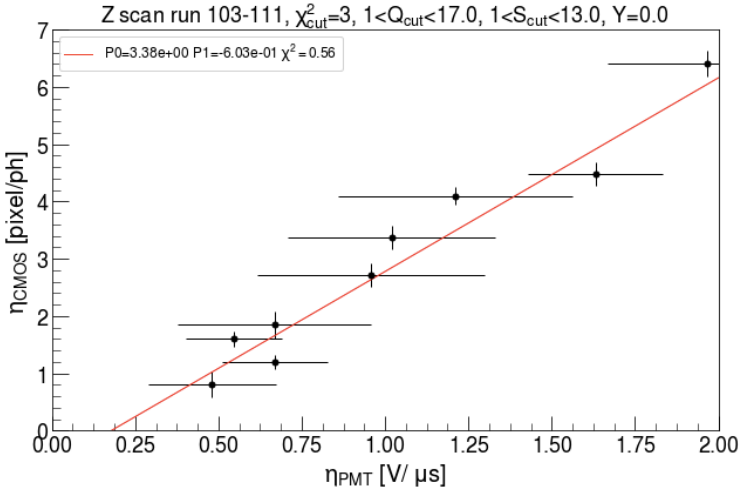




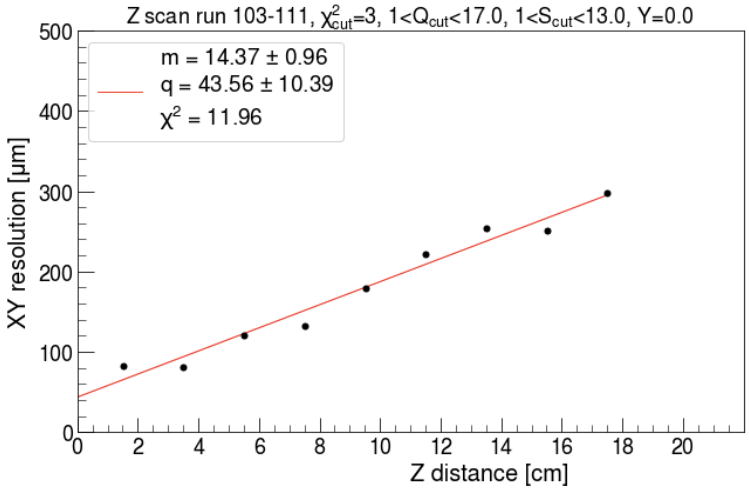


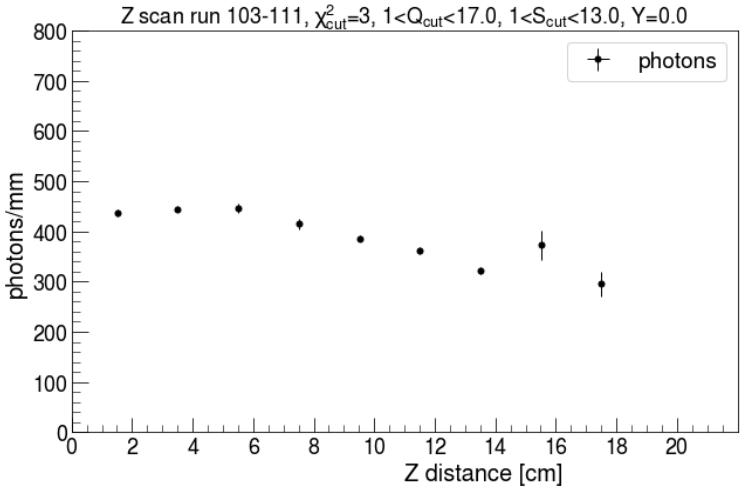


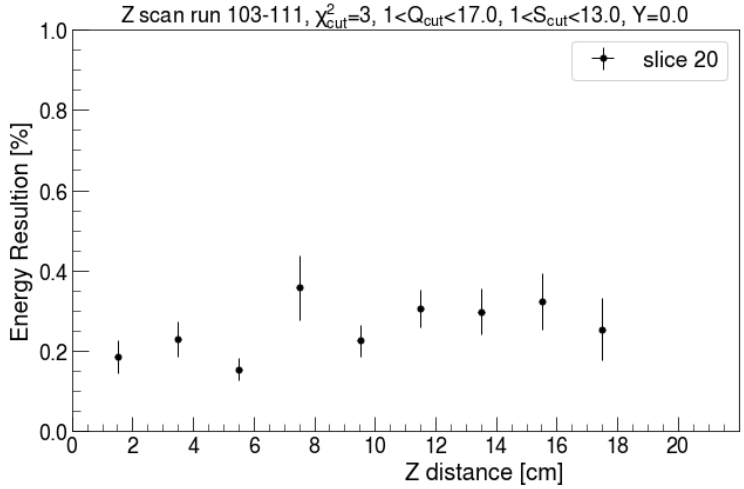


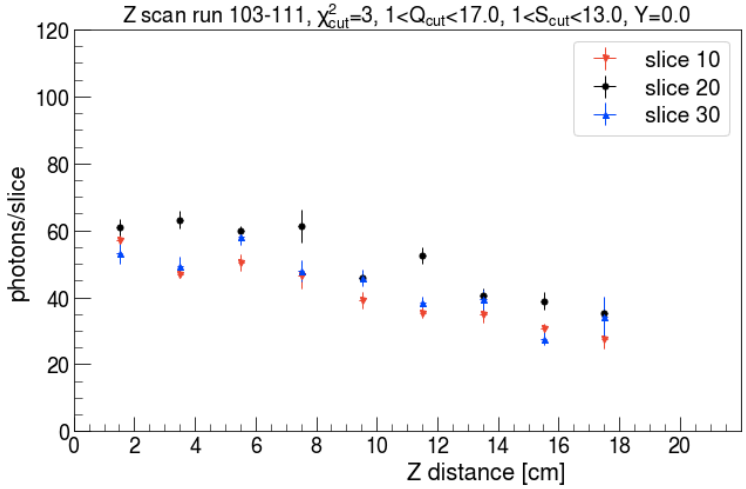


MIP 0.3kV/cm (10 segments)

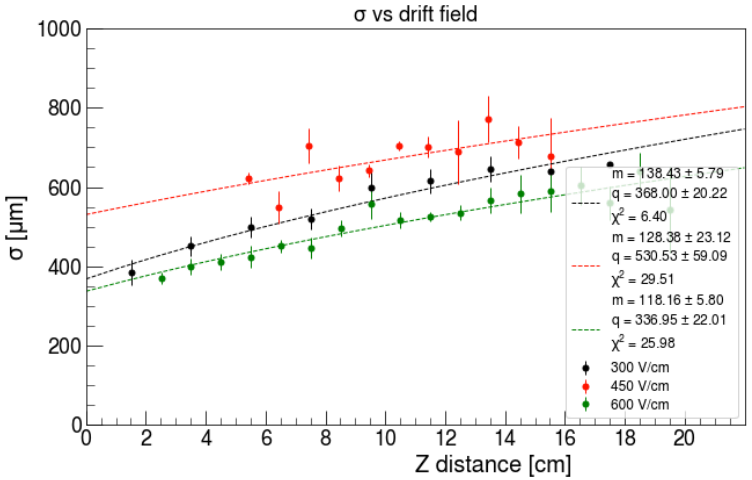


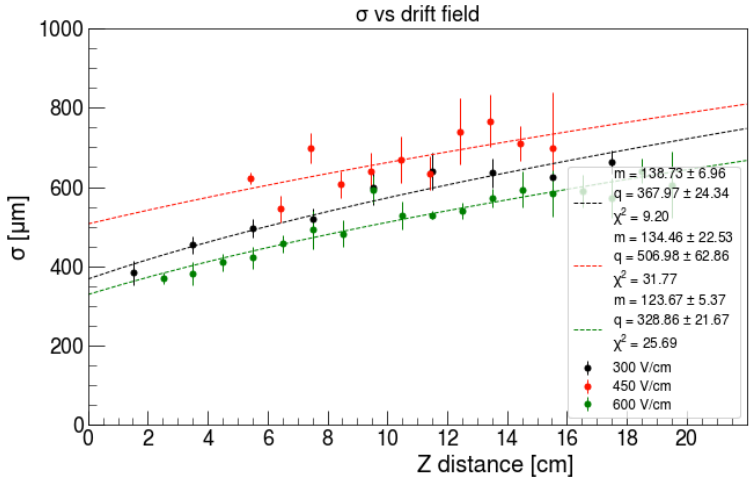


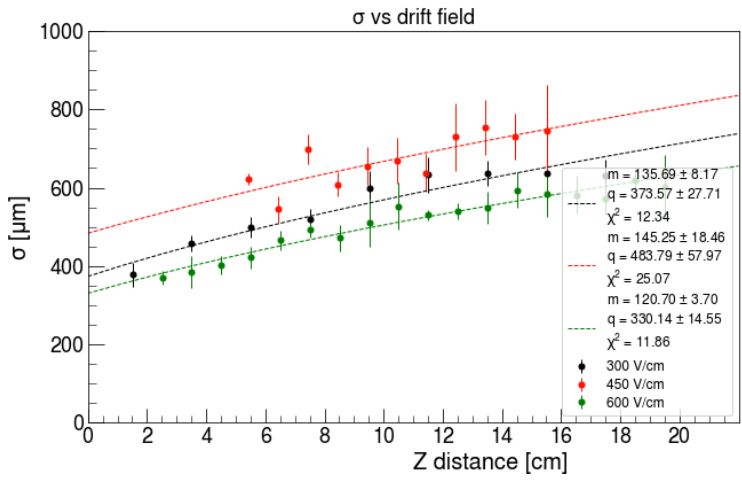




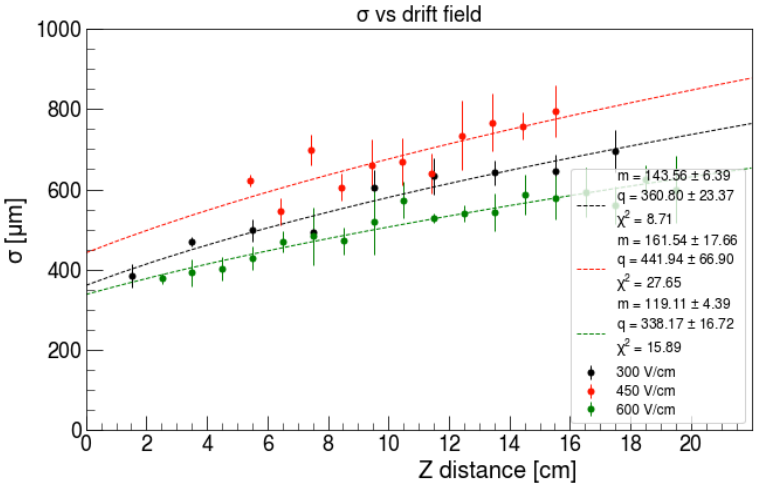
Diffusion: all data vs center FC data





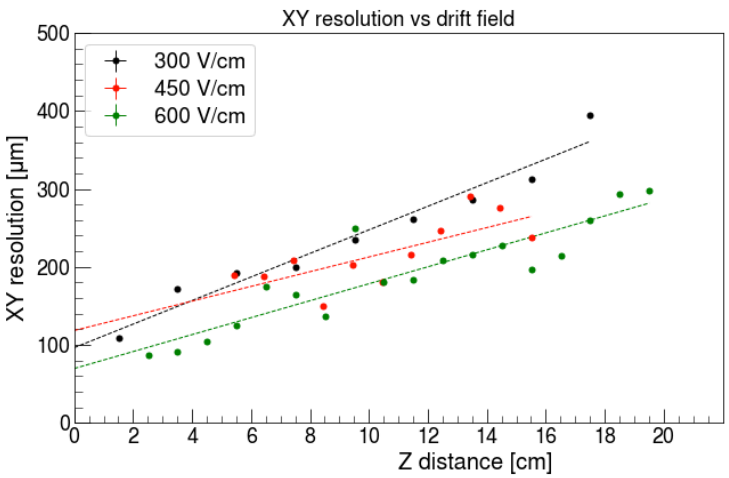


all data **+/-64 mm** **+/- 36 mm**

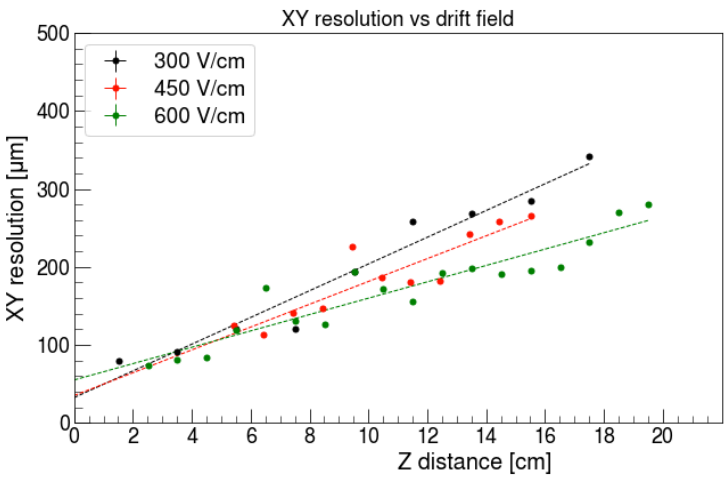


+/- 14 mm

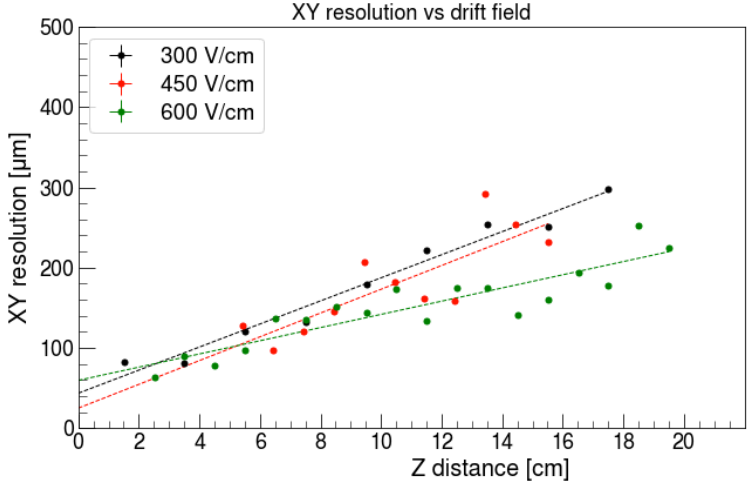
Resolution: all data vs center FC data



all data

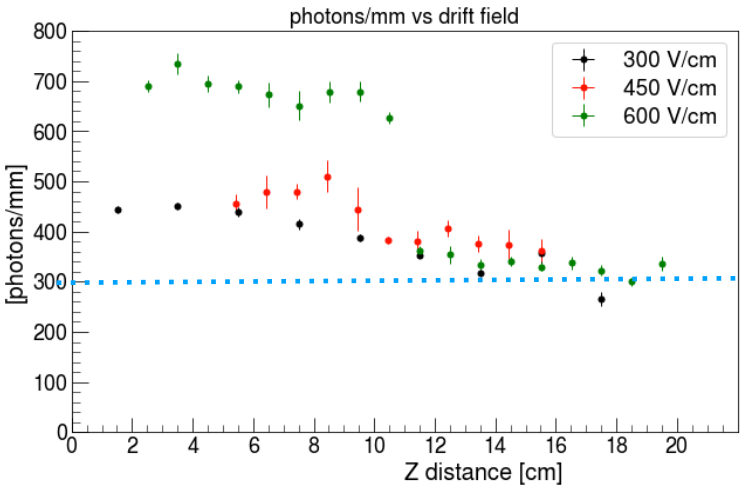


+/-64 mm

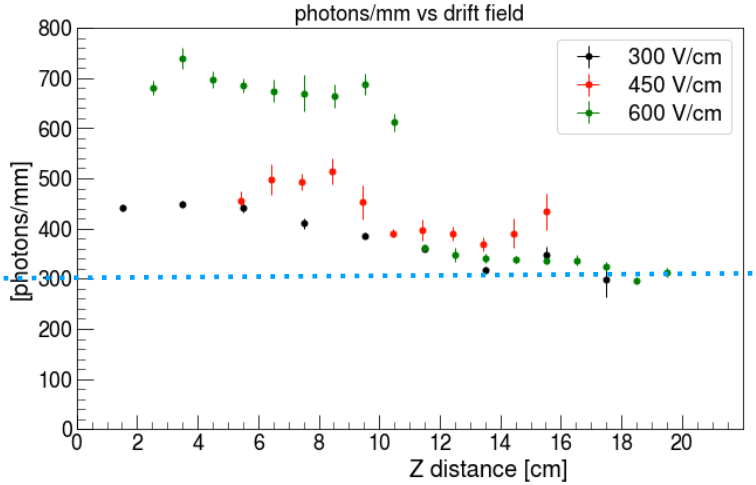


+/- 36 mm

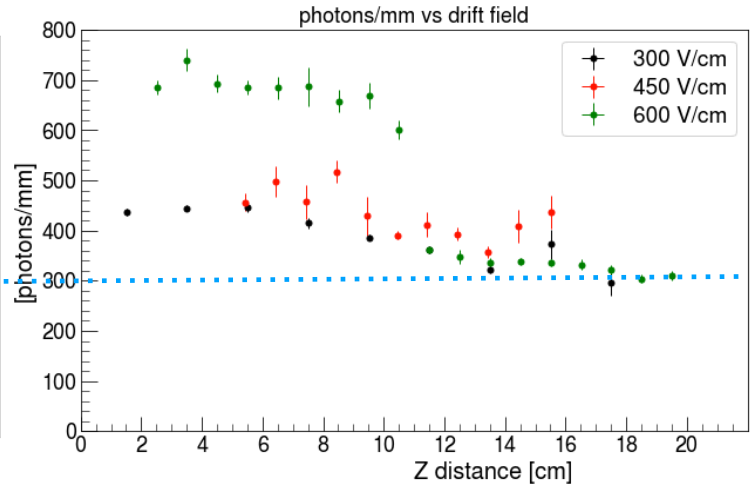
Luminosity: all data vs center FC data



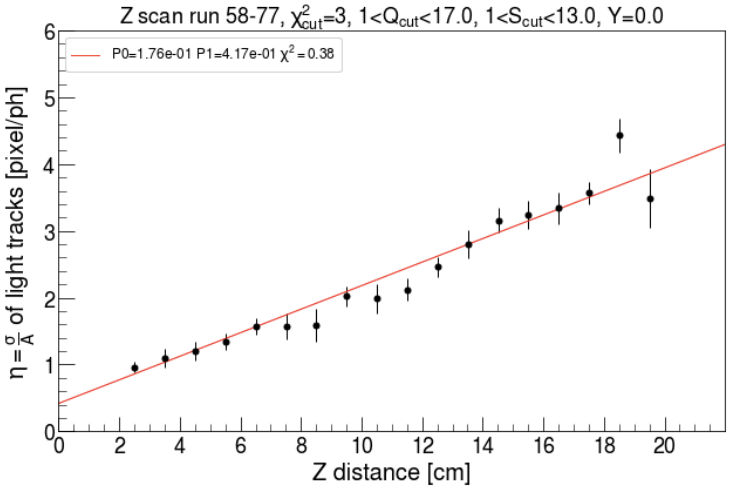
all data

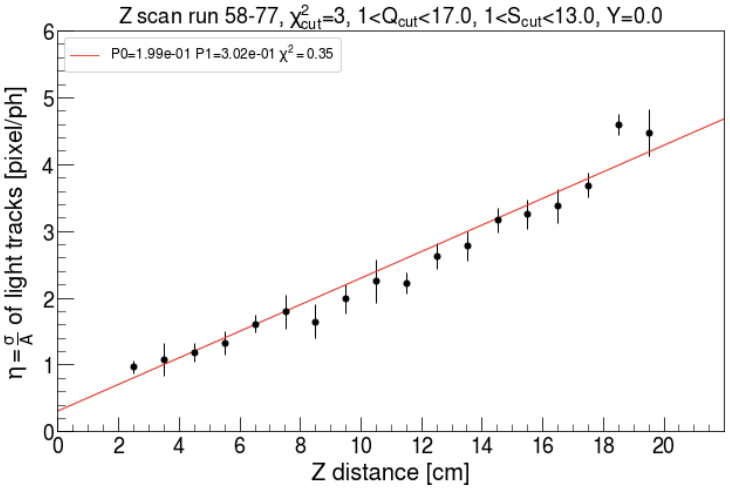


+/-64 mm

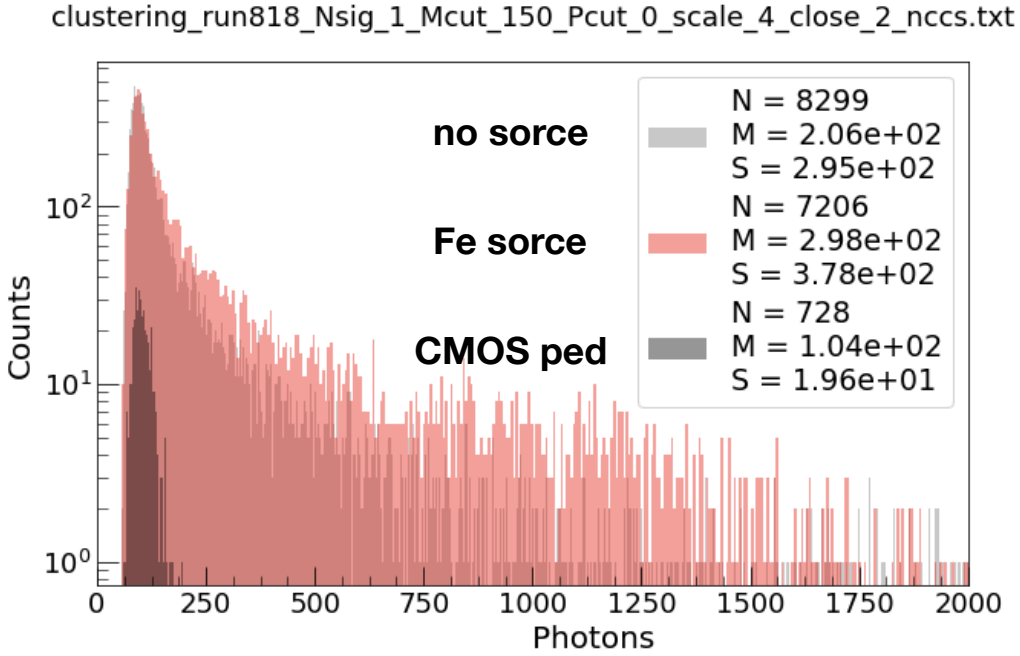


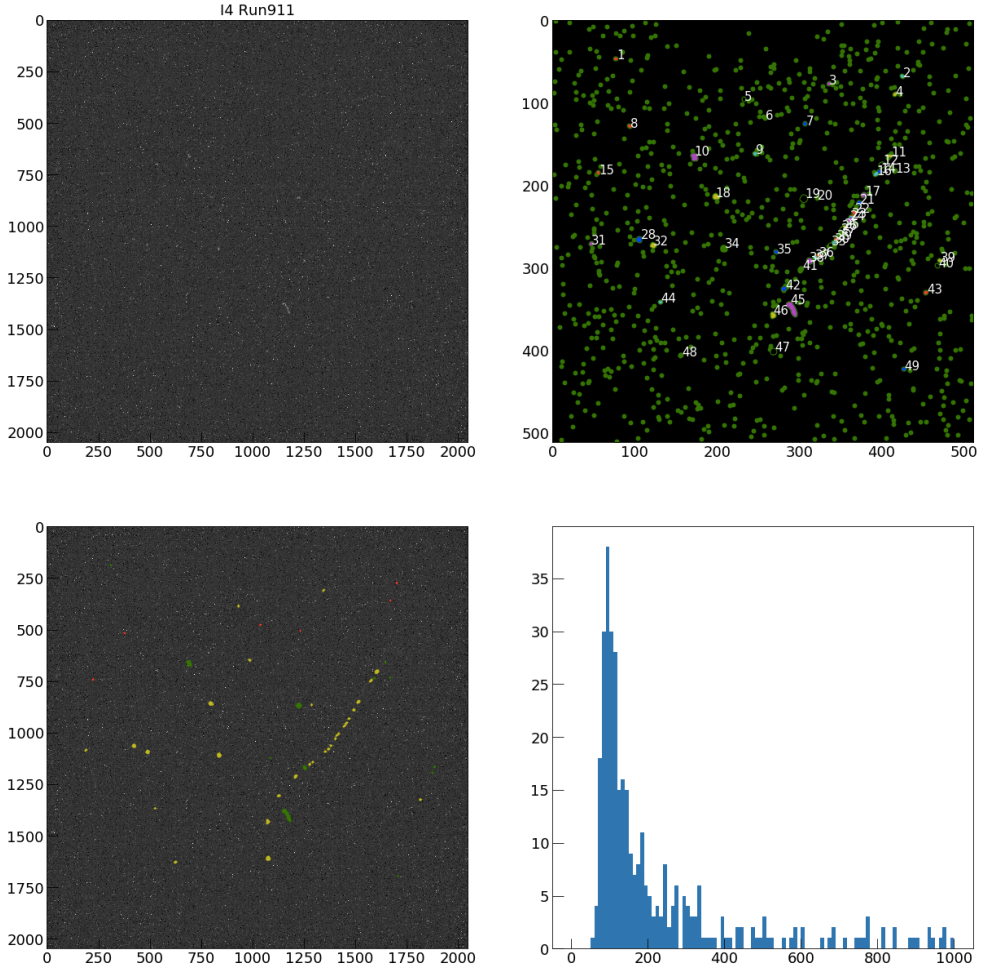
+/- 36 mm


Z scan run 58-77, χ^2_{cut}=3, 1<Q_{cut}<17.0, 1<S_{cut}<13.0, Y=0.0
P0=1.76e-01 P1=4.17e-01 χ^2 = 0.38
$\eta = \frac{\sigma}{A}$ of light tracks [pixel/ph]
Z distance [cm]


Z scan run 58-77, χ^2_{cut}=3, 1<Q_{cut}<17.0, 1<S_{cut}<13.0, Y=0.0
P0=1.99e-01 P1=3.02e-01 χ^2 = 0.35
$\eta = \frac{\sigma}{A}$ of light tracks [pixel/ph]
Z distance [cm]

preliminary Fe test for LTD





Sunday morning analysis

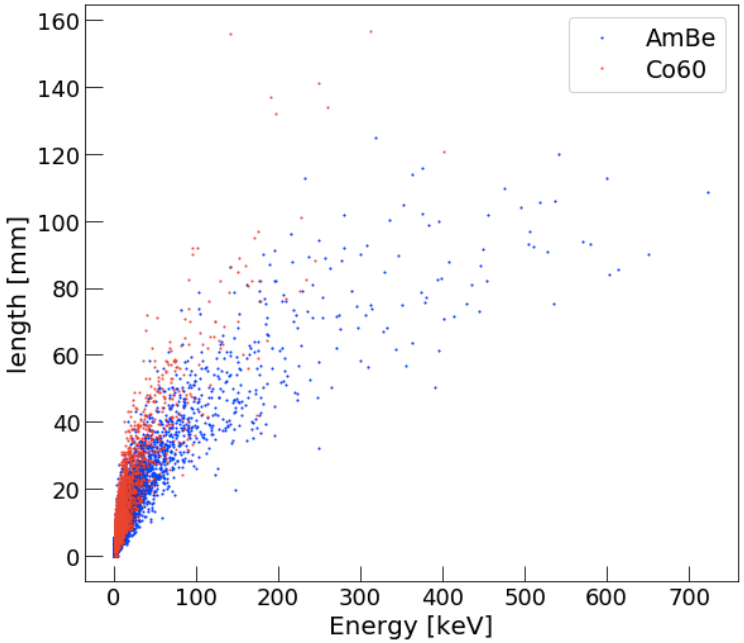
21/7/2019

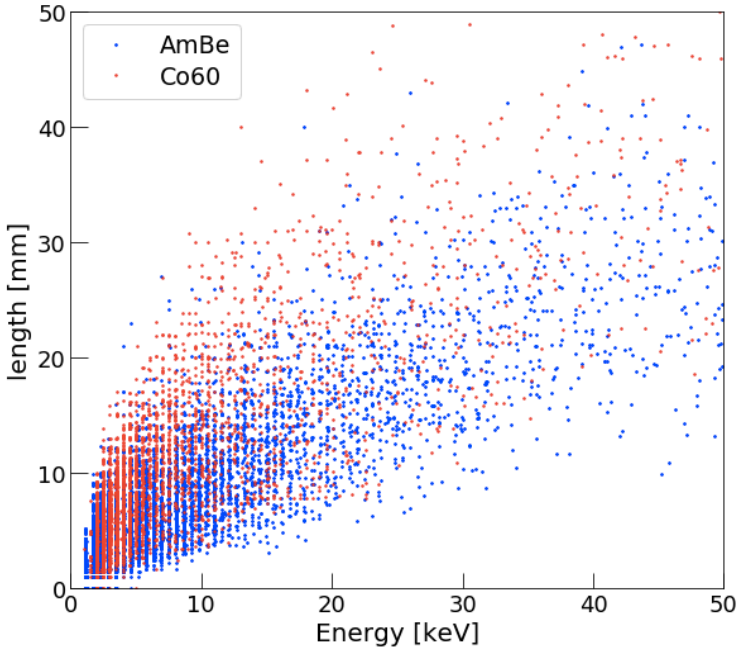
Co60 vs AmBe

- DBSCAN(eps=0.1, min_samples = 4)
- run = 1514 # 1514 AmBe
- dataSelection = 'LTD'# LTD AmBe
- rebin_th_image = 116 # 116 AmBe

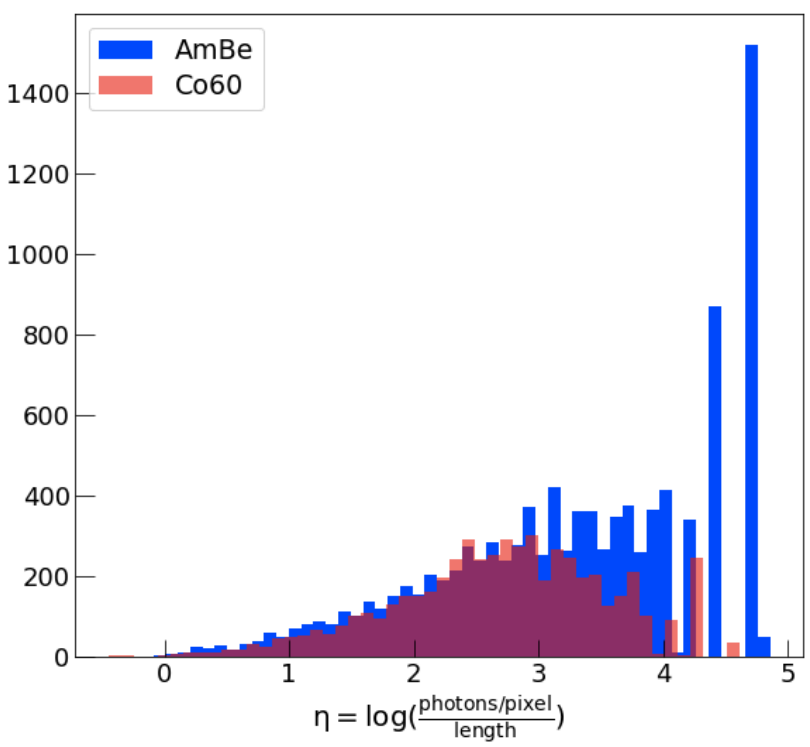
- run = 725 # Co60
- dataSelection = 'LAB'# Co60
- rebin_th_image = 101 # Co60

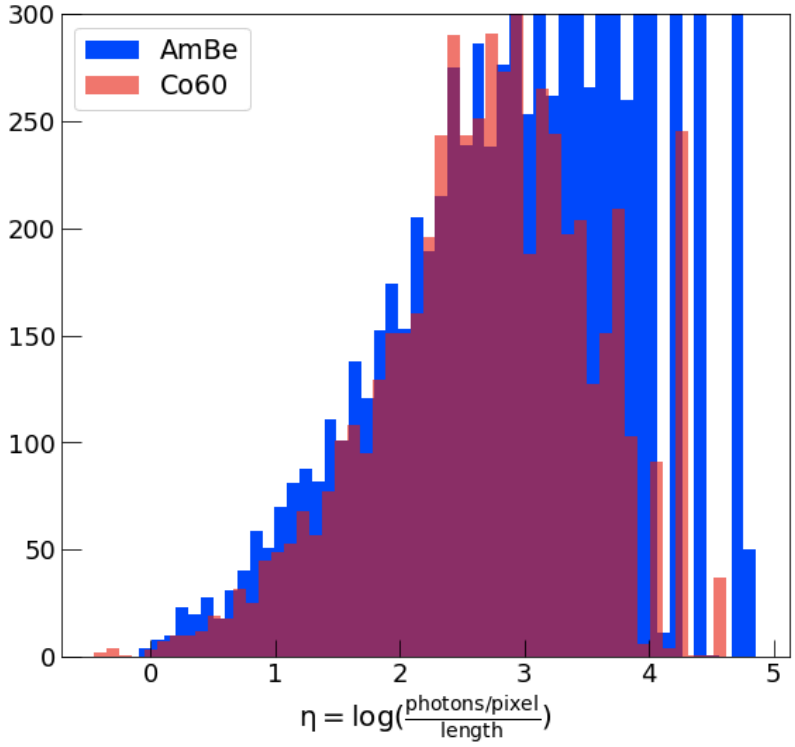
- sample = 100
- 450 kV
- phKev = 1169/5.9 # 450
- pixelscale = 0.125 # mm





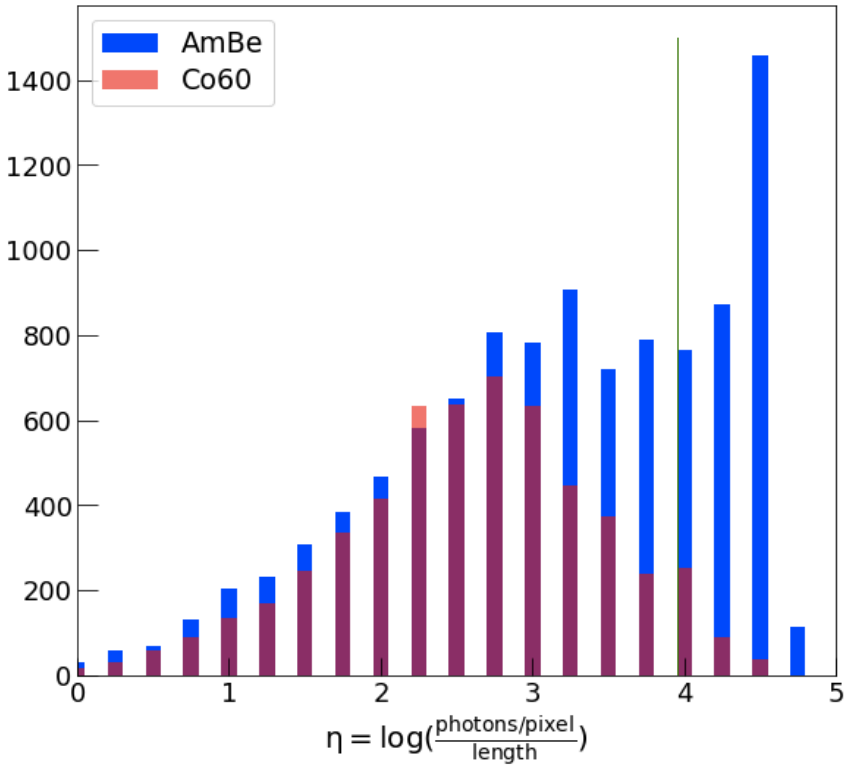
Co60 vs AmBe

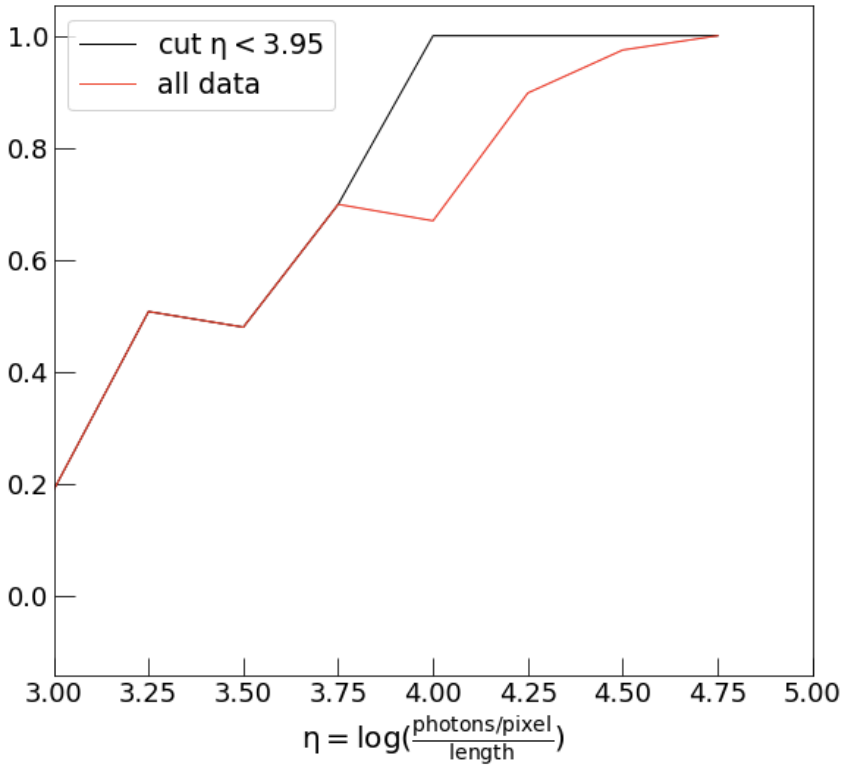




https://www.sciencedirect.com/science/article/pii/S0927650516301190?via%3Dihub,

Co60 vs AmBe


AmBe
Co60
1400
1200
1000
800
600
400
200
0
0
1
2
3
4
5
$\eta = \log(\frac{\text{photons/pixel}}{\text{length}})$

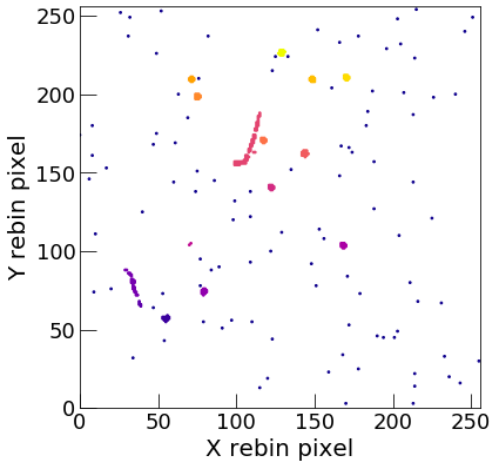

cut η < 3.95
all data
1.0
0.8
0.6
0.4
0.2
0.0
3.00
3.25
3.50
3.75
4.00
4.25
4.50
4.75
5.00
$\eta = \log(\frac{\text{photons/pixel}}{\text{length}})$

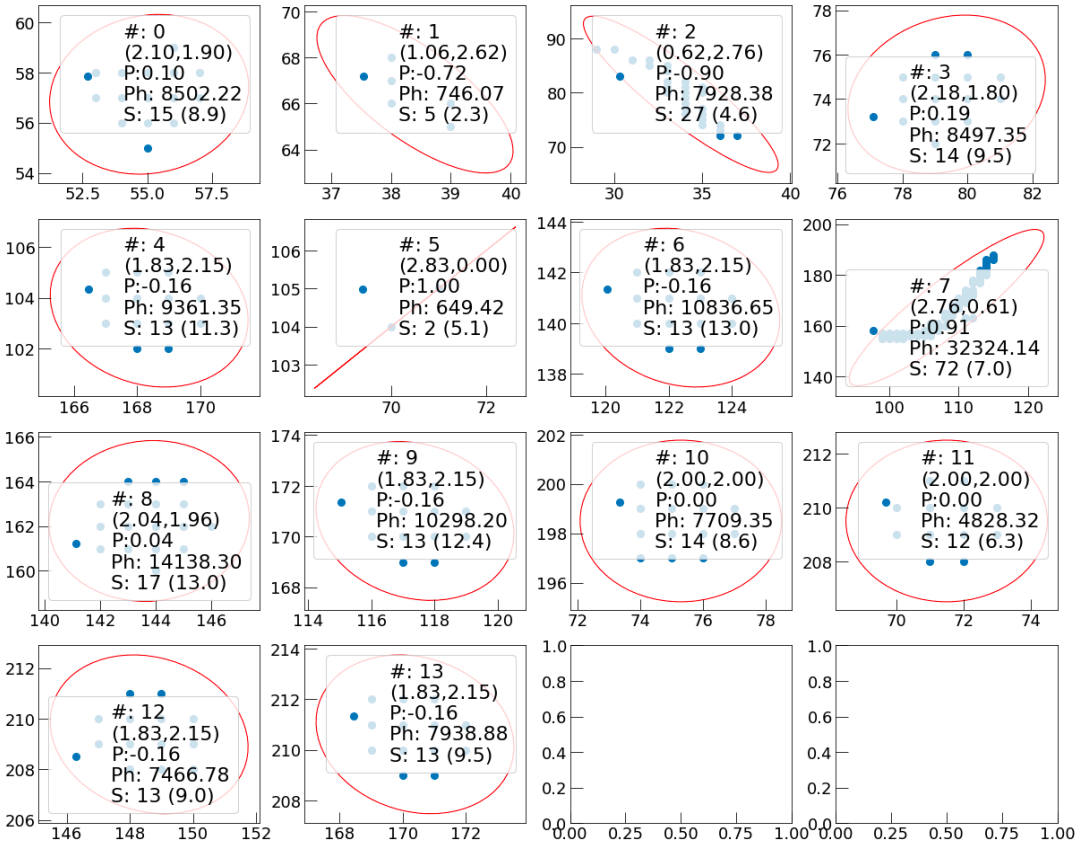
Pearson Analisys

C_file = './data/dbscan_run494_cmin_0_cmax_300_rescale_256_rebin_th_image_5_ev_100.txt' # AmBe ORANGE 440
C_file = './data/dbscan_run740_cmin_0_cmax_300_rescale_512_rebin_th_image_5_ev_100.txt' # AmBe LEMON 450
C_file = './data/dbscan_run722_cmin_0_cmax_300_rescale_256_rebin_th_image_2_ev_100.txt' # Co60 ORANGE 440
C_file = './data/dbscan_run725_cmin_0_cmax_300_rescale_512_rebin_th_image_6_ev_100.txt' # Co60 LEMON 450
quat'utimo file deve avere dei problemi

Fe ORANGE

- phKev = 10000/5.9 # @ 440
- pixelscale = 55e-3 # mm/pixel
- run = 340 # Fe @440
- cimax = 300
- cimin = 0
- rebin_th_image = 2
- dataSelection = 'LAB'
- rescale = 256

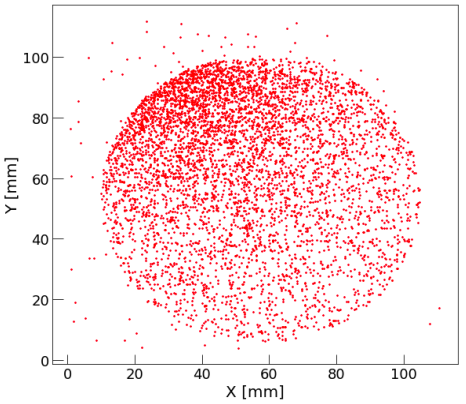


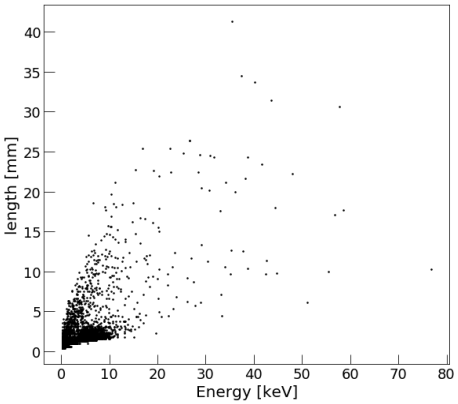


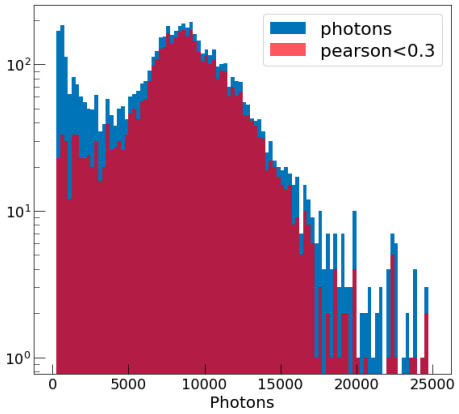
Fe ORANGE

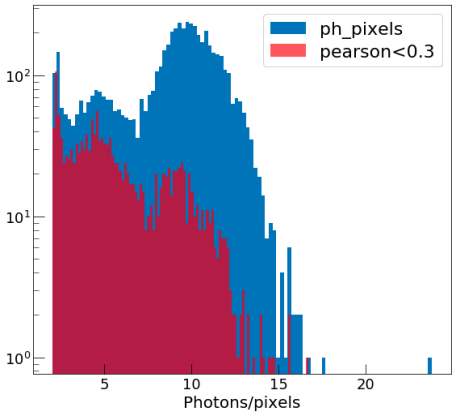
- DBSCAN(eps=0.1, min_samples = 2)

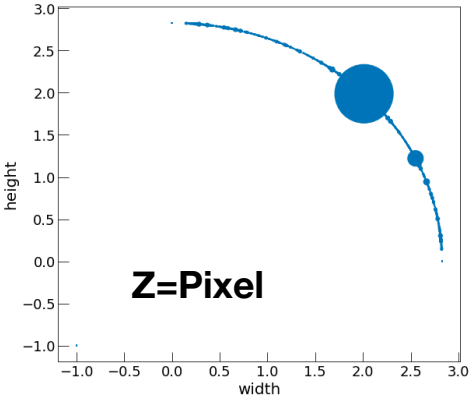
- Cuts: dfc = df[(df['cluster_lable'] > -1) & (df['width'] > 0) & (df['height'] > 0) & (df['pixels'] <200)]

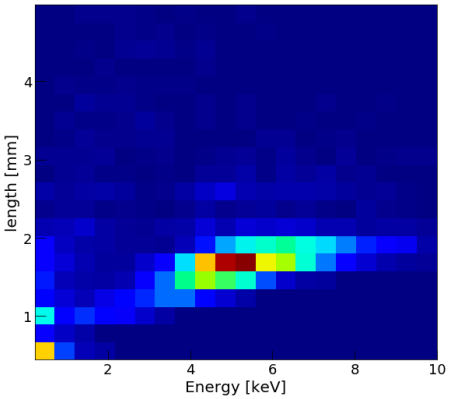






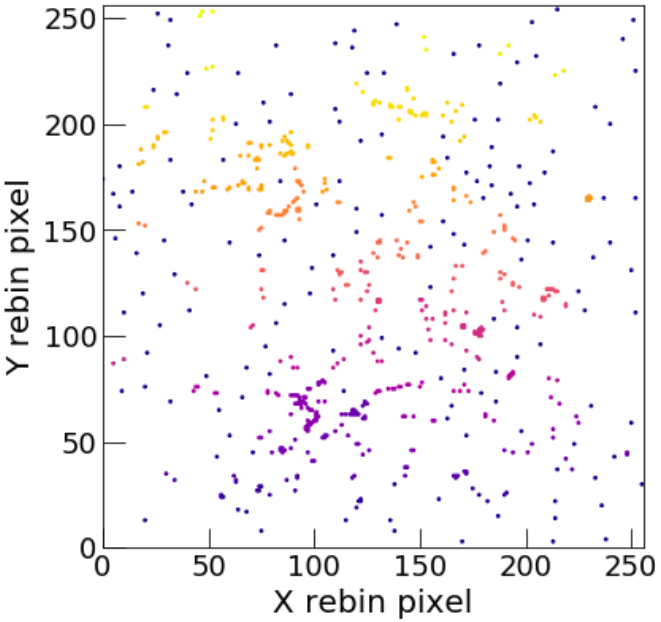


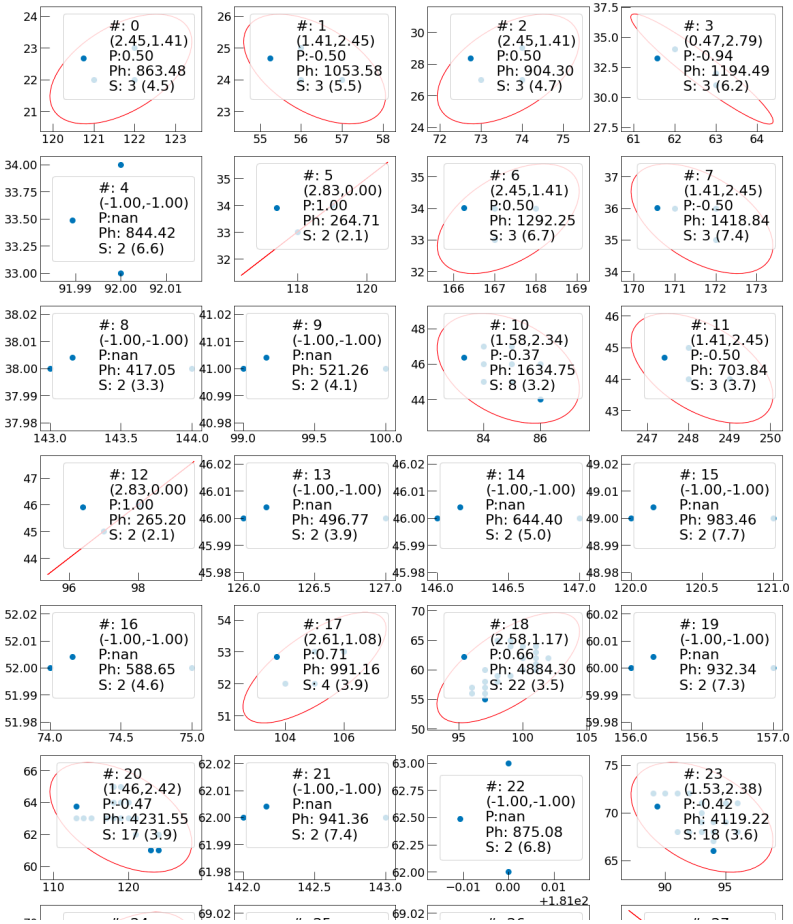




Co60 ORANGE

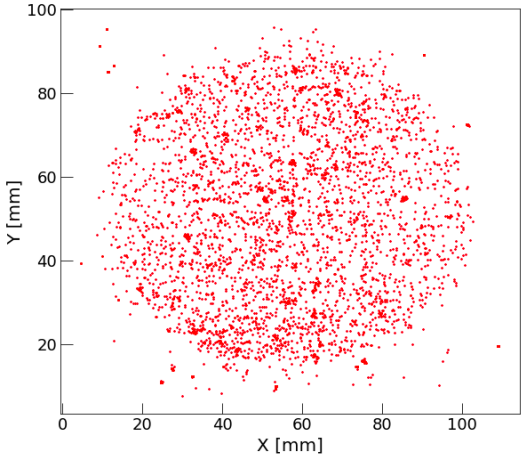
- phKev = 10000/5.9 # @ 440
- pixelscale = 55e-3 # mm/pixel
- run = 722 # Co60 @440
- cimax = 300
- cimin = 0
- rebin_th_image = 2
- dataSelection = 'LAB'
- rescale = 256

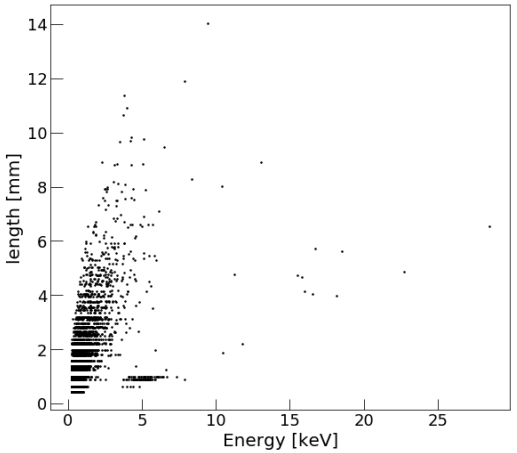


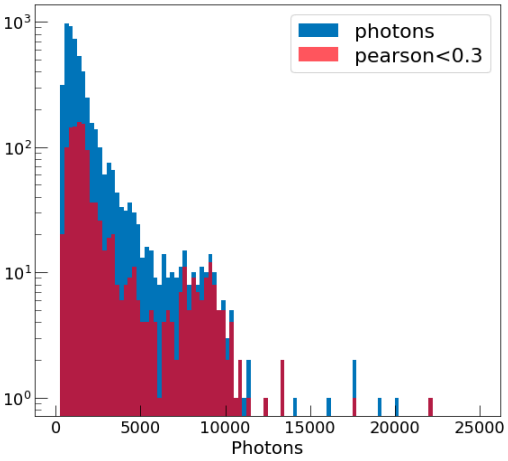


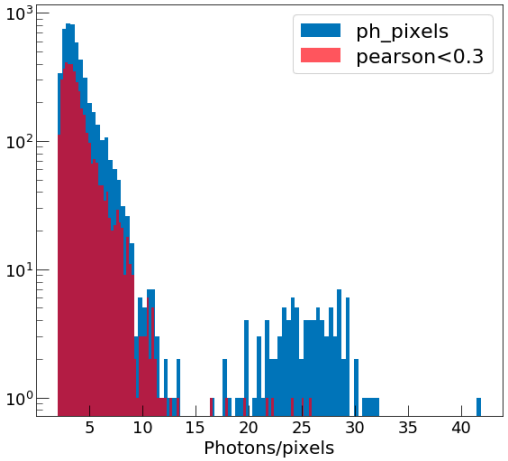
Co60 ORANGE

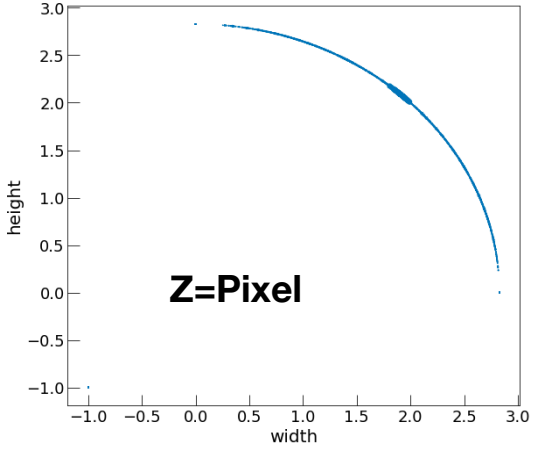
- DBSCAN(eps=0.1, min_samples = 2)
- Cuts: dfc = df[(df['cluster_lable'] > -1) & (df['width'] > 0) & (df['height'] > 0)

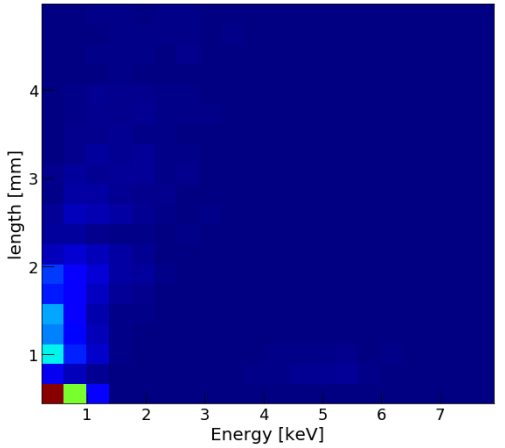






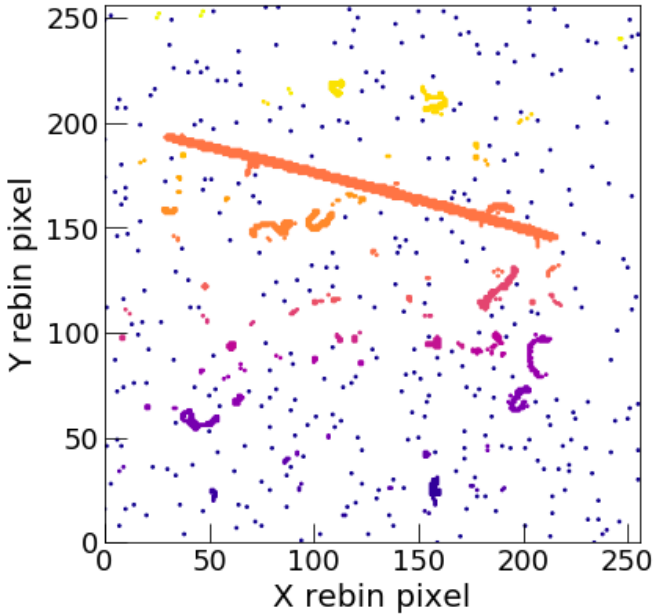


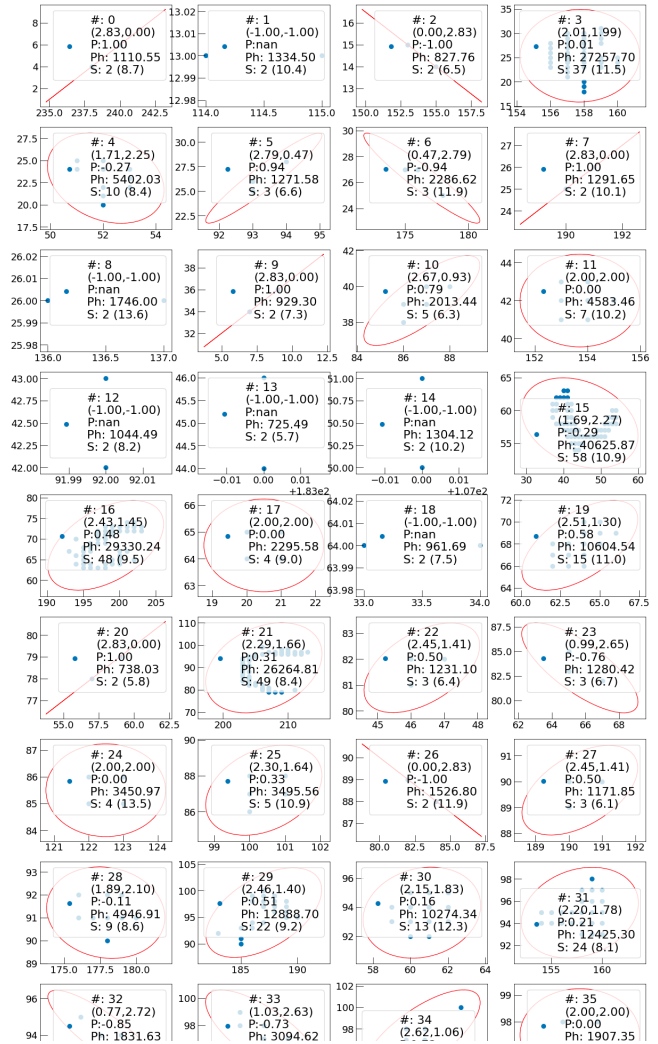




AmBe ORANGE

- phKev = 10000/5.9 # @ 440
- pixelscale = 55e-3 # mm/pixel
- run = 494 # AmBe @440
- cimax = 300
- cimin = 0
- rebin_th_image = 5
- dataSelection = 'LAB'
- rescale = 256

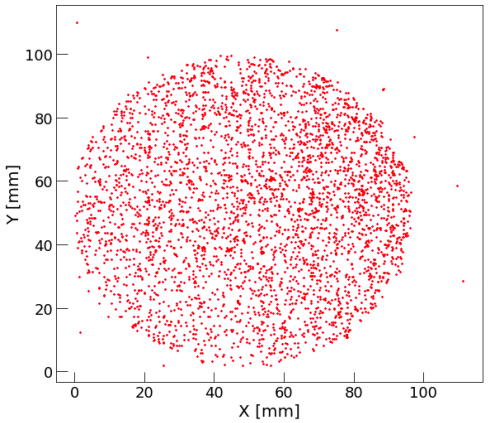


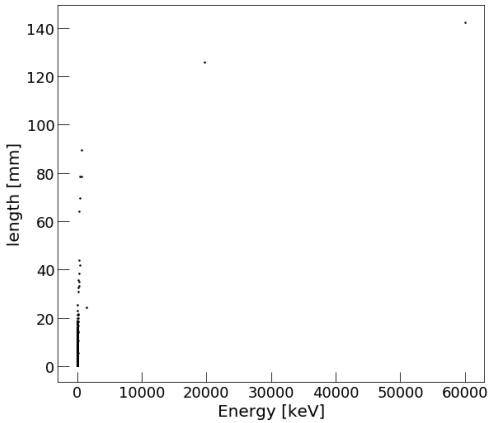


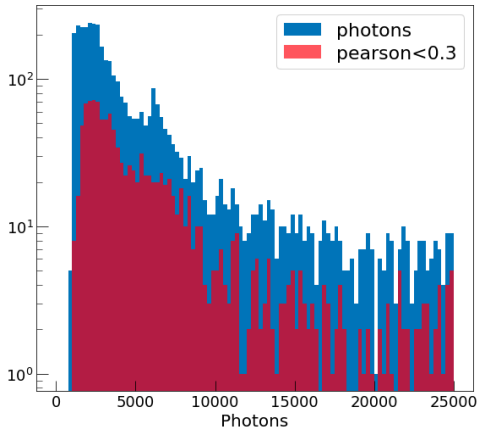
AmBe ORANGE

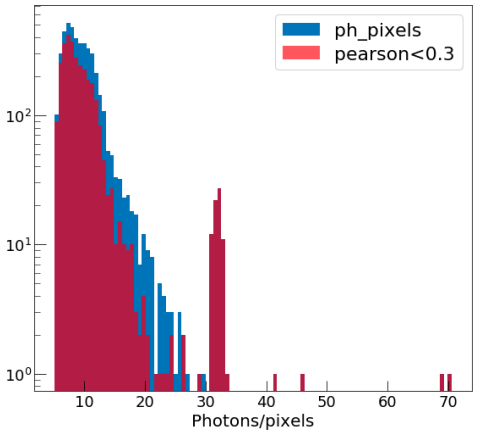
- DBSCAN(eps=0.1, min_samples = 2)

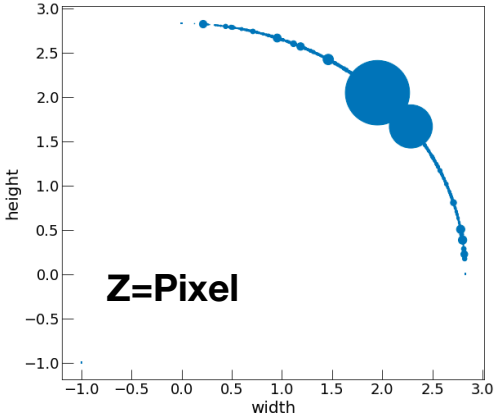
- Cuts: dfc = df[(df['cluster_lable'] > -1) & (df['width'] > 0) & (df['height'] > 0)

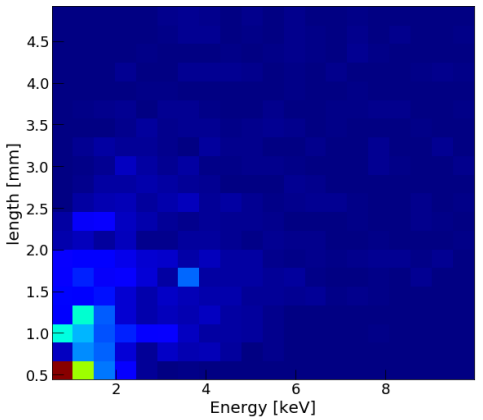




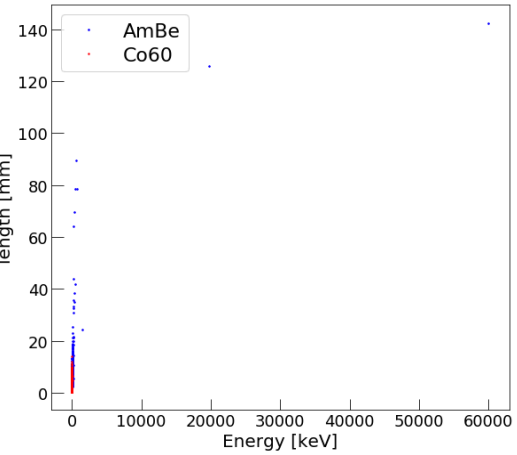


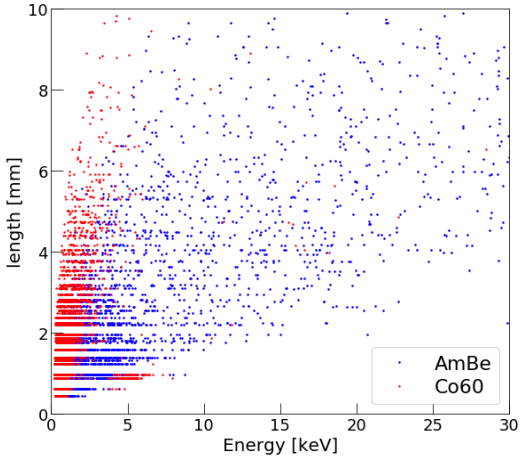


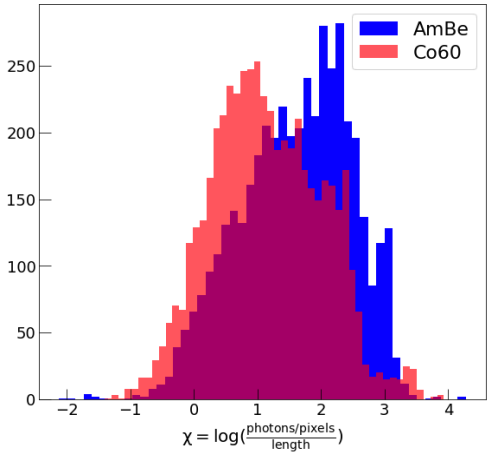


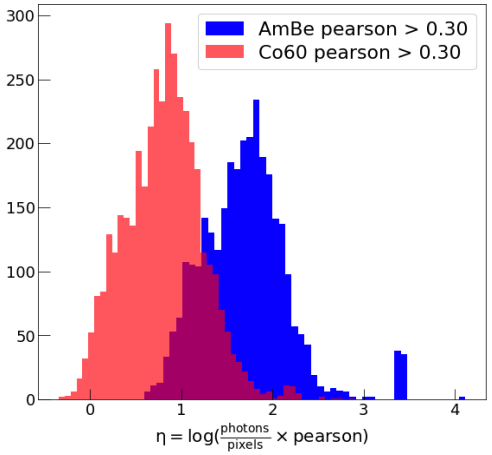


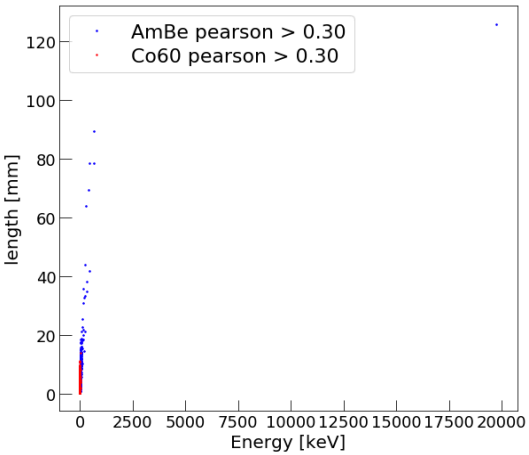
AmBe ORANGE (pearson>0.3)

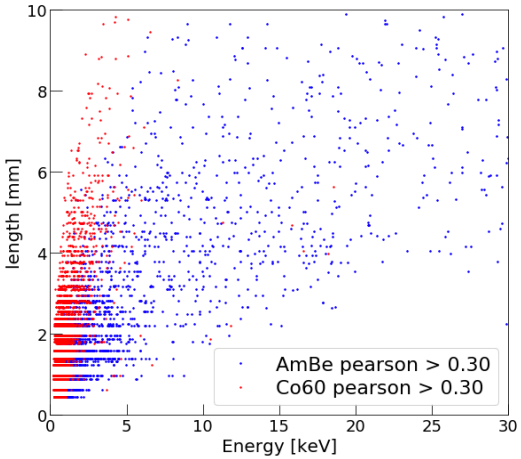


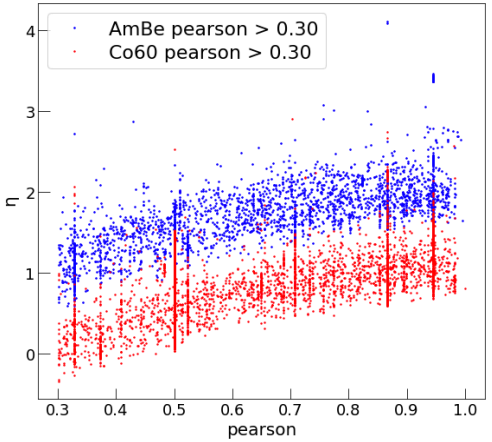


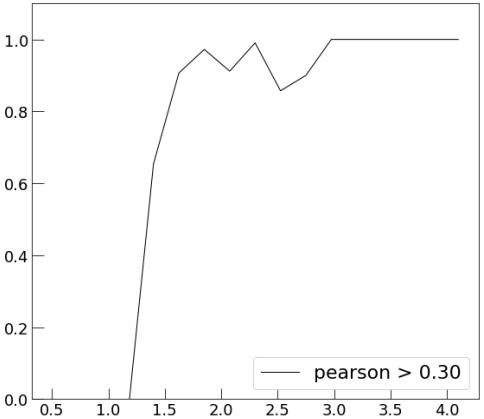




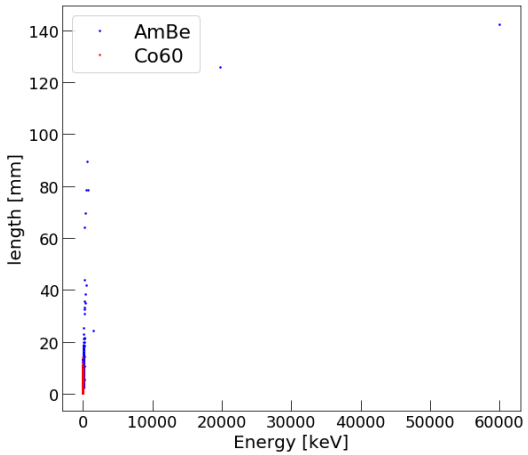


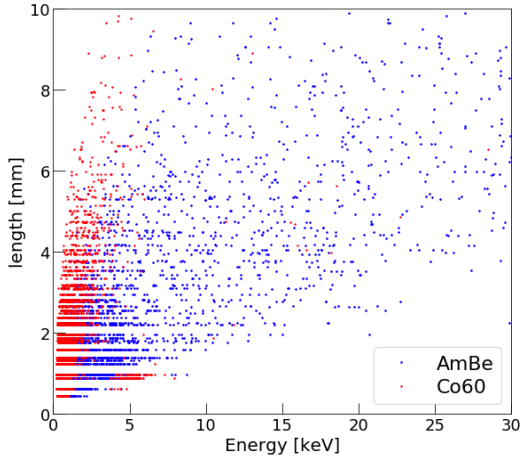


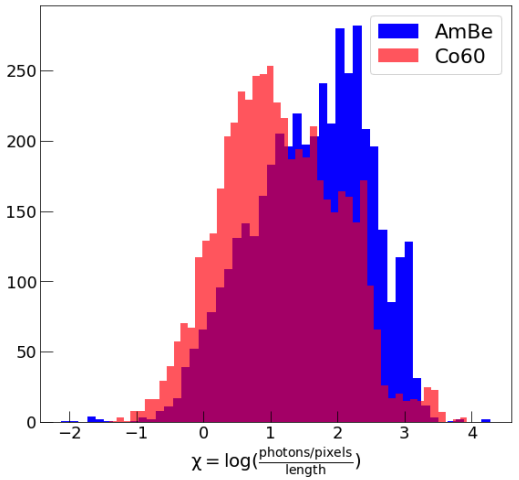


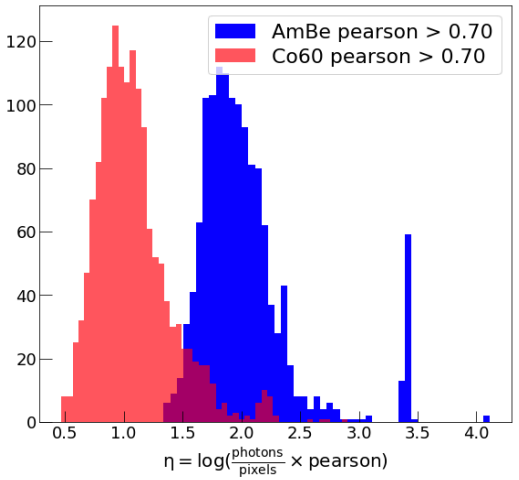


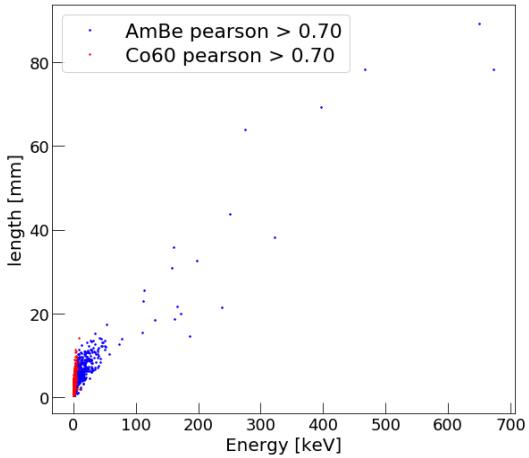
AmBe ORANGE (pearson> 0.7)

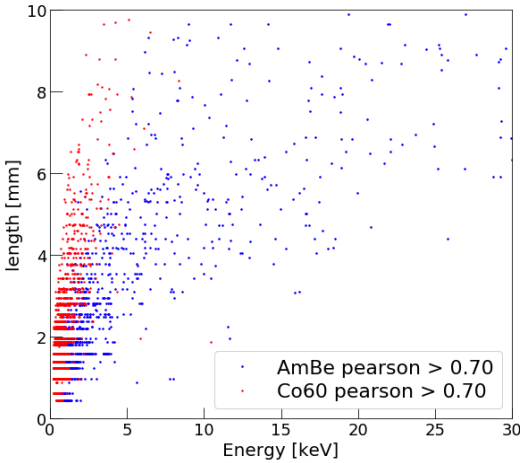


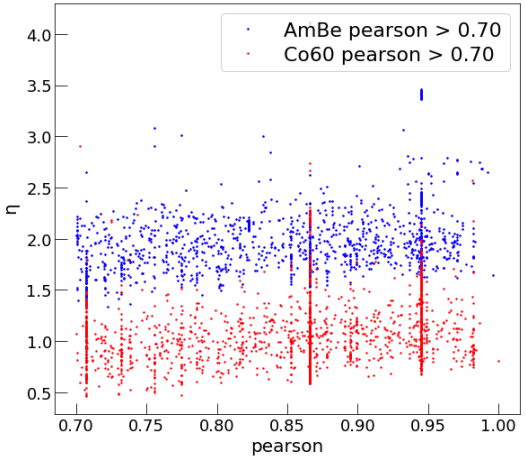


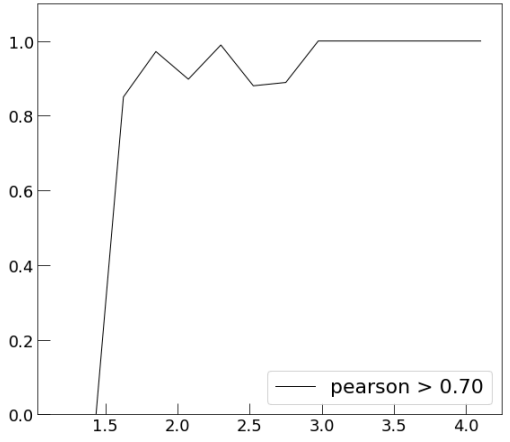




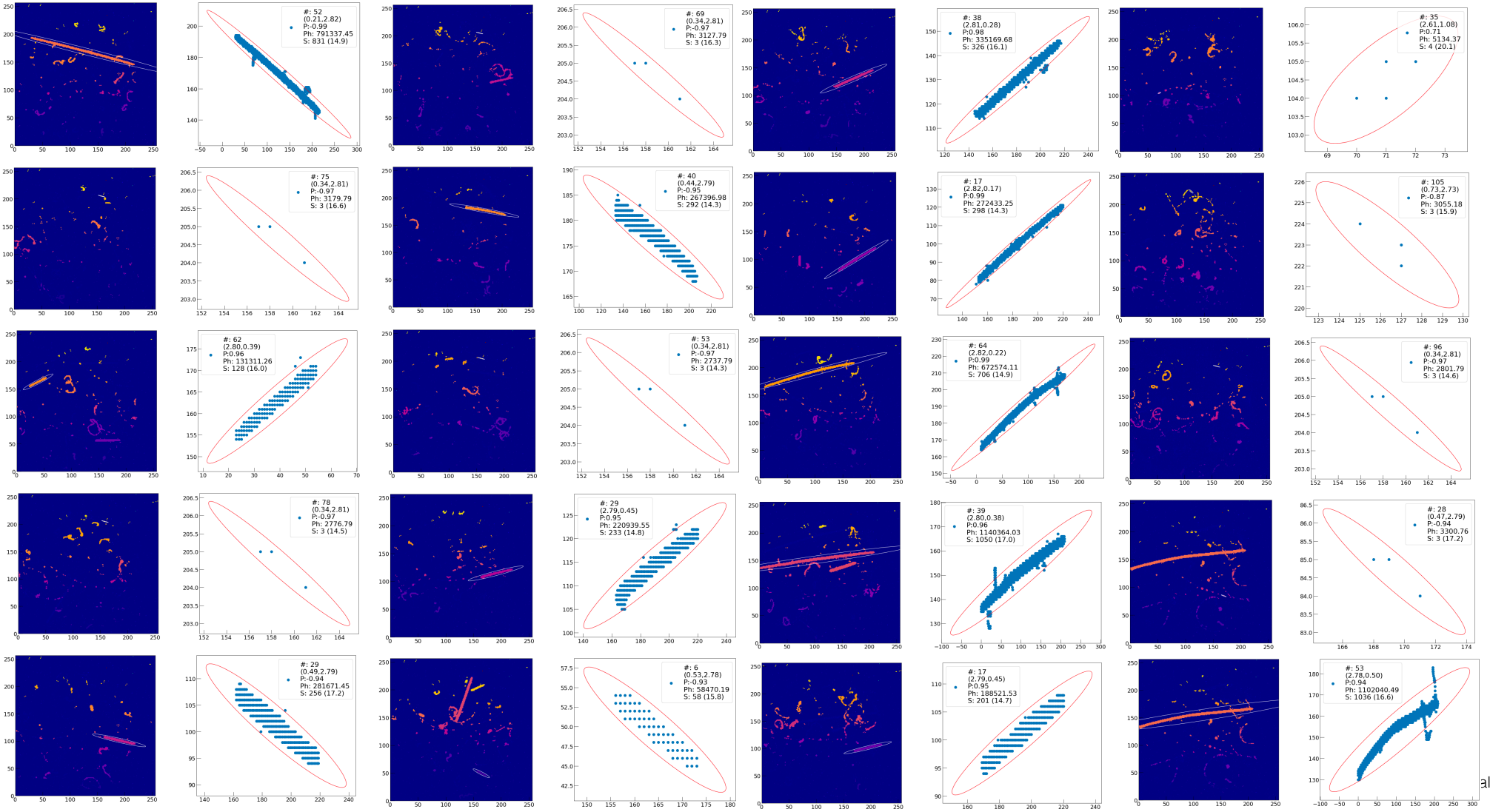






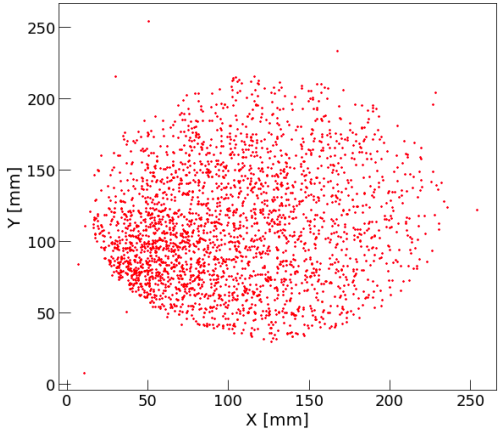


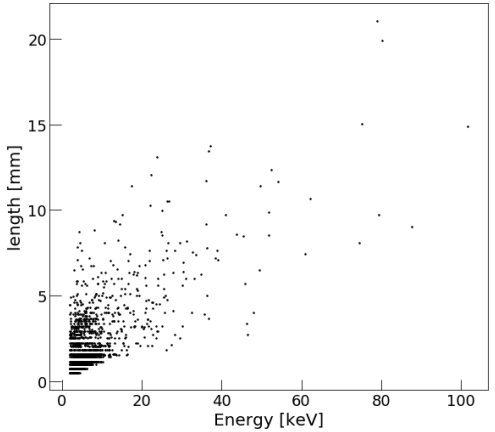
AmBe ORANGE (pearson>0.7 2.6<eta<2.8)

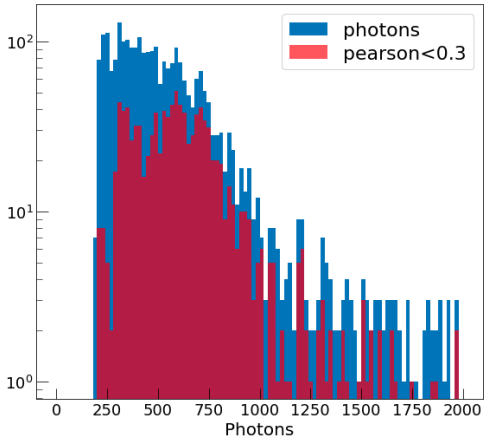


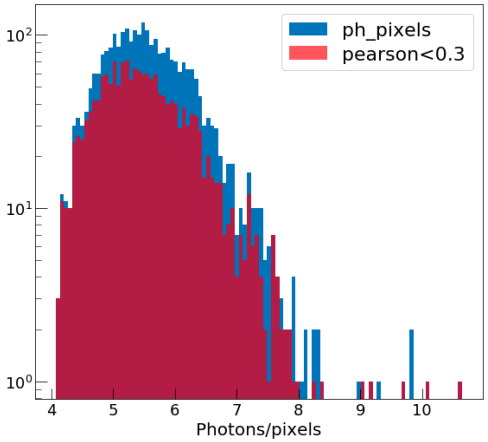
LEMON Fe

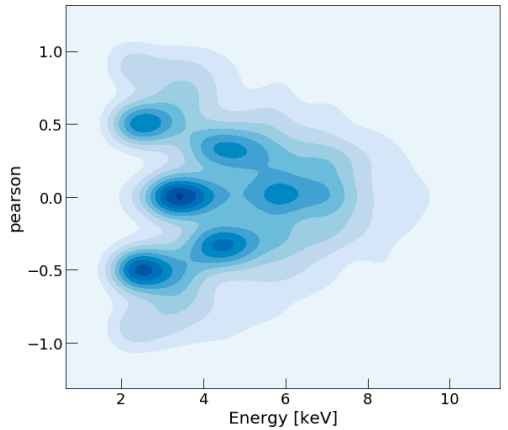
- phKev = 600/5.9### 1020/5.9 # @ 450 --> 930/5.9 a 440
- pixelscale = 0.125 # lemonn mm/pixel
- nsigma = 1
- run = 1511
- run = 833 # Fe @ 450
- run = 725 # Co60 @ 450
- cimax = 300
- cimin = 0
- rebin_th_image = 6 # 116
- dataSelection = 'LAB'

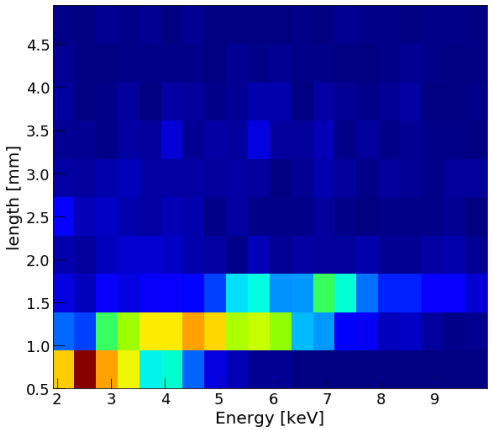






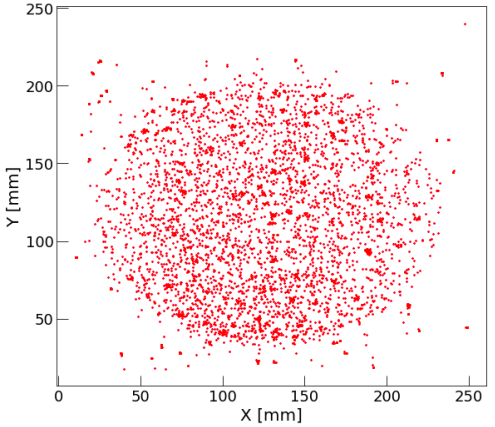


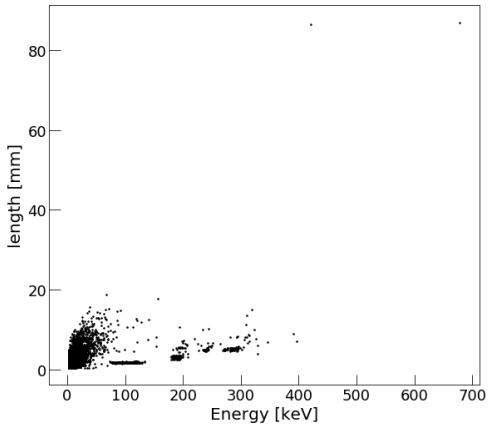


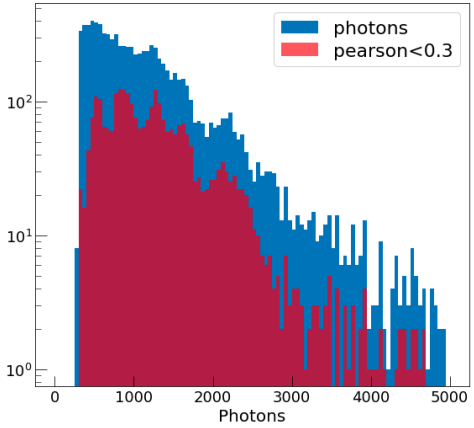


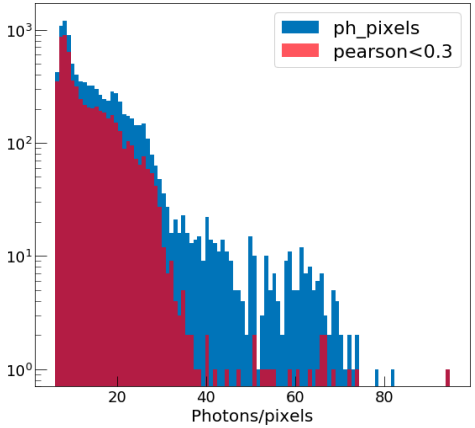
LEMON Co60

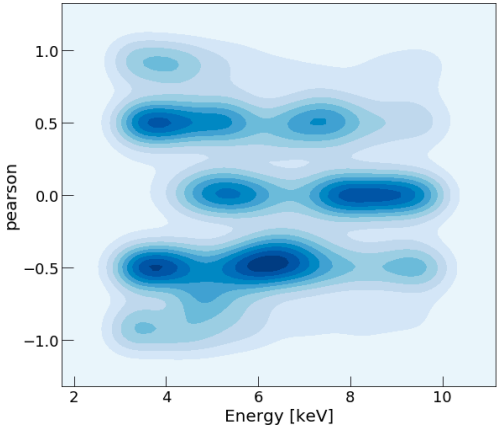
- phKev = 600/5.9### 1020/5.9 # @ 450 --> 930/5.9 a 440
- pixelscale = 0.125 # lemonn mm/pixel
- nsigma = 1
- run = 1511
- run = 833 # Fe @ 450
- cimax = 300
- cimin = 0
- rebin_th_image = 6 # 116
- dataSelection = 'LAB'
- rescale = 512

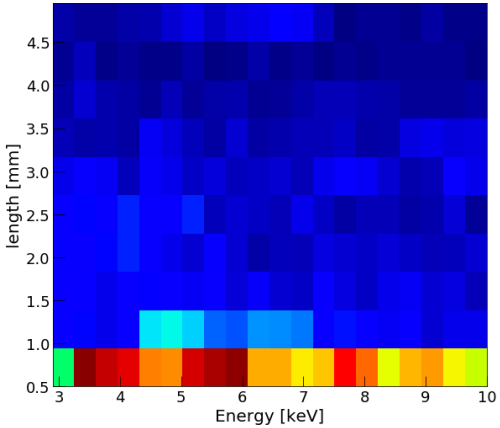






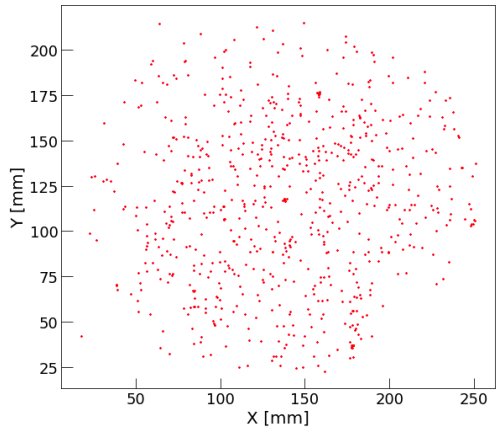


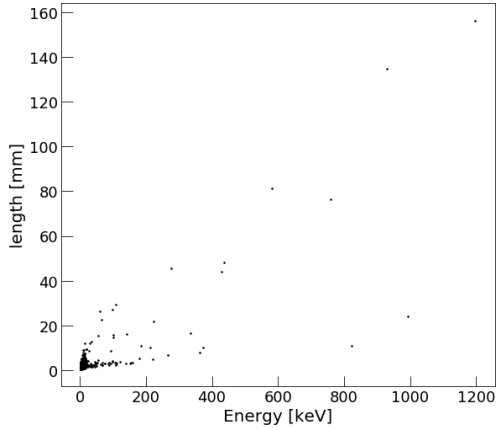


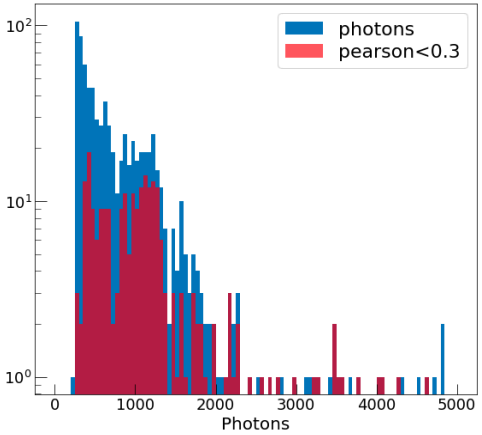


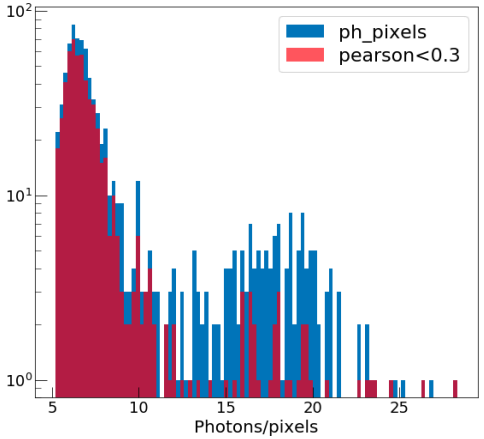
LEMON AmBe

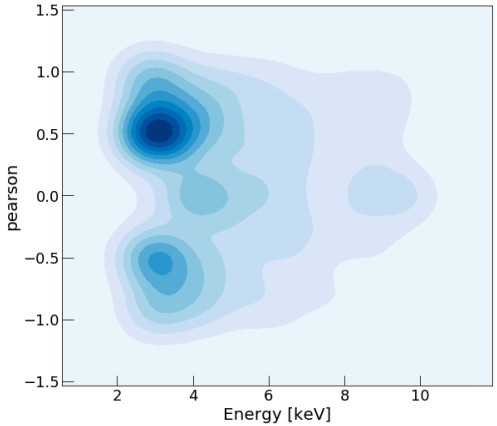
- phKev = 600/5.9### 1020/5.9 # @ 450 --> 930/5.9 a 440
- pixelscale = 0.125 # lemonn mm/pixel
- nsigma = 1
- run = 1511
- run = 833 # Fe @ 450
- cimax = 300
- cimin = 0
- rebin_th_image = 6 # 116
- dataSelection = 'LAB'
- rescale = 512

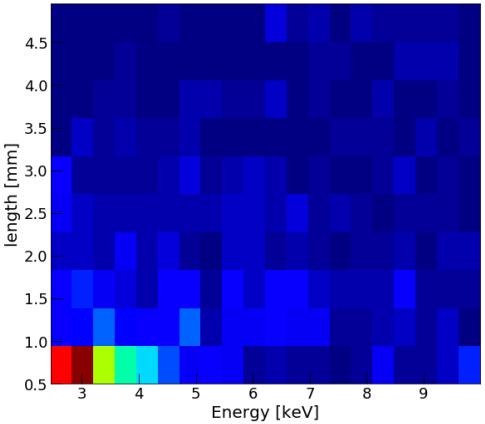












LEMON (Problema Co60…)