

Pilot blade data analysis with uTCA FED

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Pixel Offline meeting



miniDAQ runs (280329-280346)

Date: 2016-09-08

Run number: from 280329 (at 8:34)

Run number: until 280346 (at 12:13)

All: around 4.5 hours

Number of events: 17M

https://tvami.web.cern.ch/tvami/projects/PilotBlade/Runs280329-280346_miniDAQ/

Pilot Blade uTCA configuration

All Bml modules configured.

FPix_Bml_D3_BLD3_PNL2

FPix_Bml_D3_BLD2_PNL2

FPix_Bml_D3_BLD3_PNL1

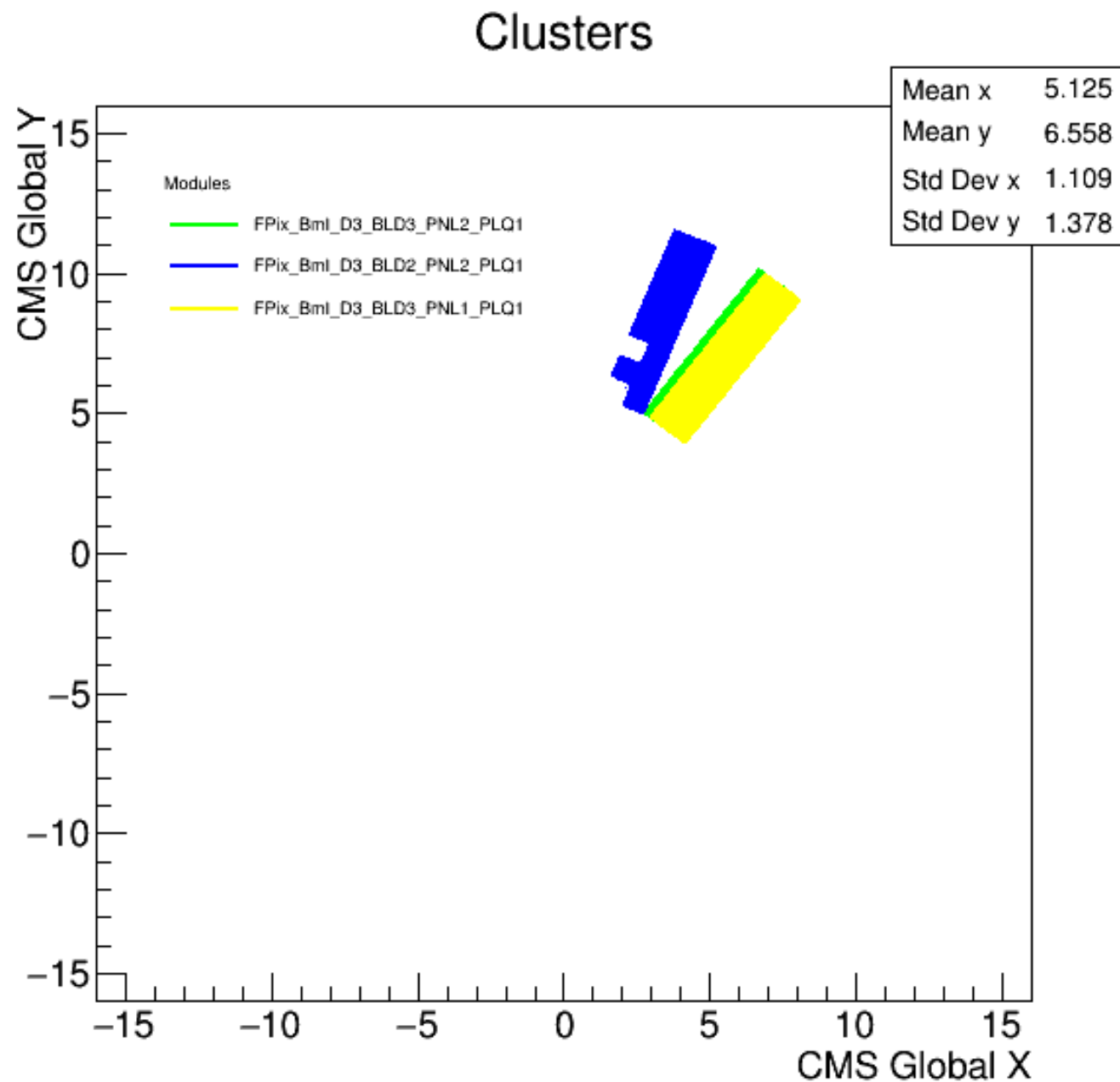
FPix_Bml_D3_BLD2_PNL1

FED 40 excluded

FED 1240 included (uTCA port)

Clusters

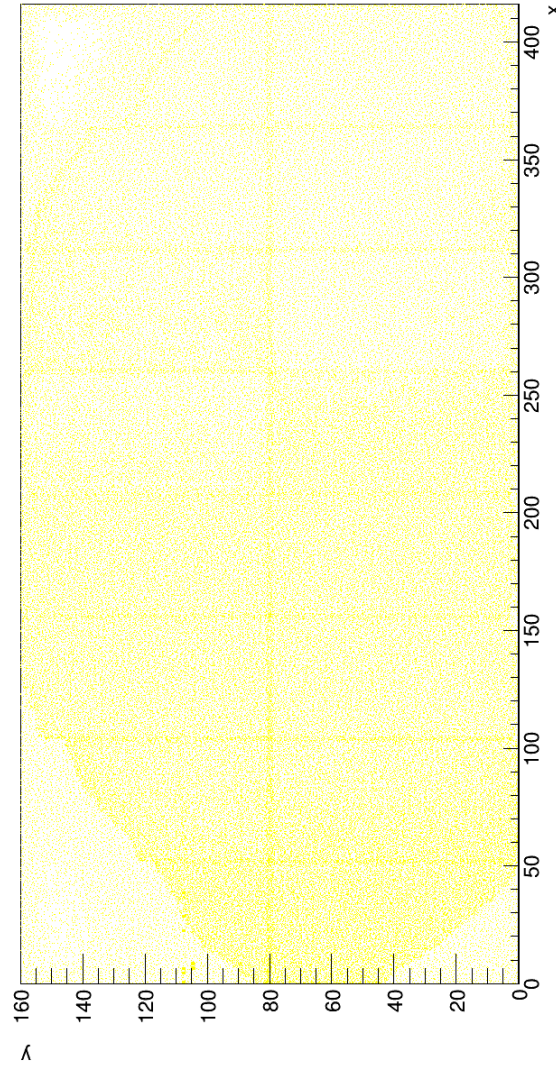
Global positions



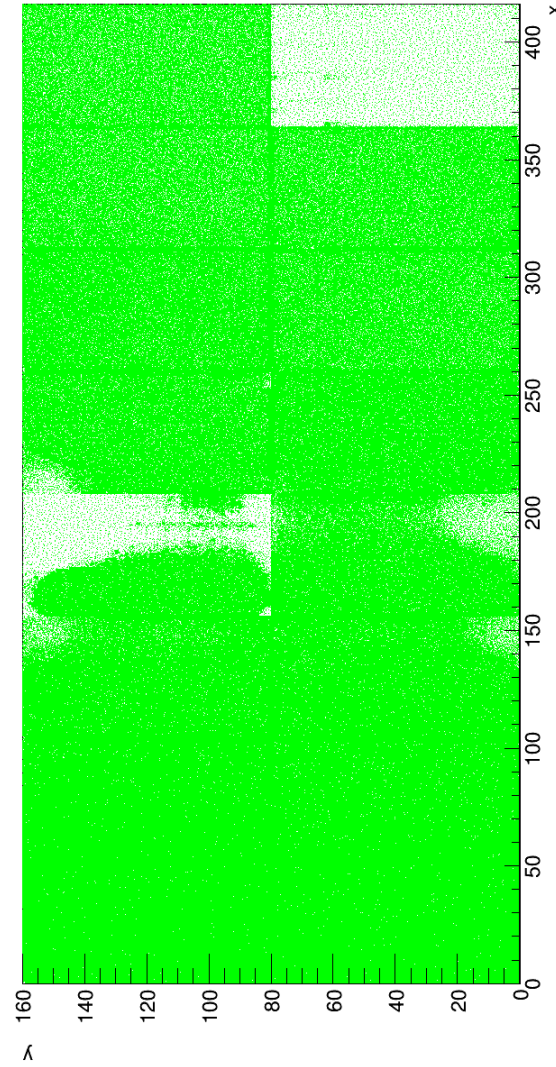
Clusters

Local positions

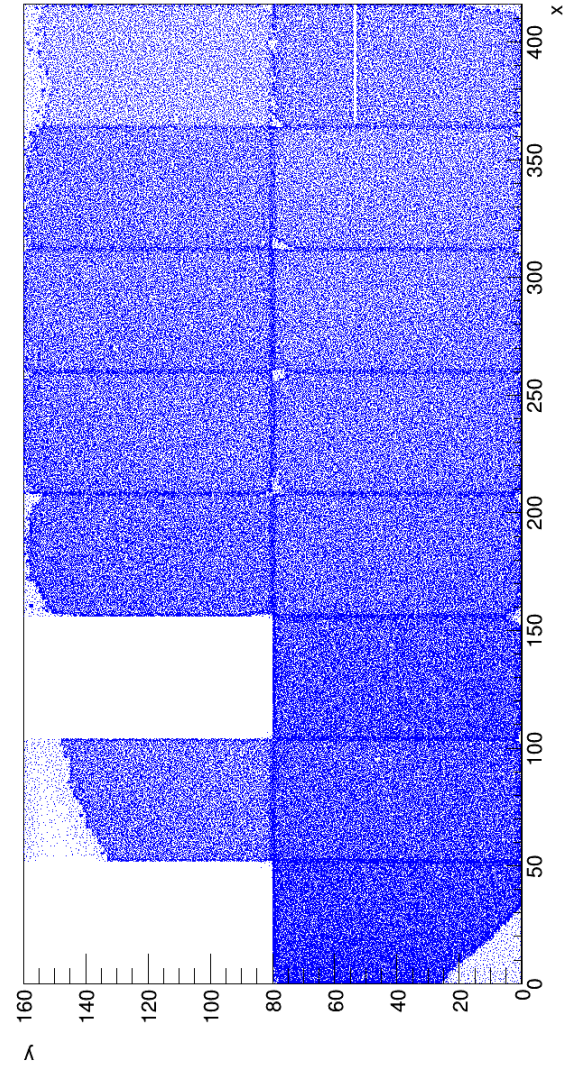
Clusters in FPix_Bml_D3_BLD3_PNL1_PLQ1



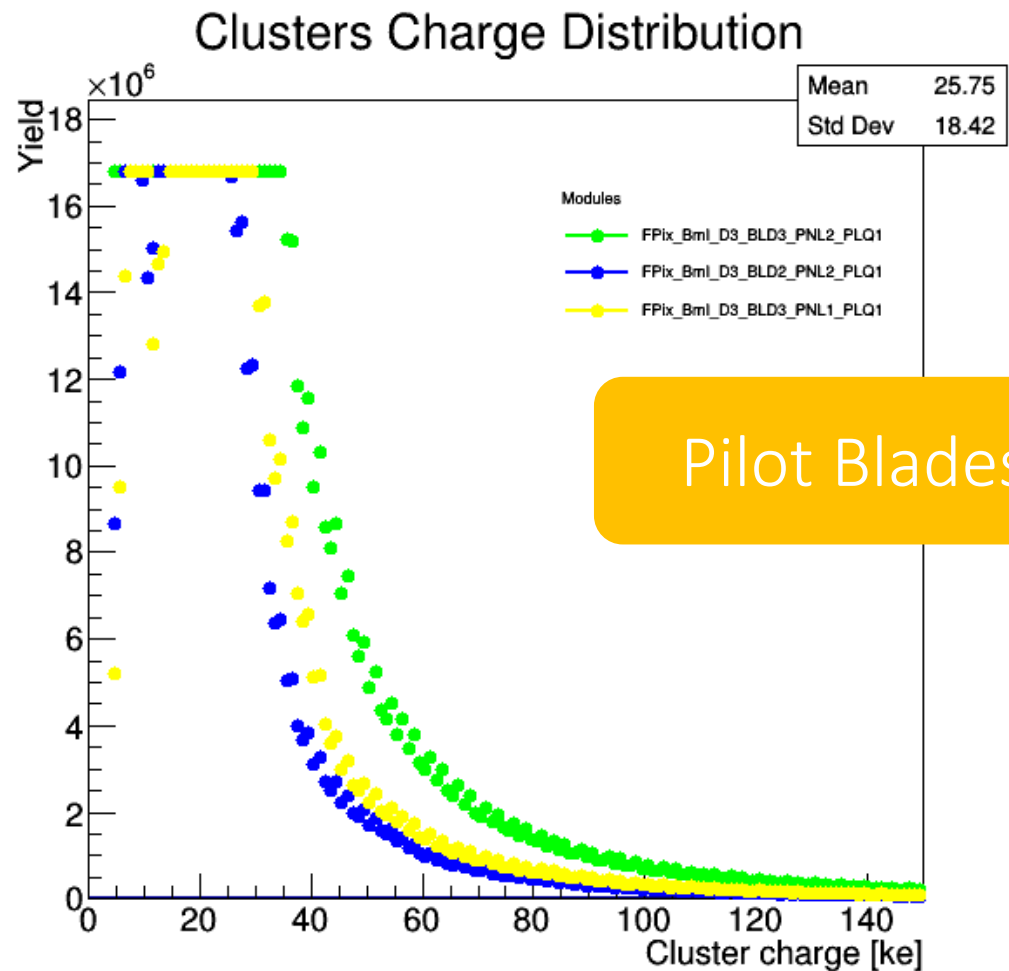
Clusters in FPix_Bml_D3_BLD3_PNL2_PLQ1



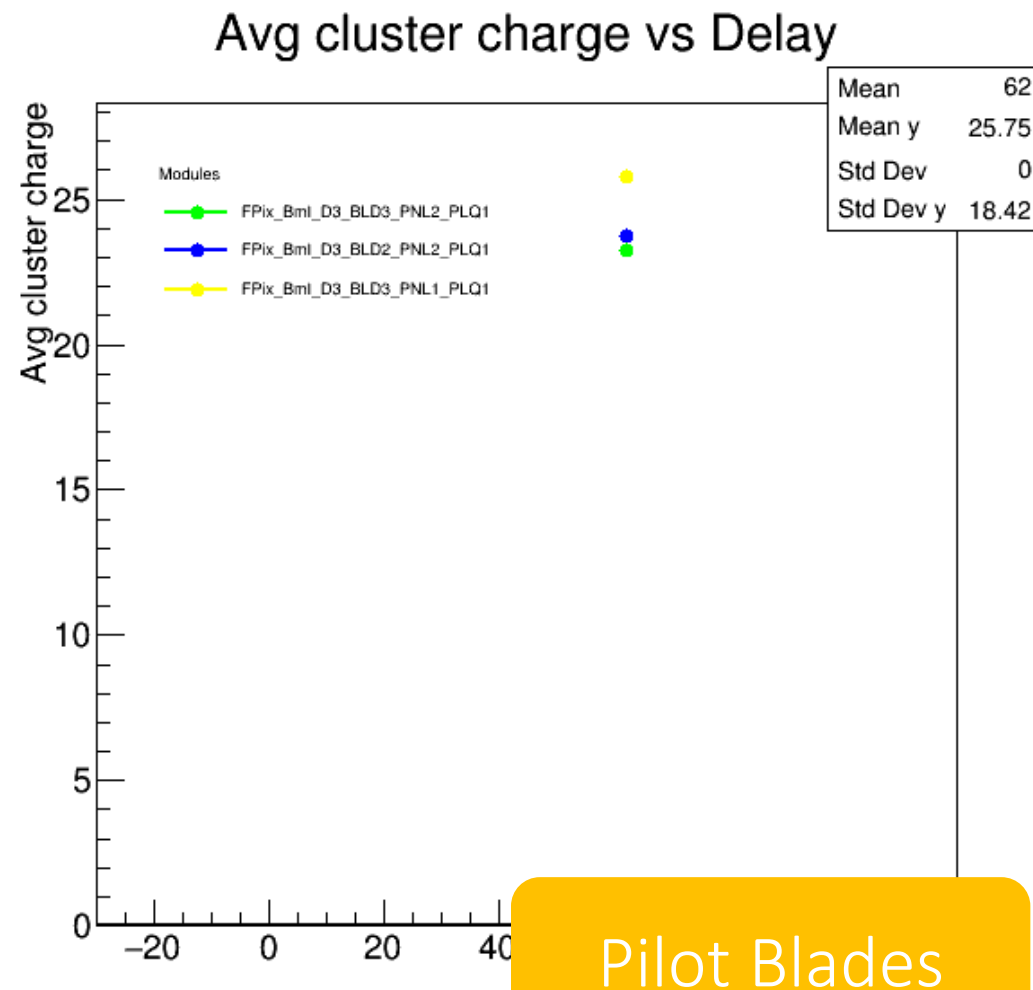
Clusters in FPix_Bml_D3_BLD2_PNL2_PLQ1



Cluster charge



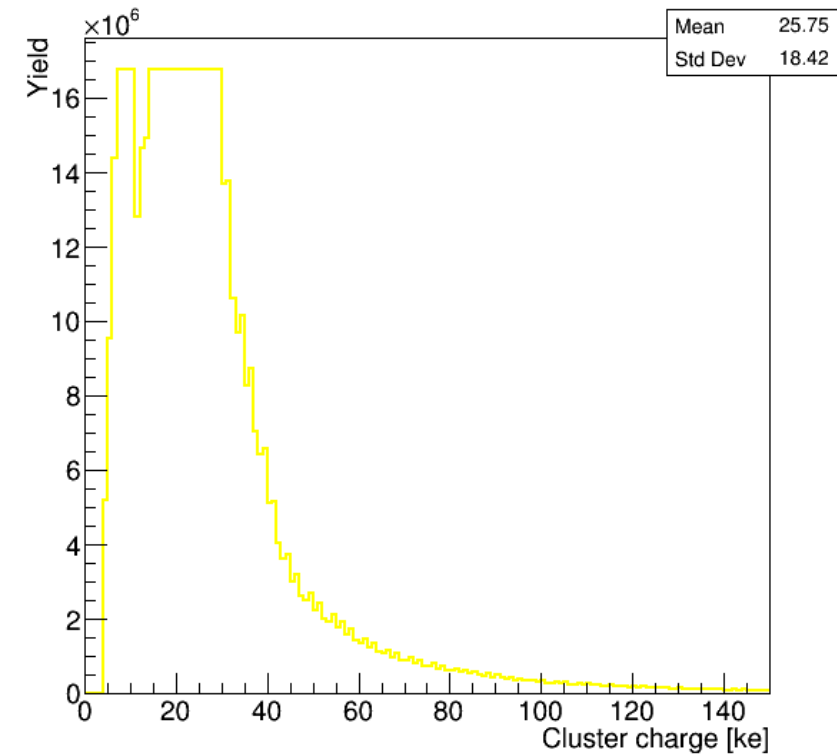
Pilot Blades



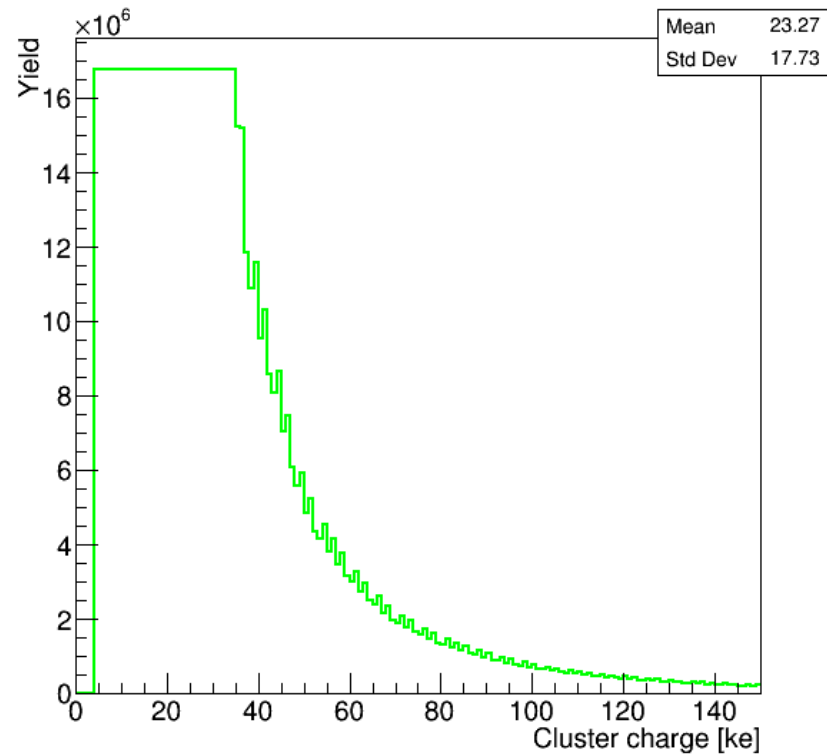
Pilot Blades

Cluster charge

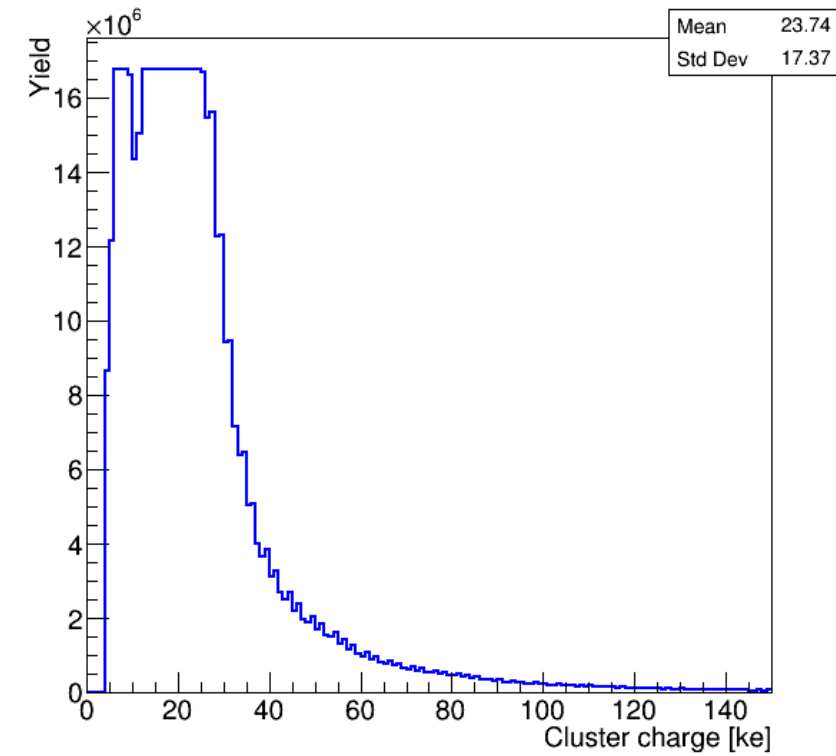
Clusters Charge Distribution in FPix_Bml_D3_BLD3_PNL1_PLQ1



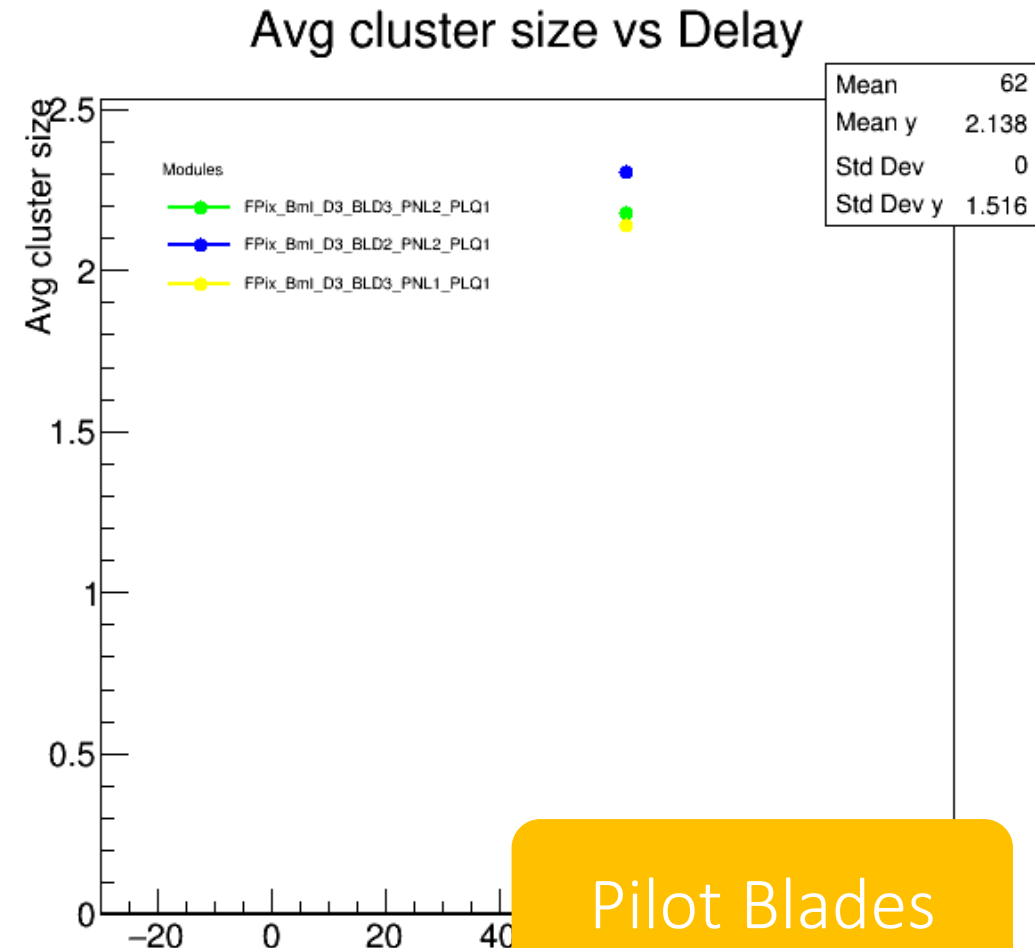
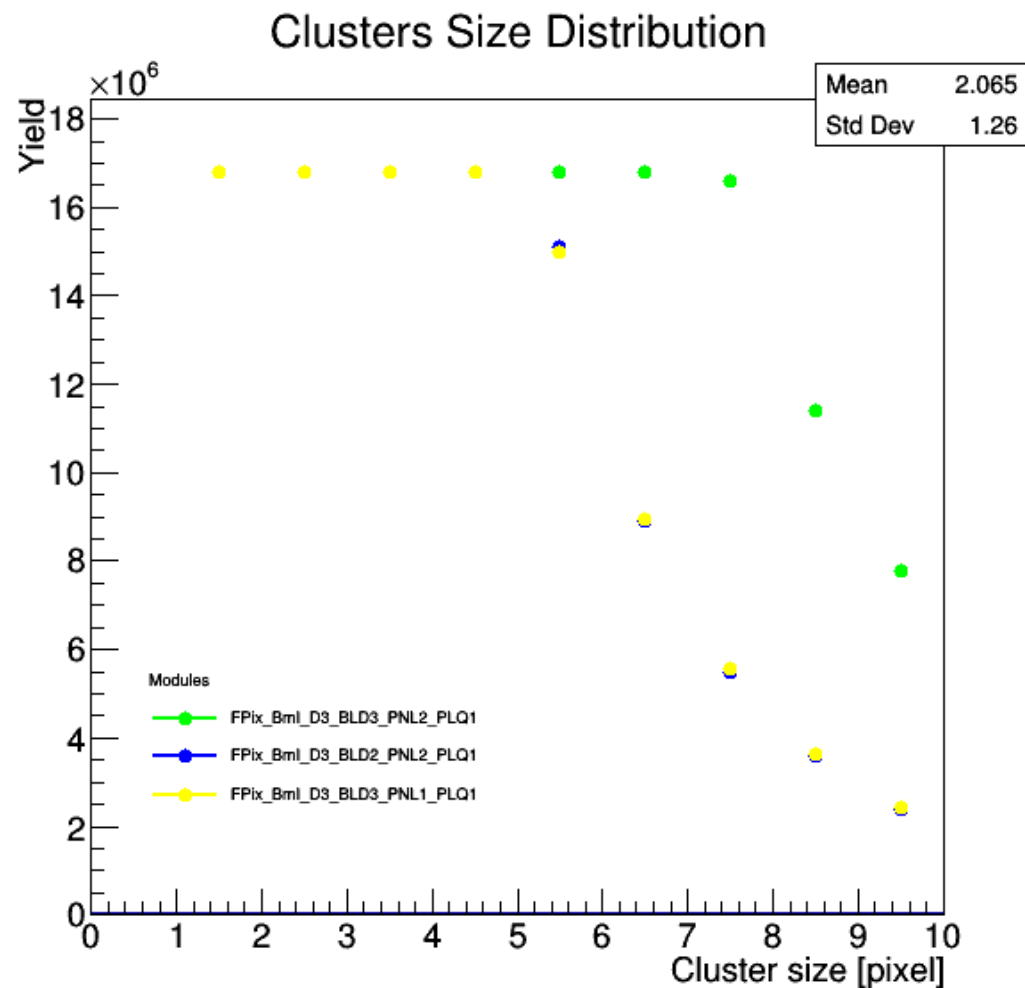
Clusters Charge Distribution in FPix_Bml_D3_BLD3_PNL2_PLQ1



Clusters Charge Distribution in FPix_Bml_D3_BLD2_PNL2_PLQ1

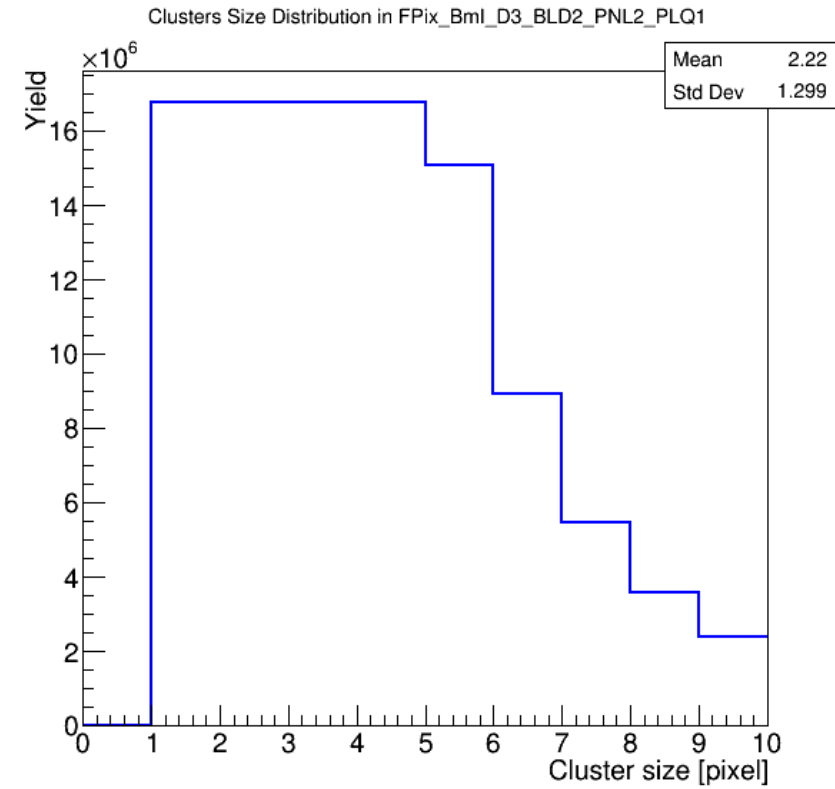
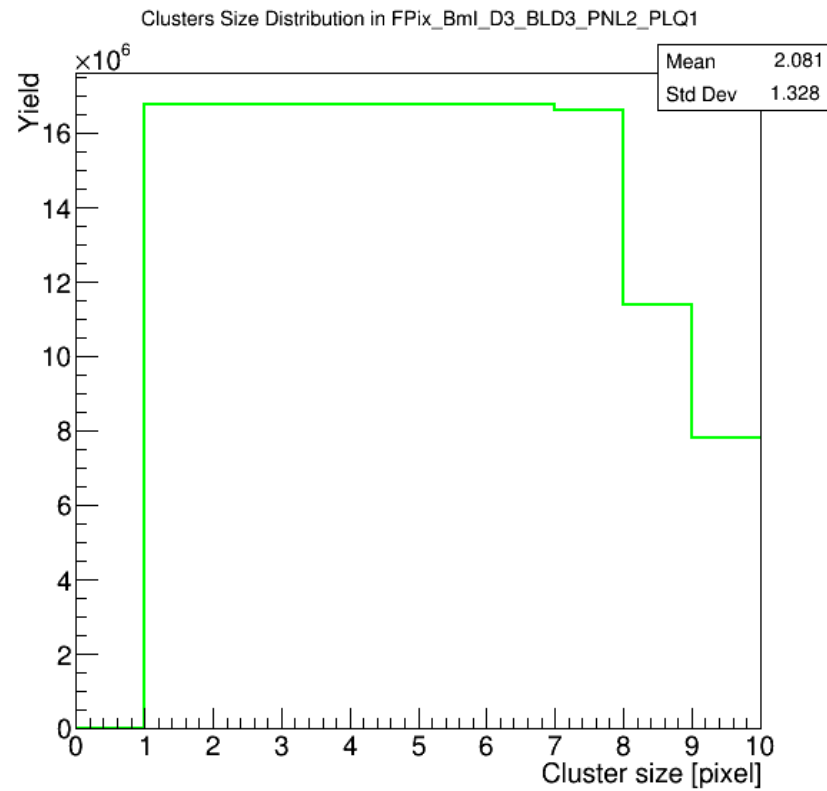
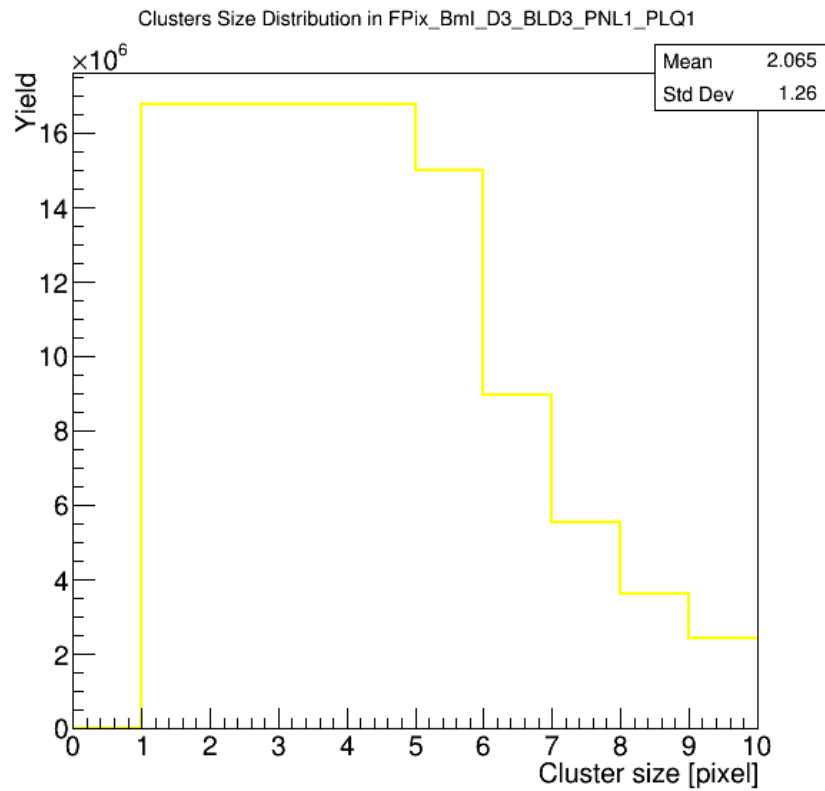


Cluster size

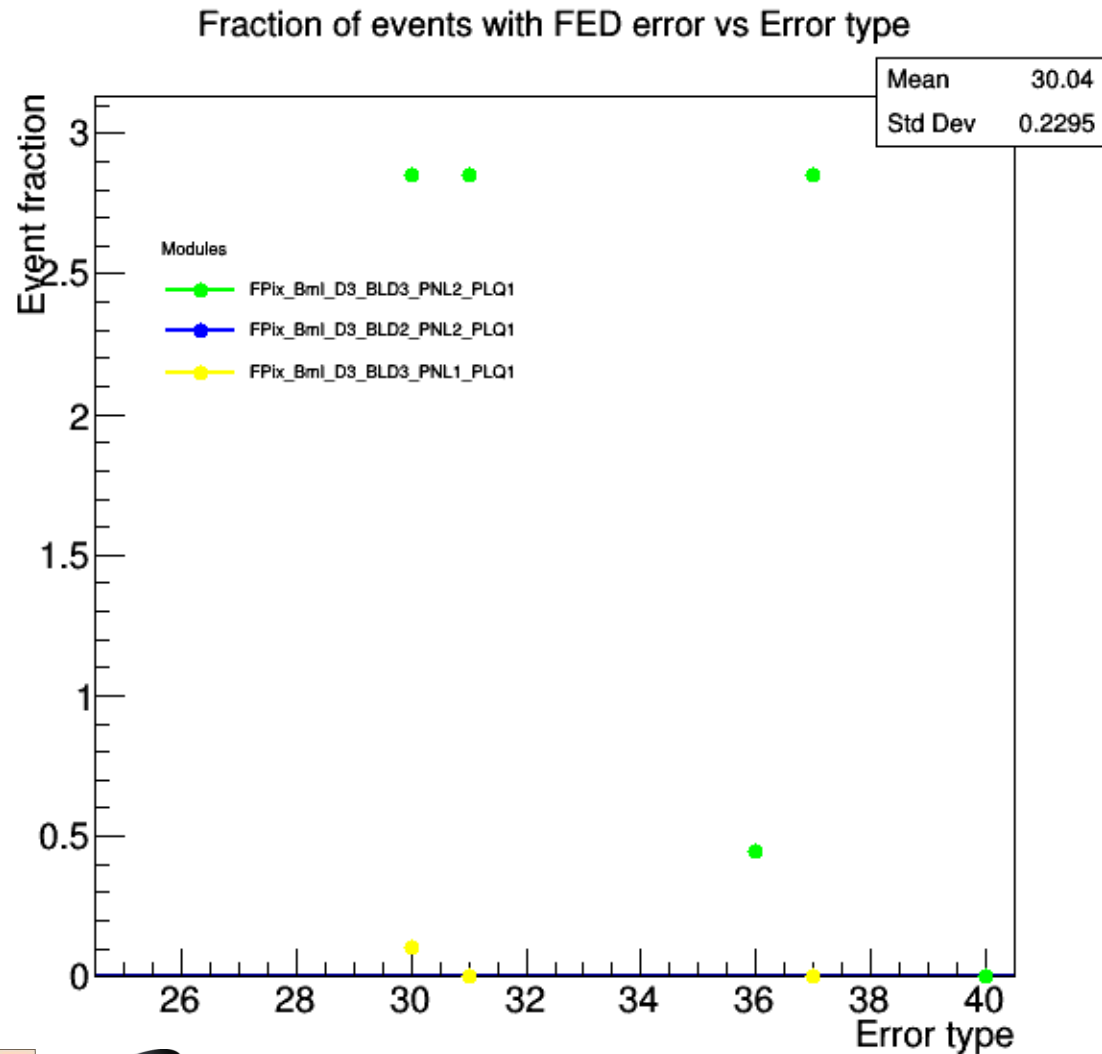


Pilot Blades

Cluster size



FED Errors



Error 30:
TBM error trailer

Error 31:
Event number error

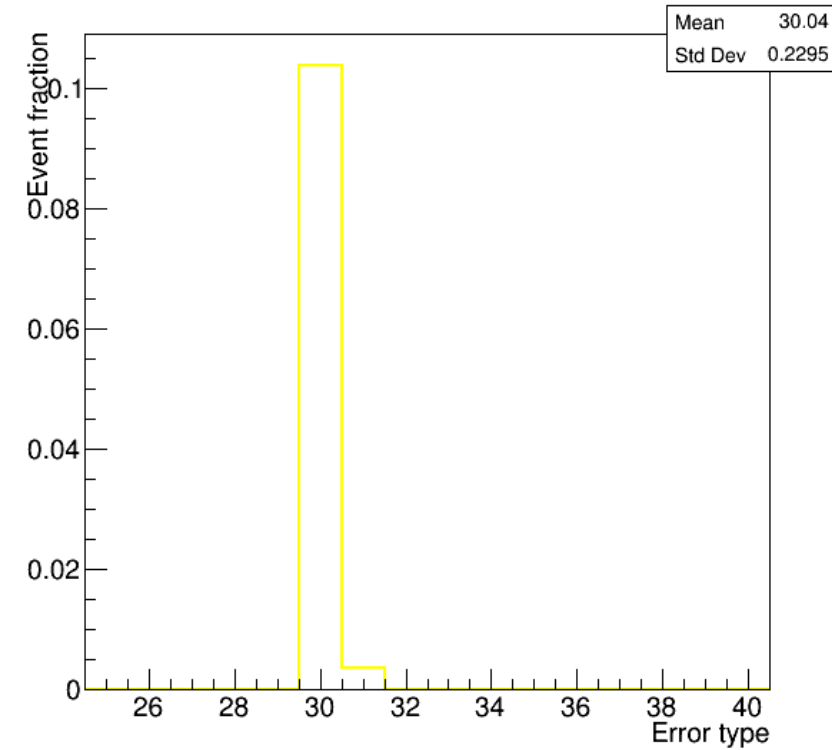
Error 36:
Invalid ROC value

Error 37:
The error type is invalid
dcol or pixel value

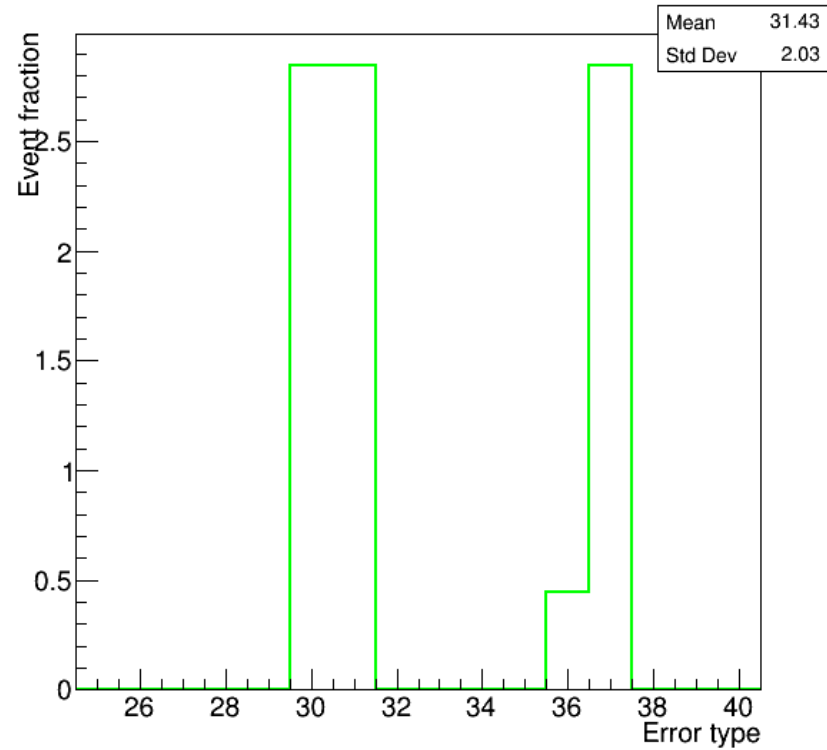
Error 40:
Overflow error

FED Errors

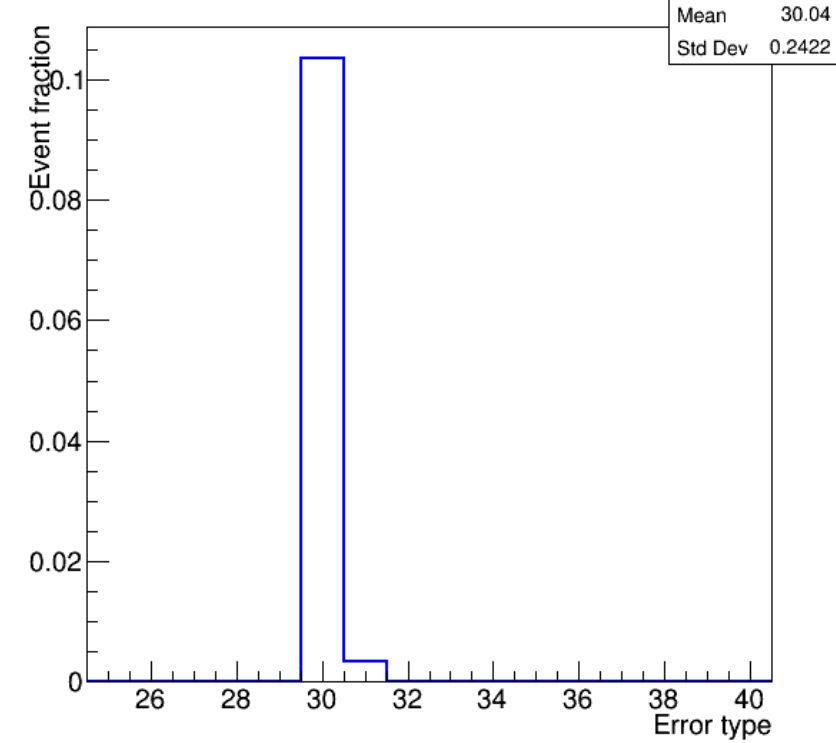
Fraction of events with FED error vs Error type in FPix_Bml_D3_BLD3_PNL1_PLQ1



Fraction of events with FED error vs Error type in FPix_Bml_D3_BLD3_PNL2_PLQ1



Fraction of events with FED error vs Error type in FPix_Bml_D3_BLD2_PNL2_PLQ1



miniDAQ runs (280874-280922)

Date: 2016-09-16

Run number: from 280874 (at 12:32)

Run number: until 280922 (at 16:15)

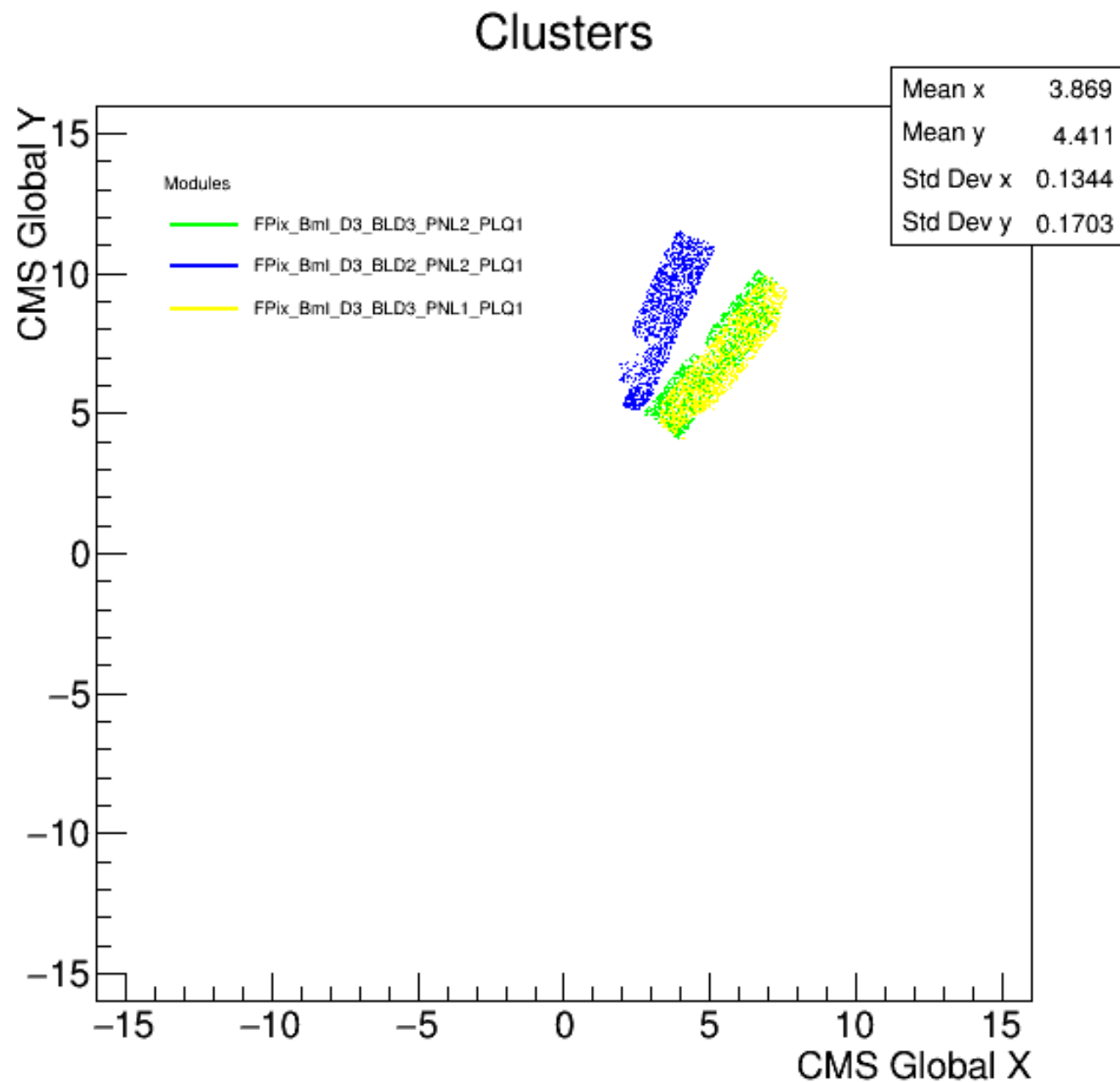
All: around 4 hours

Number of events: 17M

https://tvami.web.cern.ch/tvami/projects/PilotBlade/Runs280874-280922_miniDAQ/

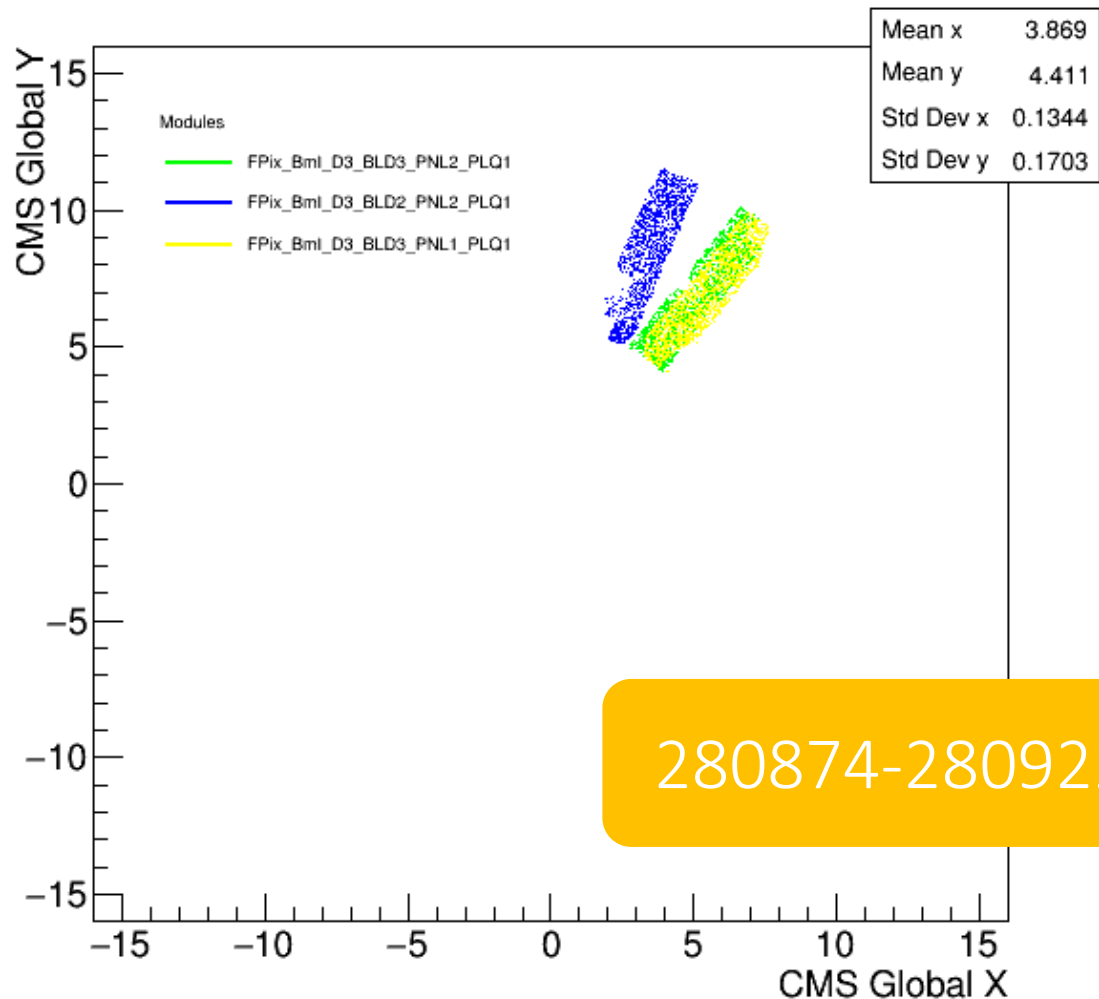
Clusters

Global positions



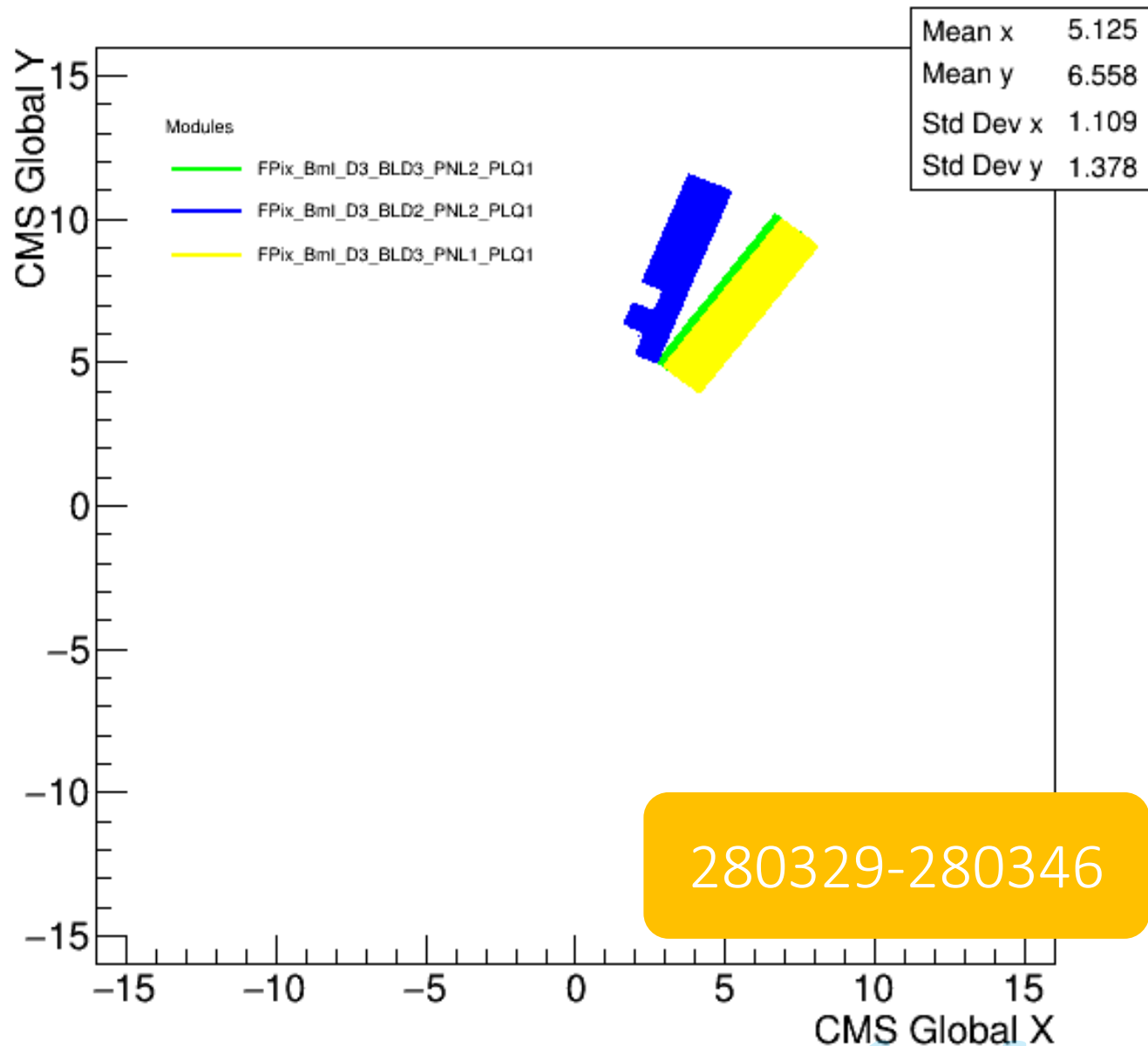
Cluster comparison

Clusters



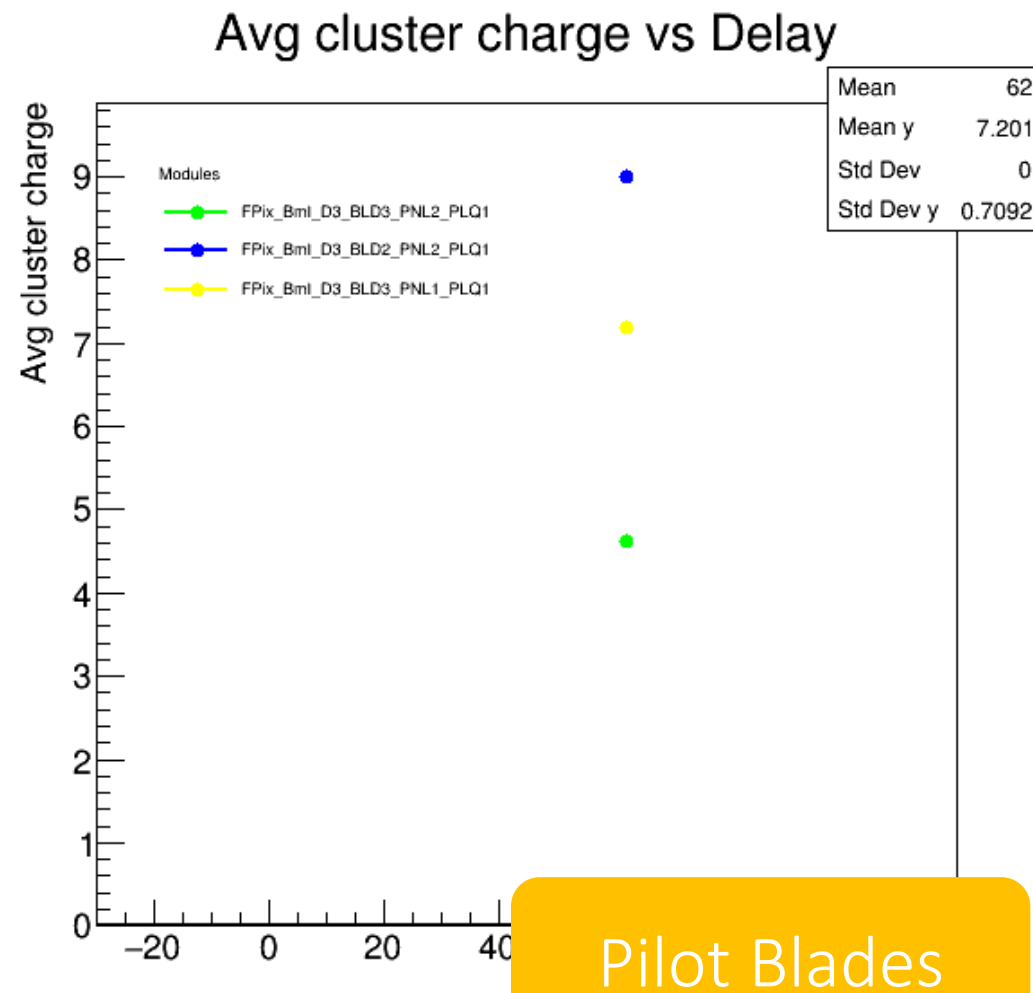
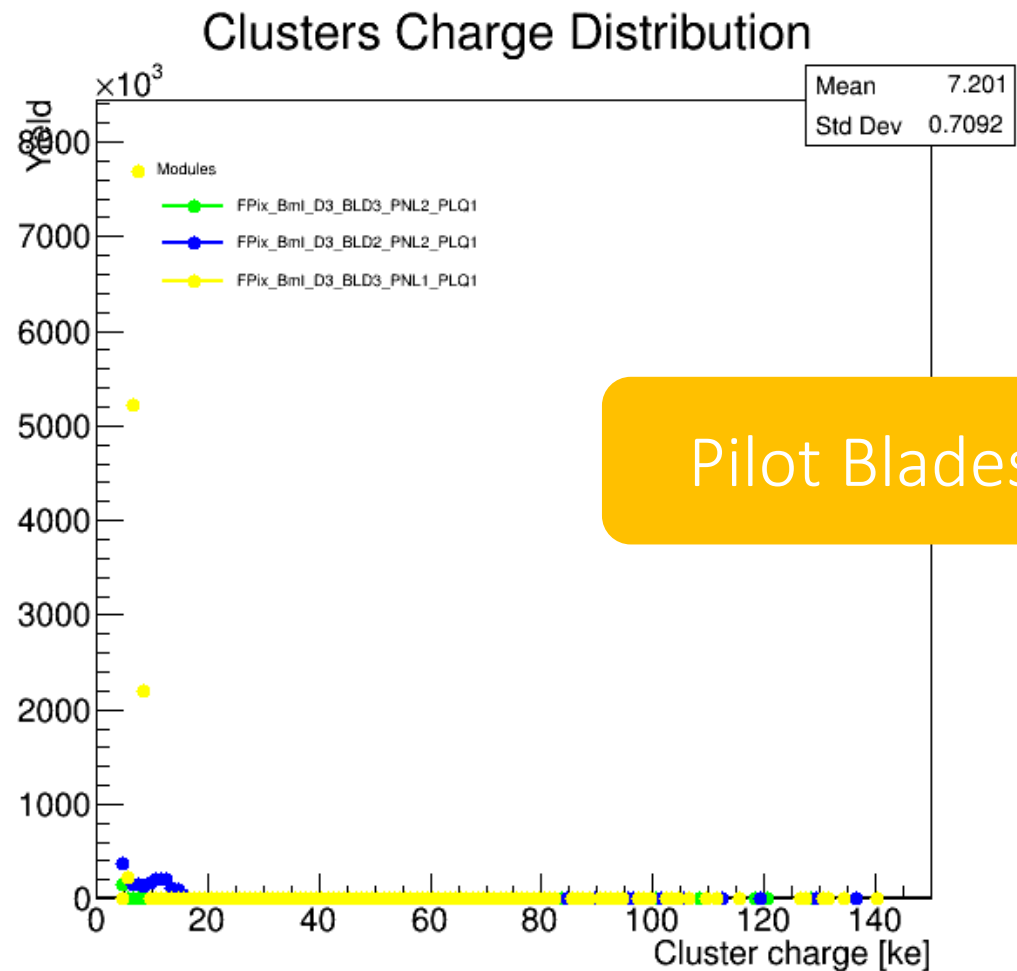
280874-280922

Clusters

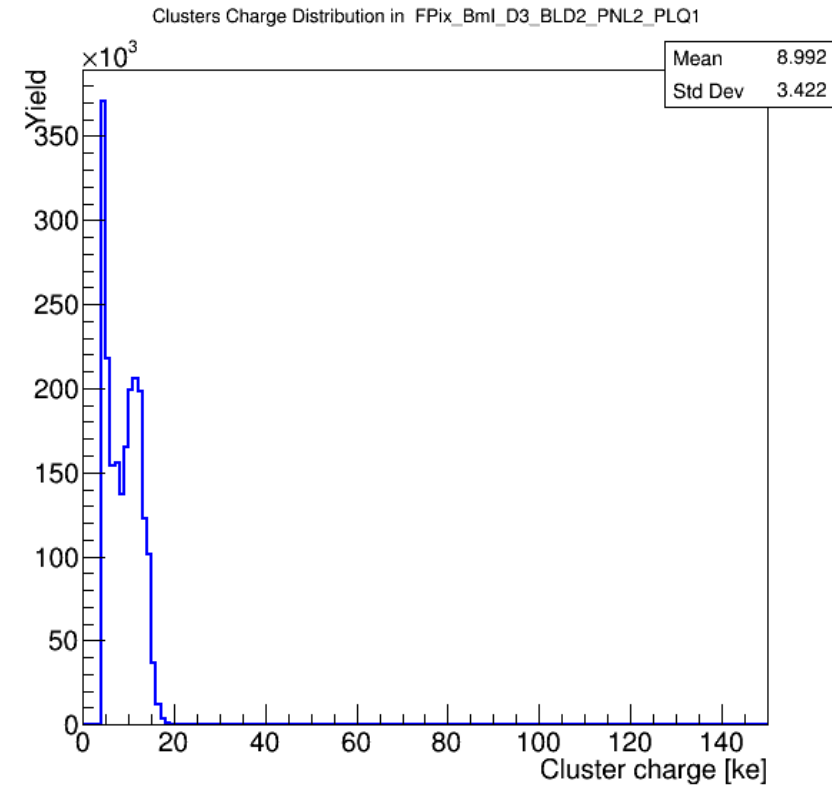
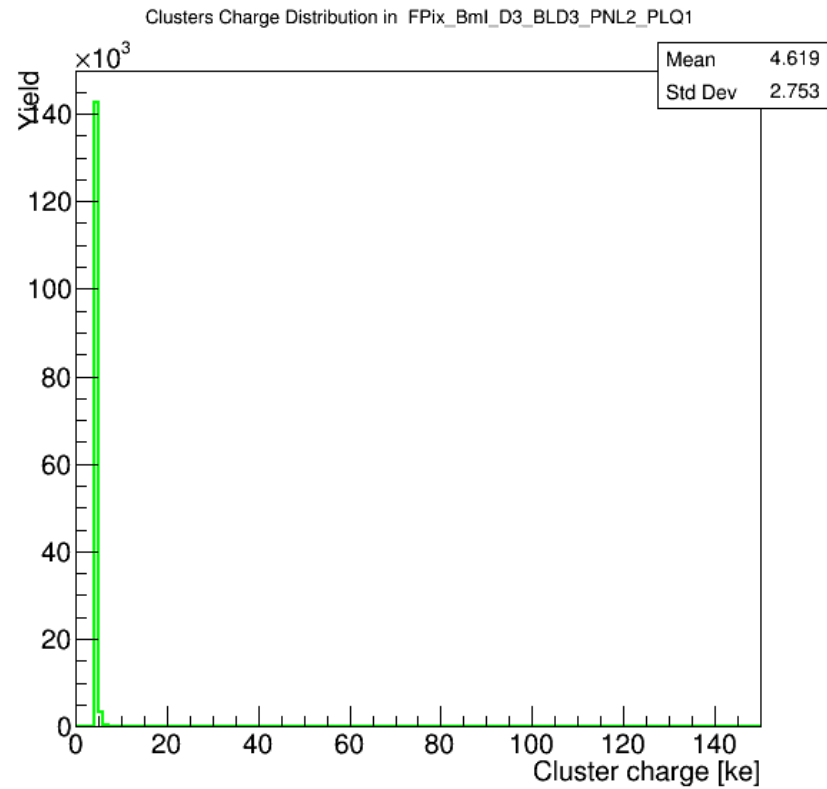
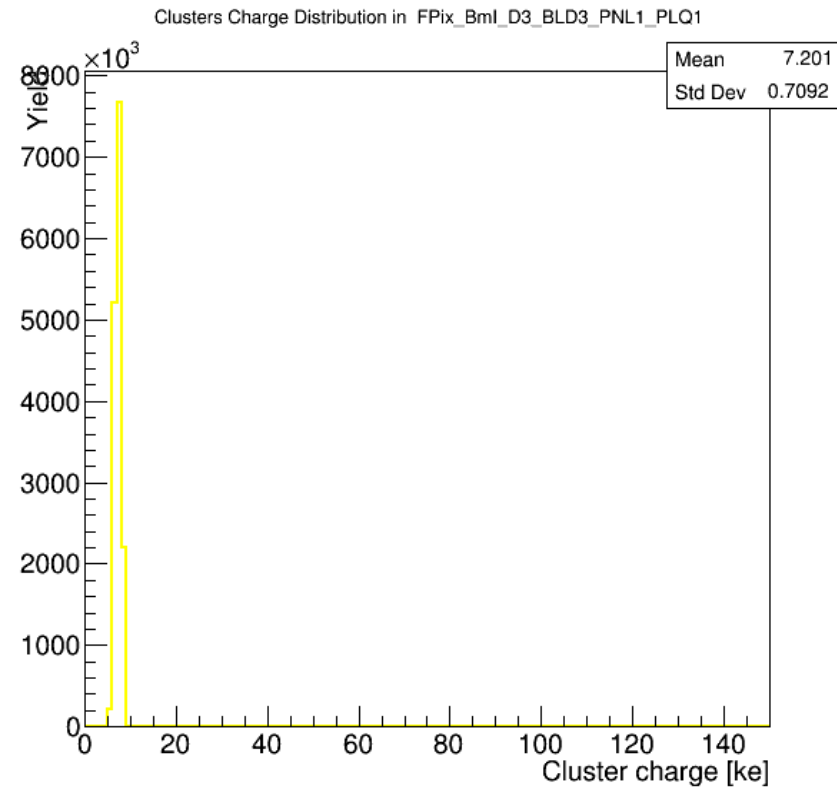


280329-280346

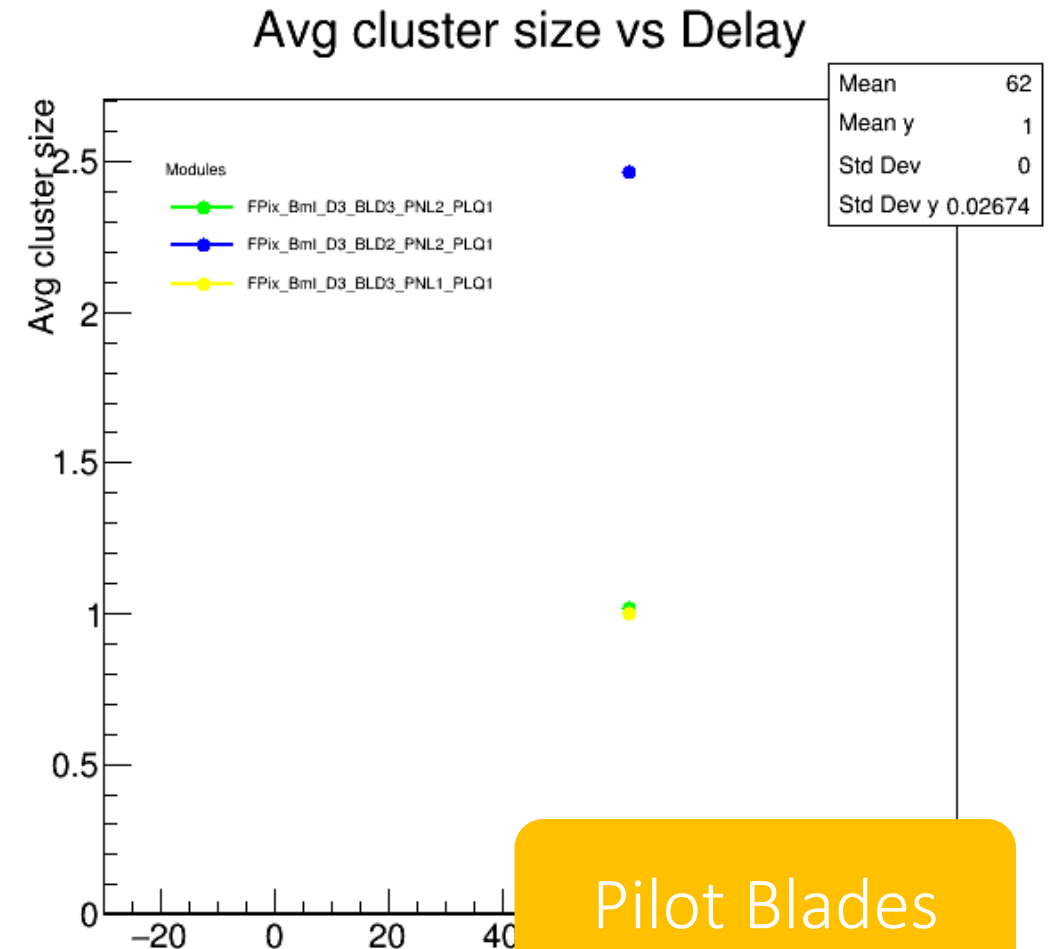
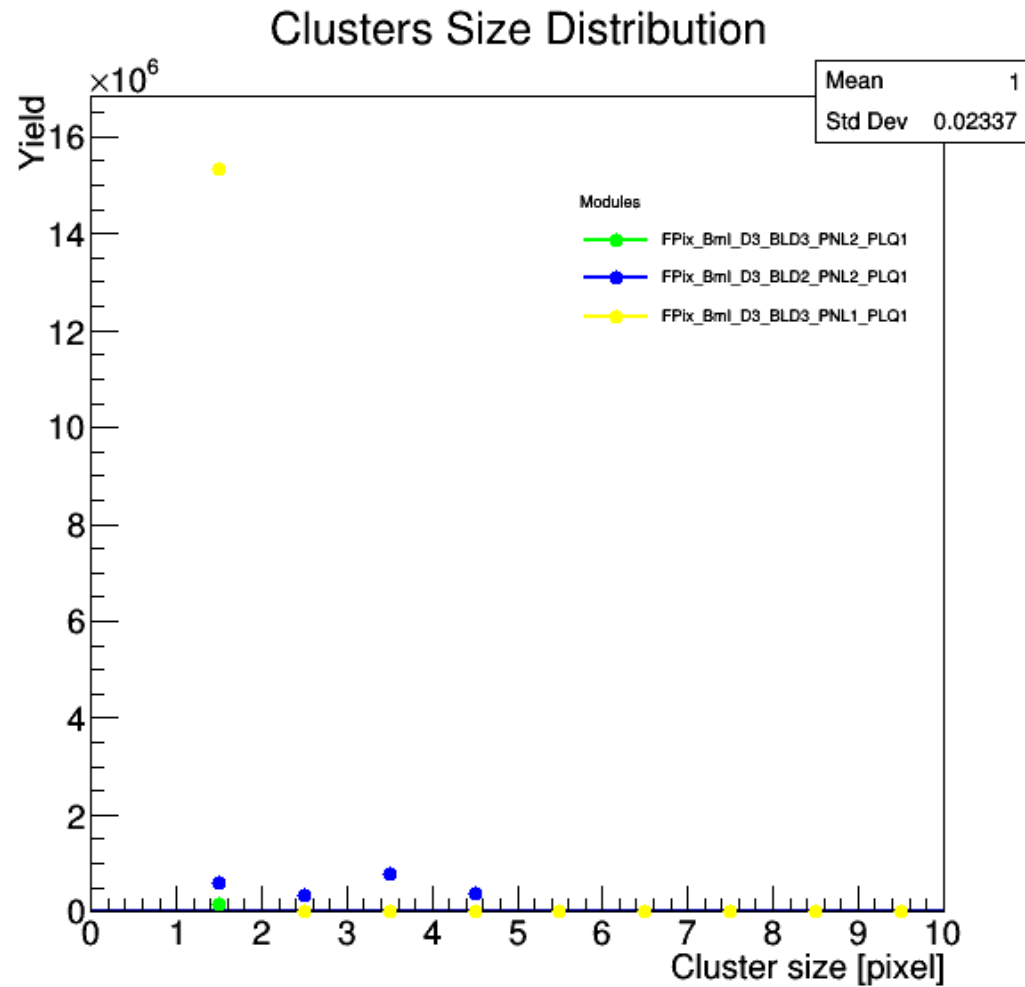
Cluster charge



Cluster charge

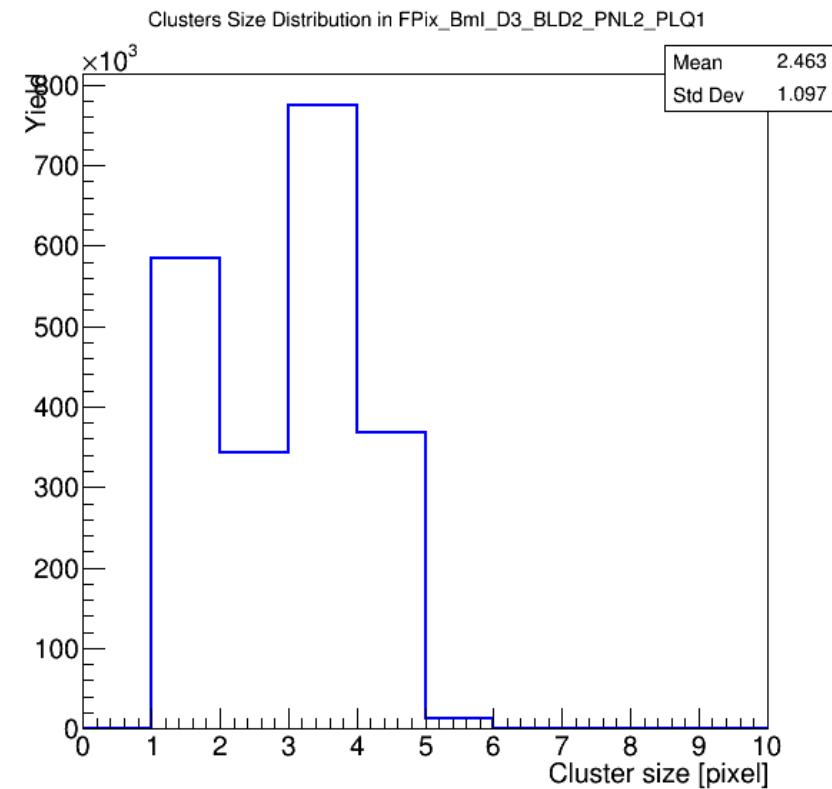
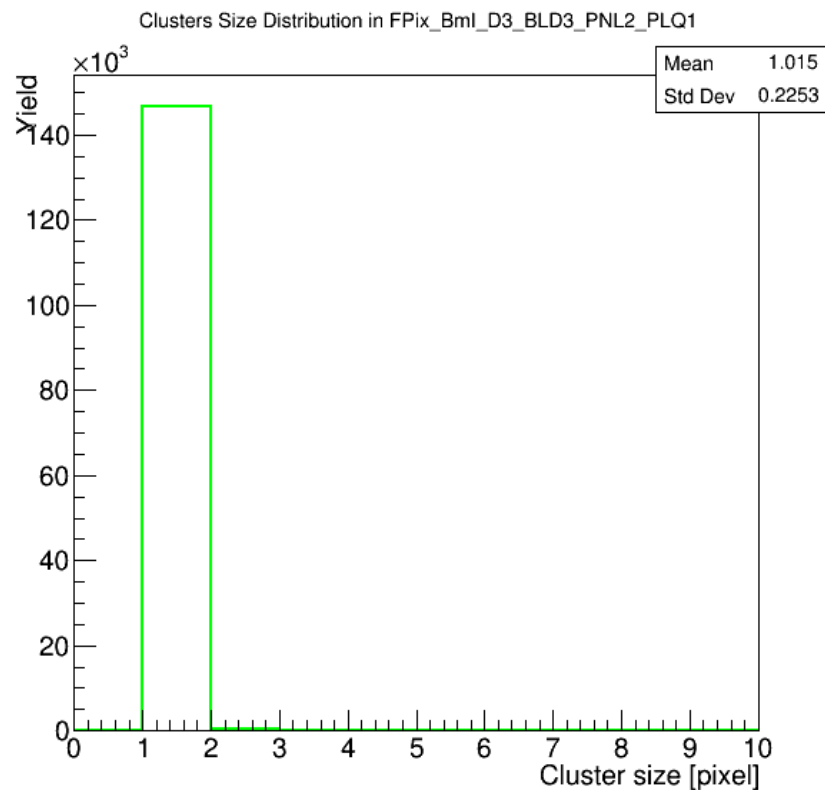
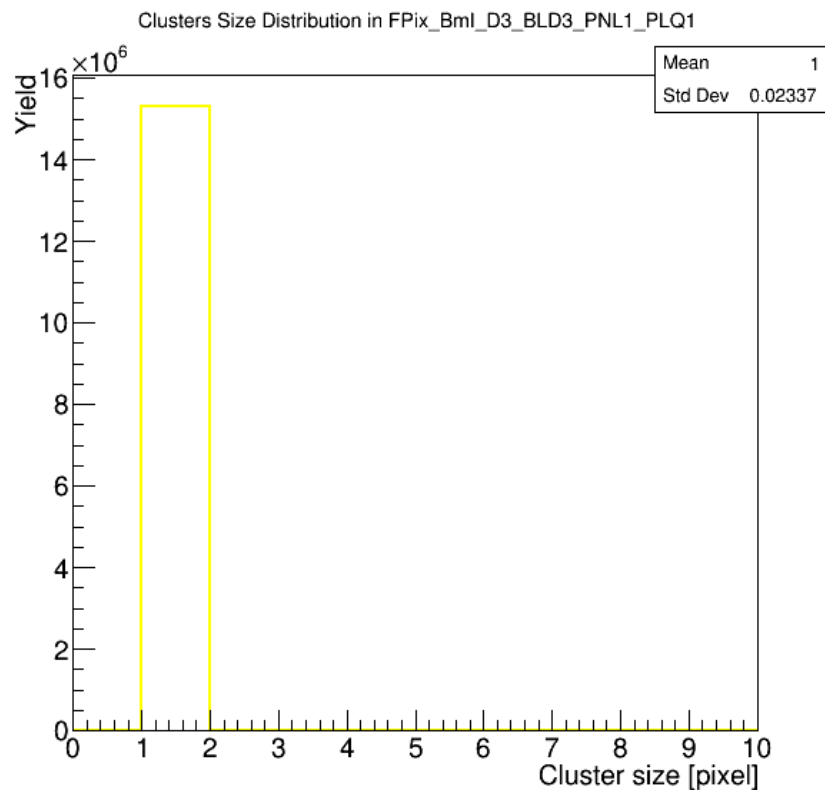


Cluster size



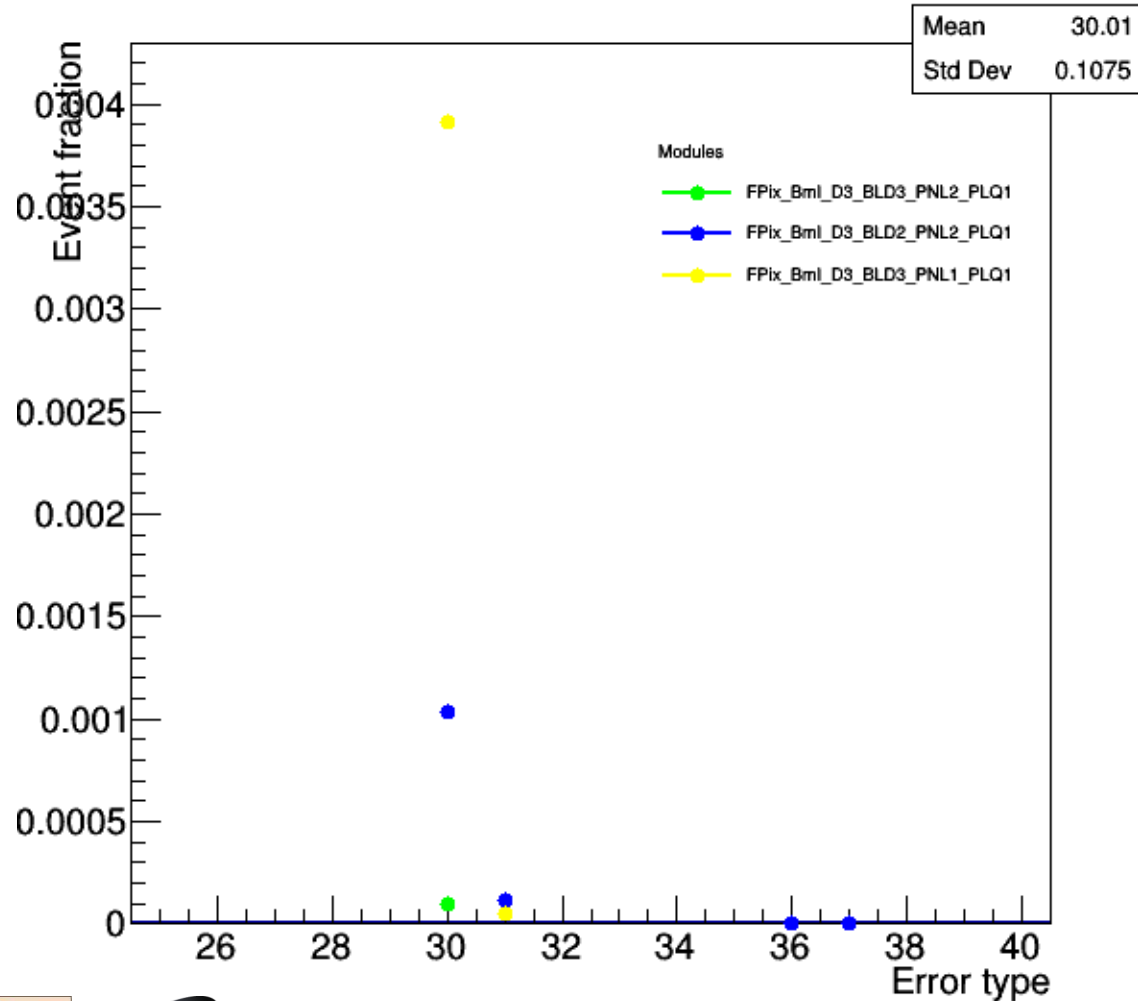
Pilot Blades

Cluster size



FED Errors

Fraction of events with FED error vs Error type



Error 30:

TBM error trailer

Error 31:

Event number error

Error 36:

Invalid ROC value

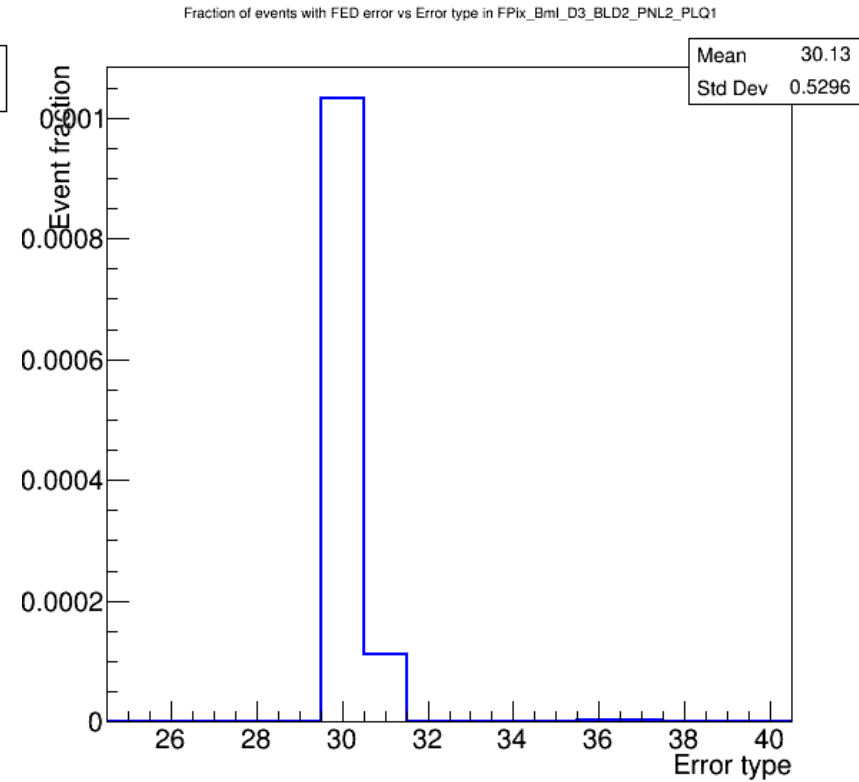
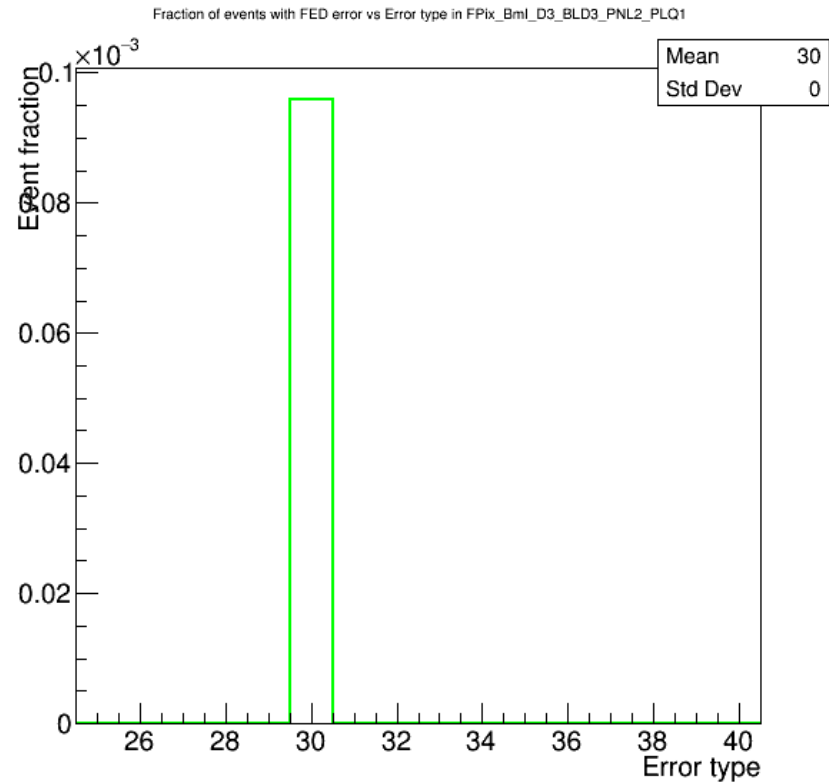
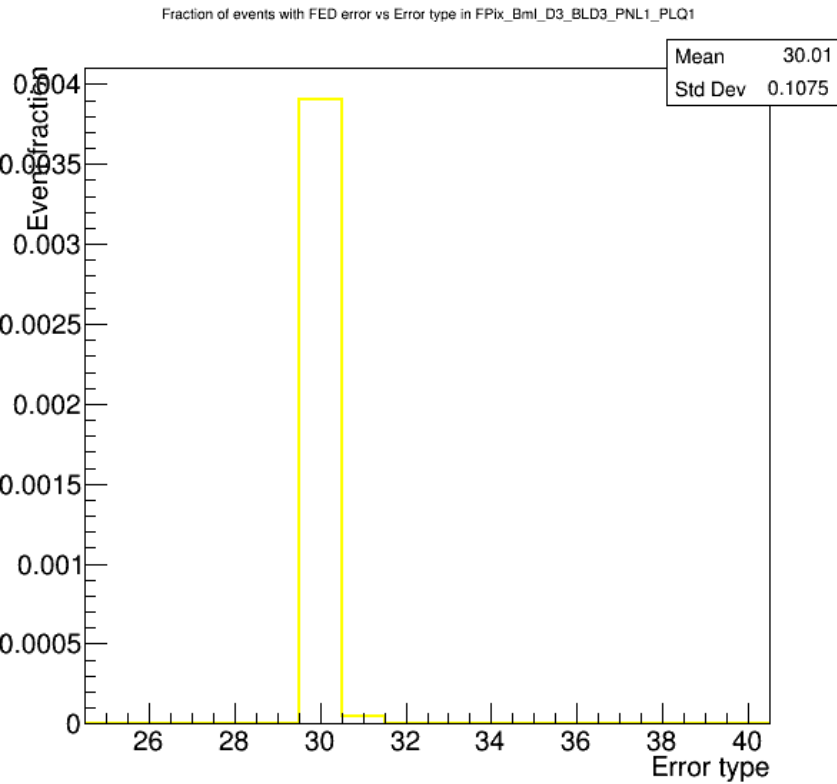
Error 37:

The error type is invalid
dcol or pixel value

Error 40:

Overflow error

FED Errors



Global Runs in September (281602)

LHC Fill 5330

InjectionScheme Single_4b_3_2_1_1bpi_4inj

Date: 2016-09-25

Run number: from 281602 (at 01:09)

Run number: until 281602 (at 01:57)

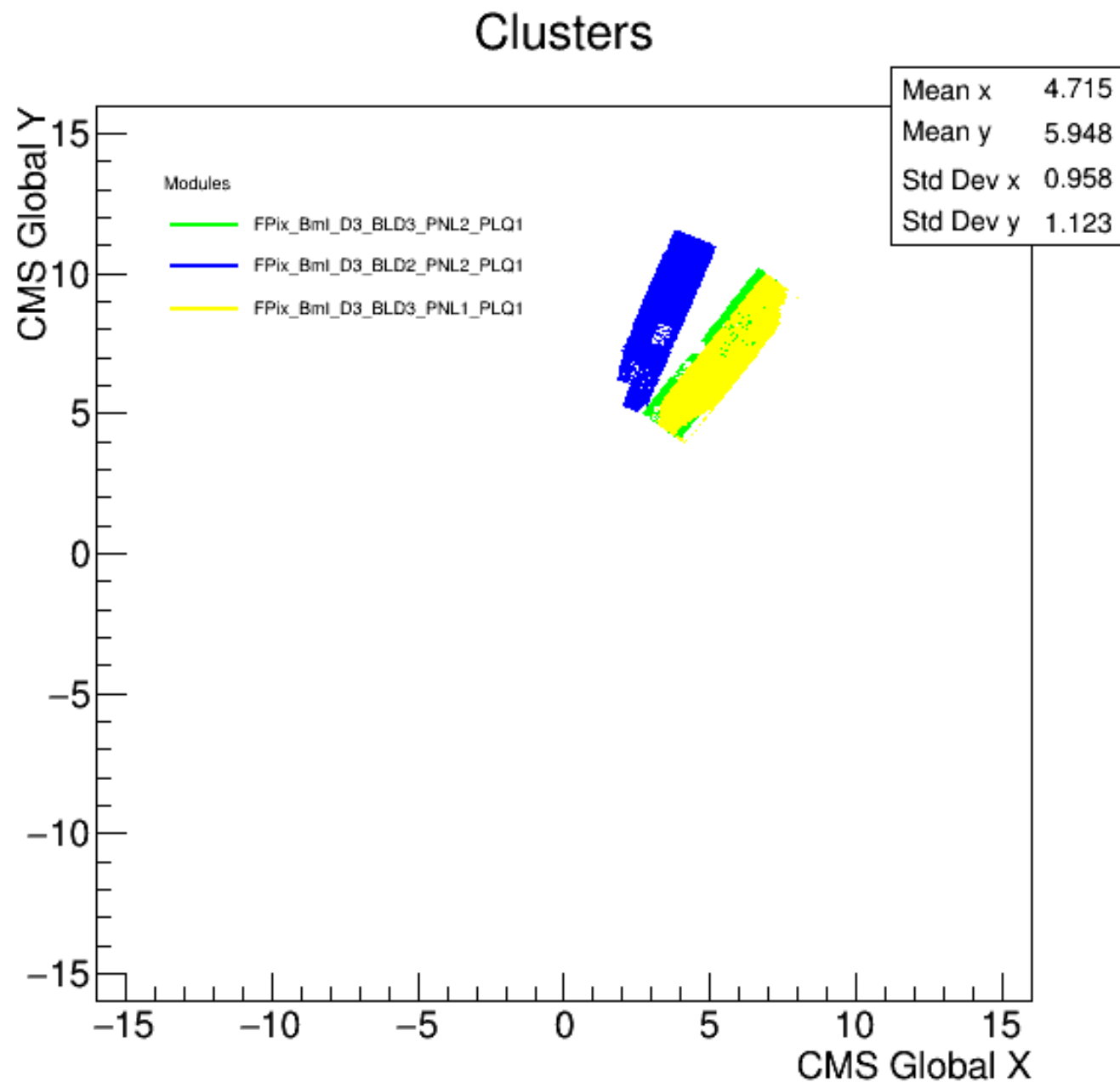
All: around 1 hour

Number of events: 20M

https://tvami.web.cern.ch/tvami/projects/PilotBlade/Runs281602_ZeroBias/

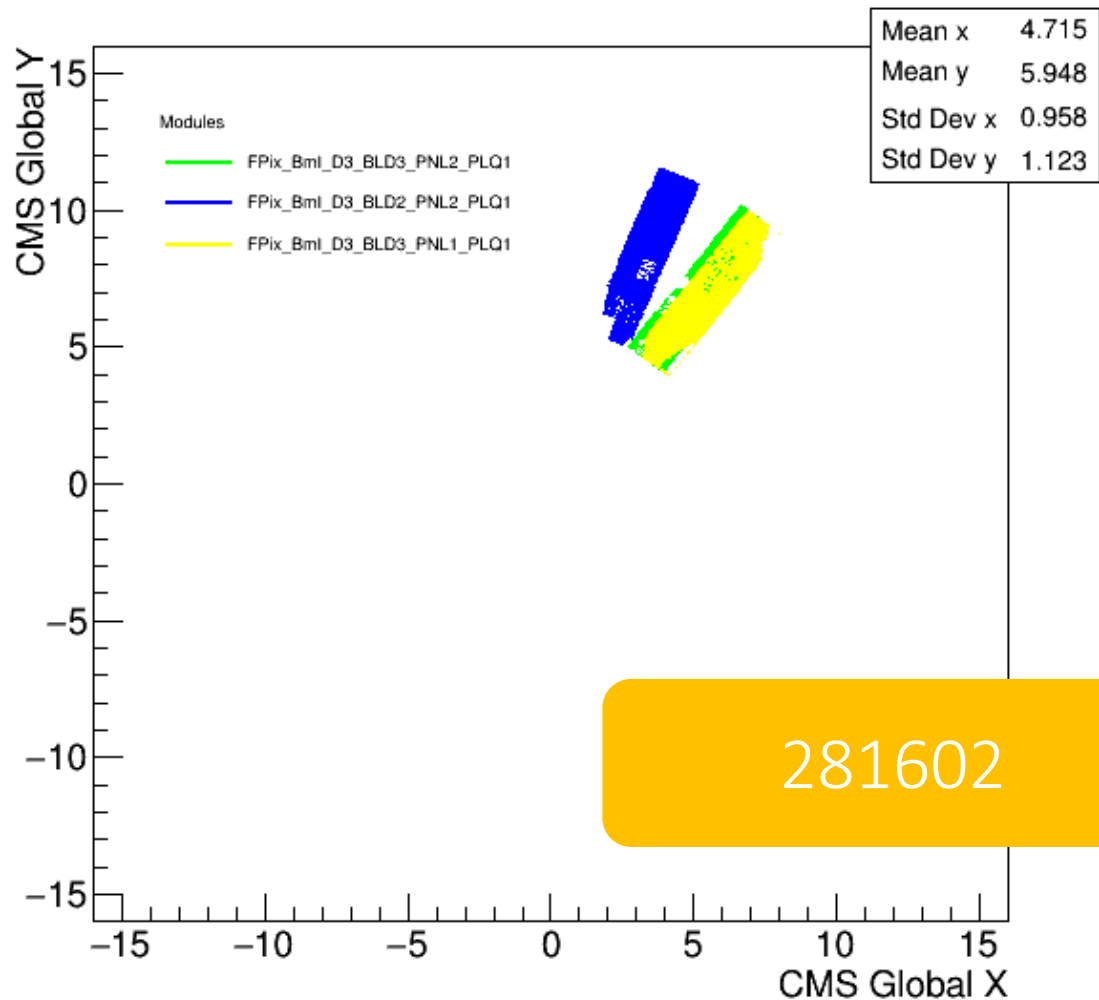
Clusters

Global positions

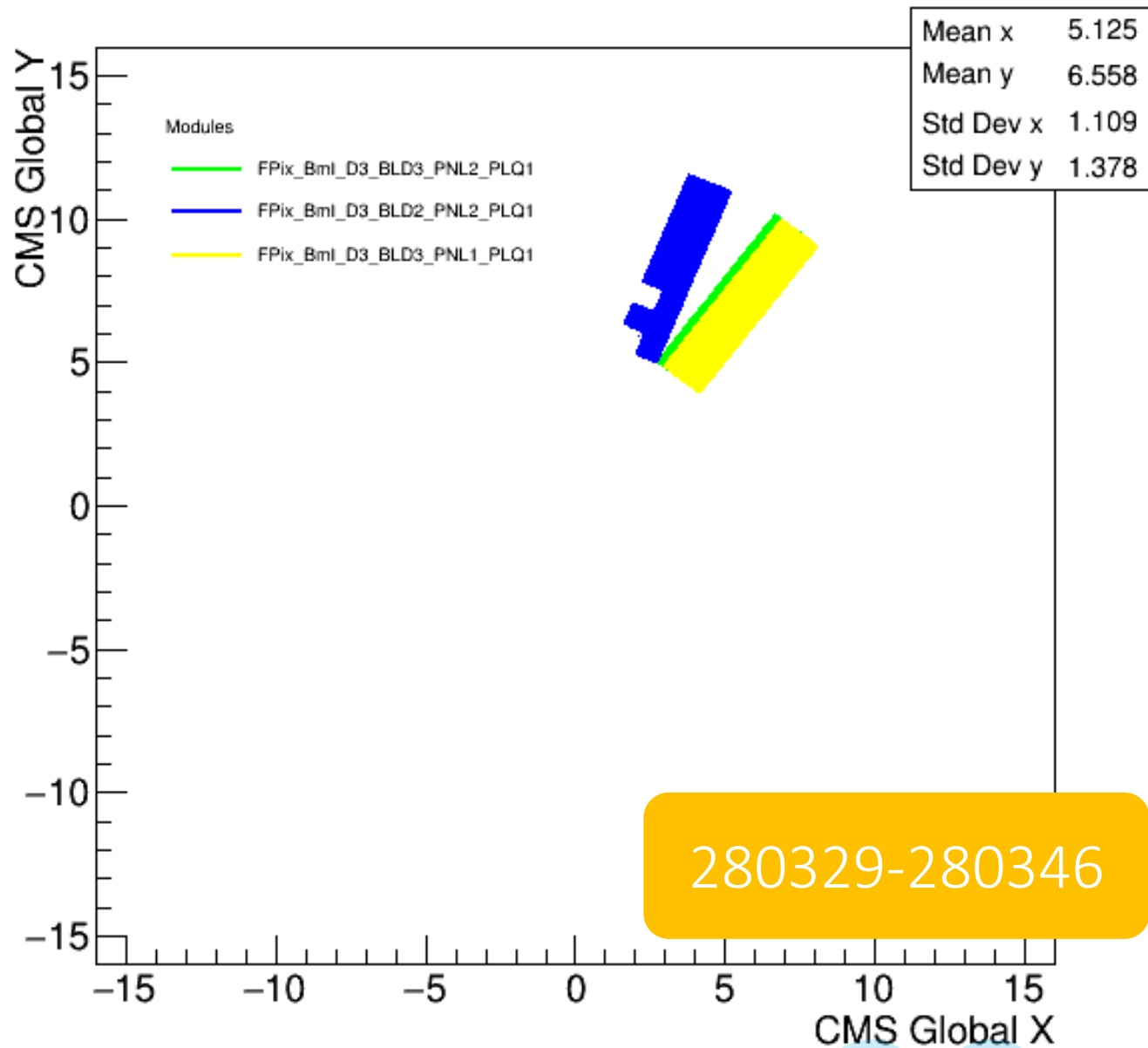


Cluster comparison

Clusters



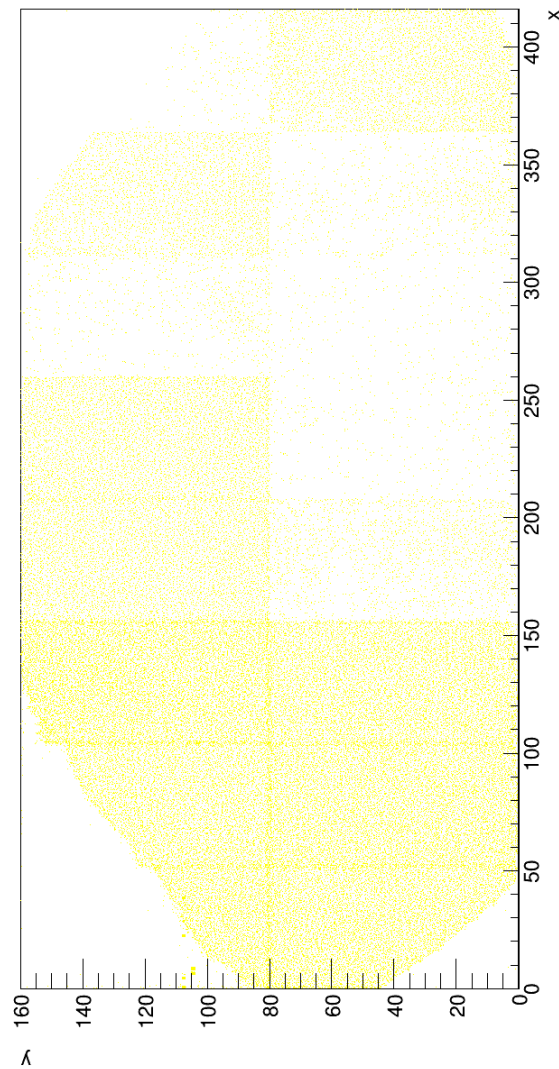
Clusters



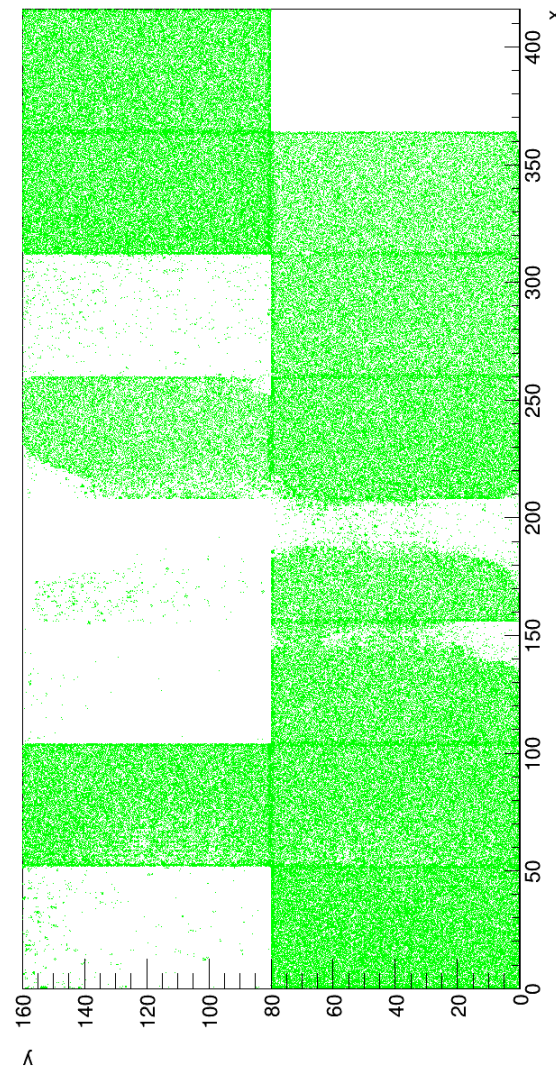
Clusters

Local positions

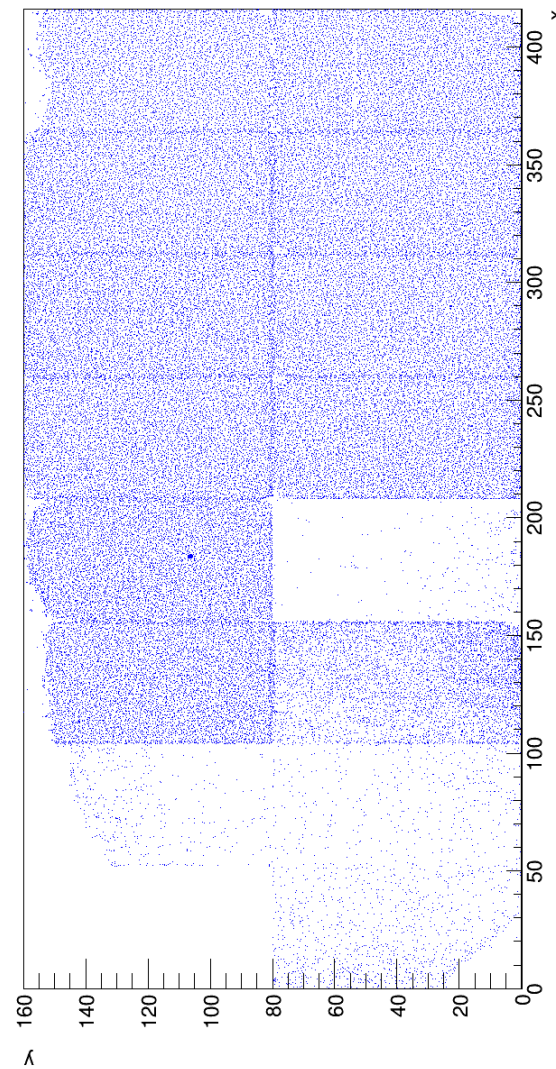
Clusters in FPix_Bml_D3_BLD3_PNL1_PLQ1



Clusters in FPix_Bml_D3_BLD3_PNL2_PLQ1

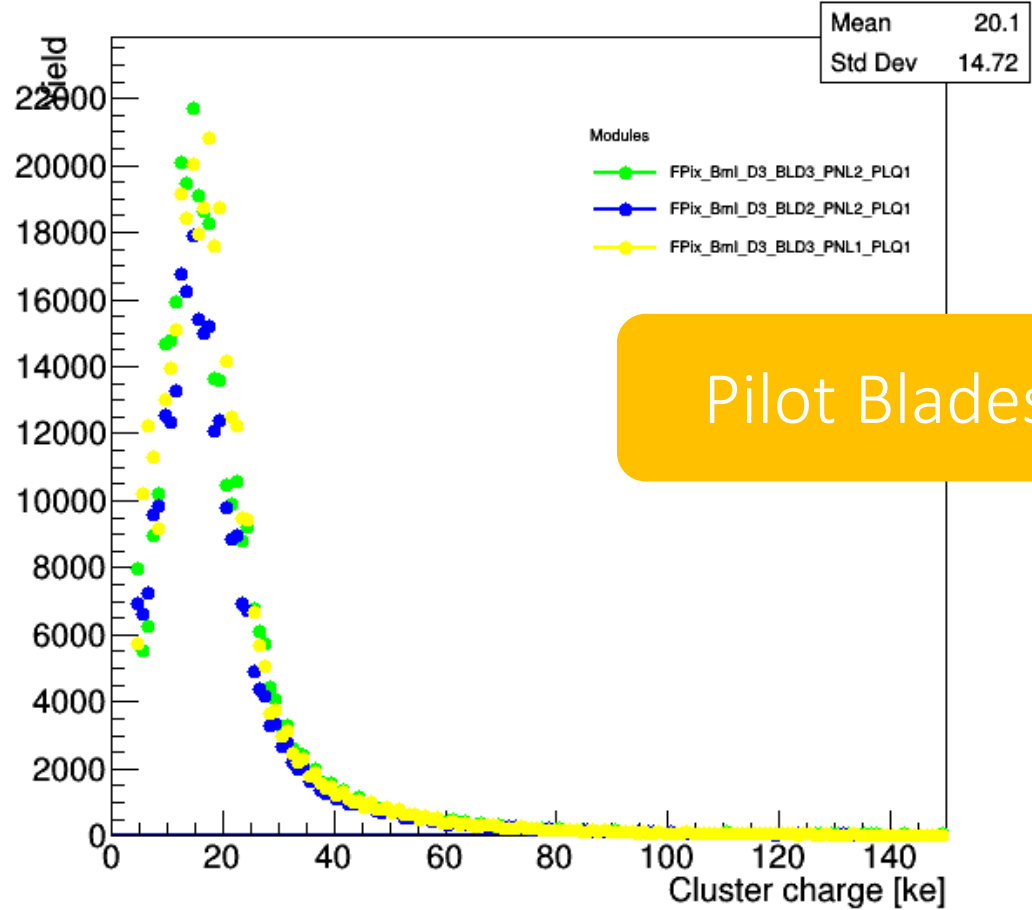


Clusters in FPix_Bml_D3_BLD2_PNL2_PLQ1

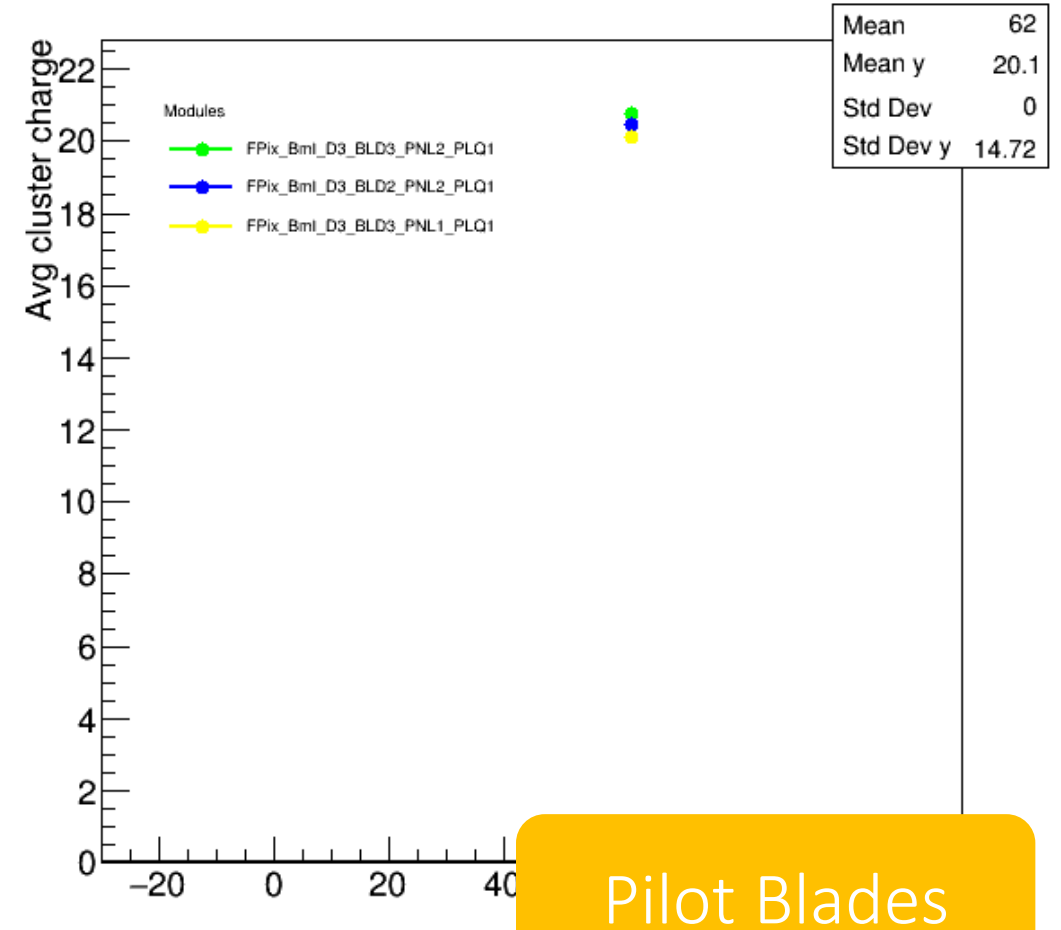


Cluster charge

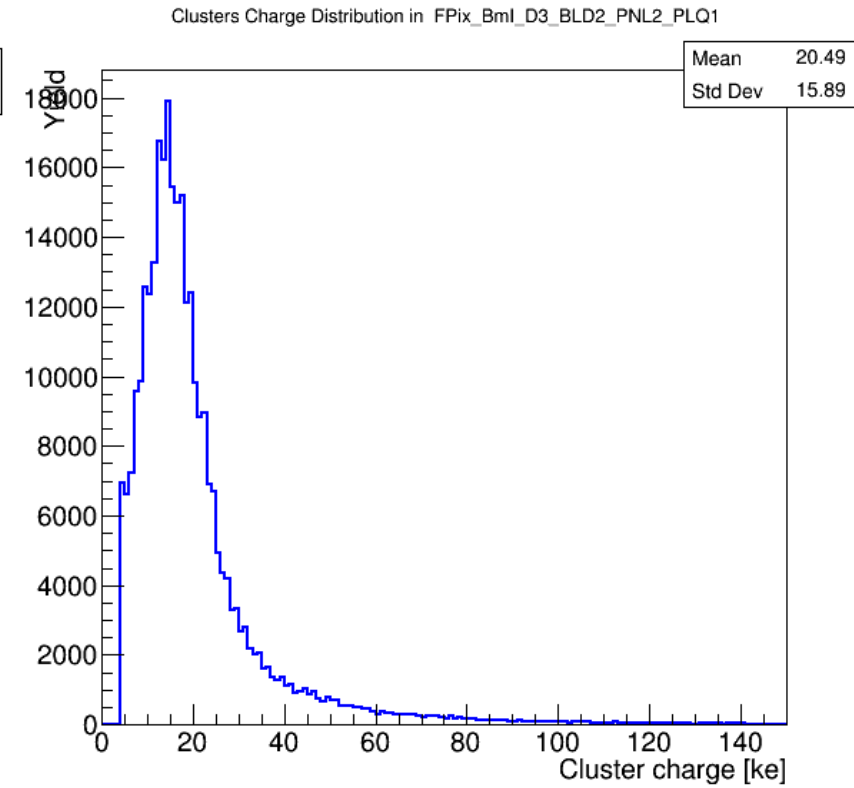
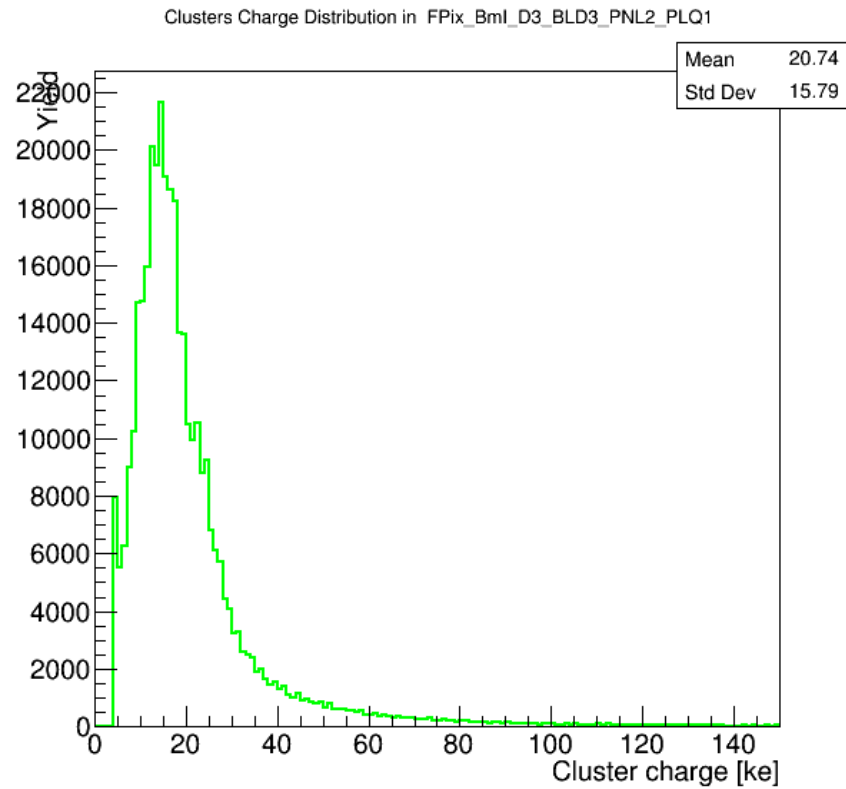
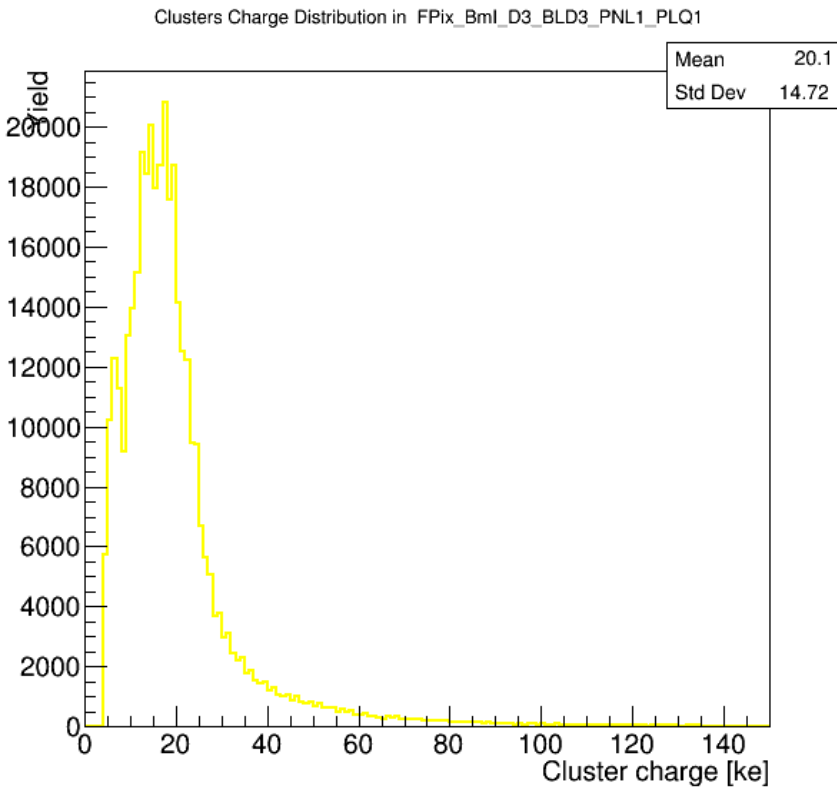
Clusters Charge Distribution



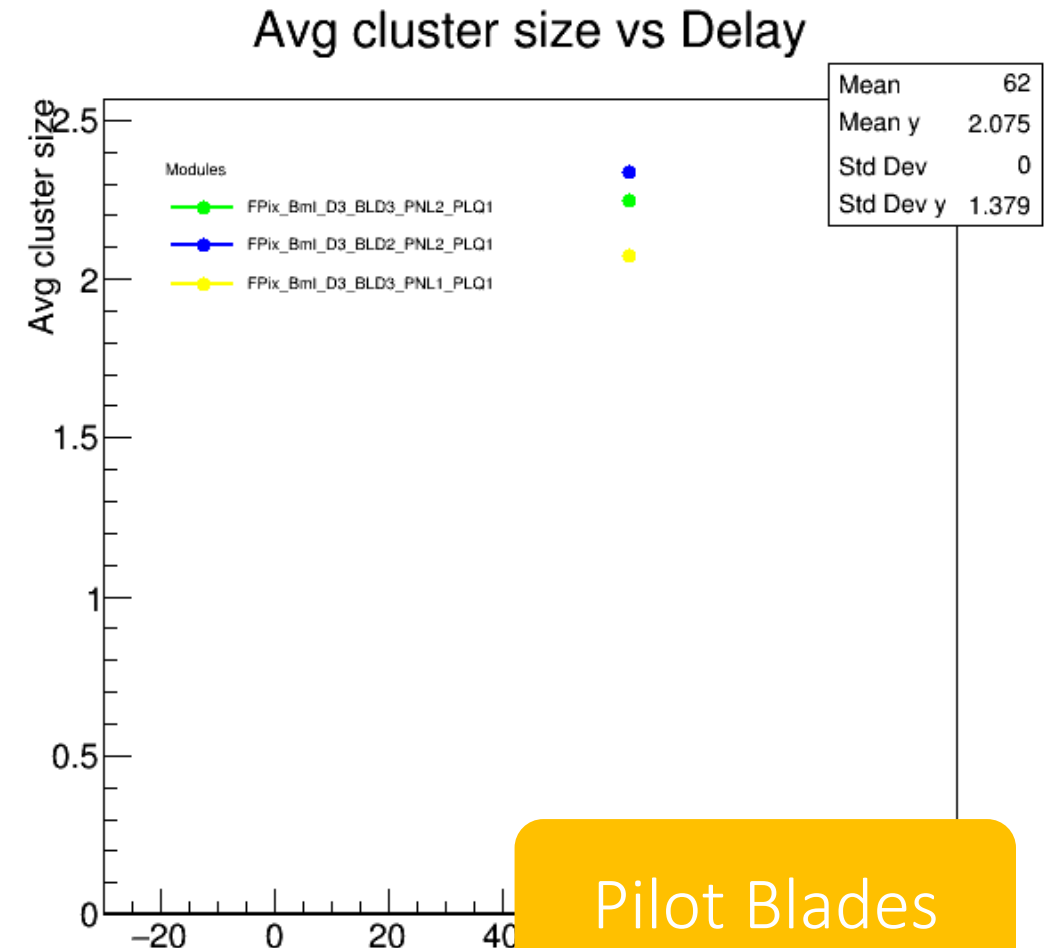
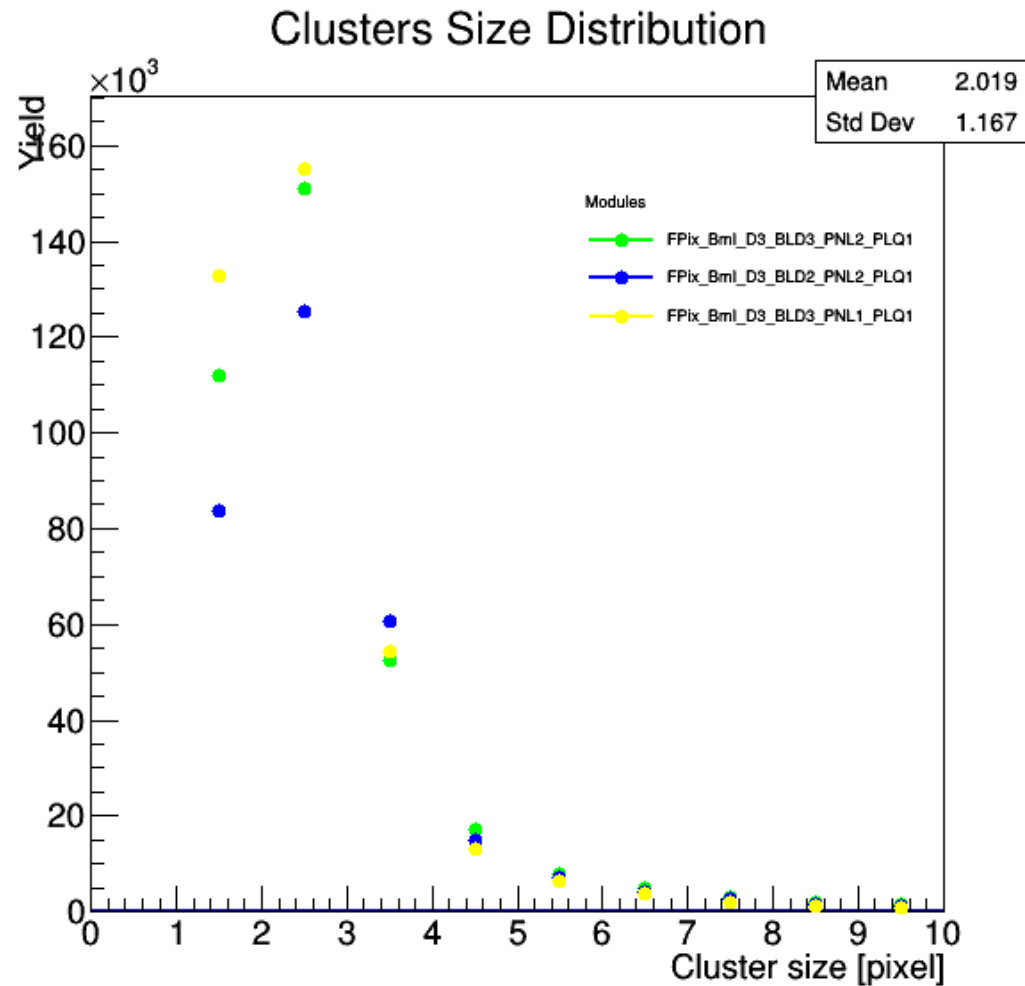
Avg cluster charge vs Delay



Cluster charge

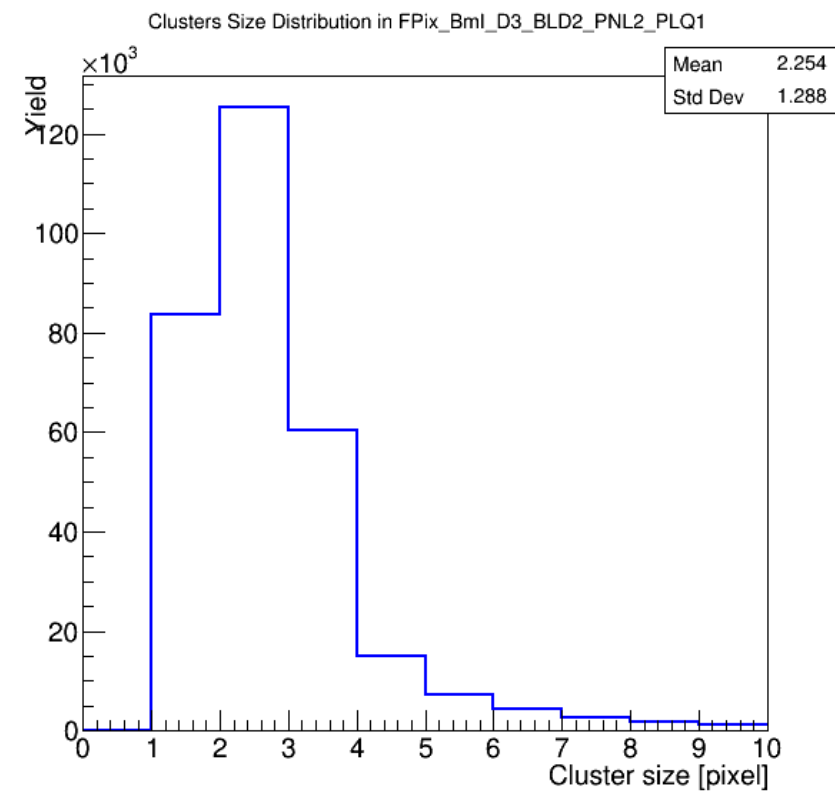
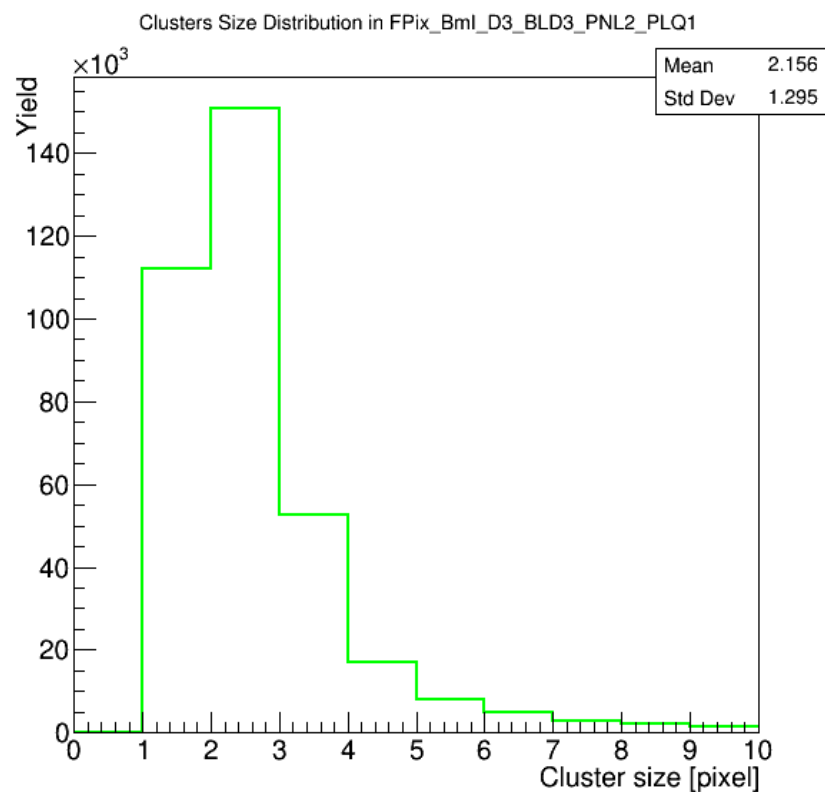
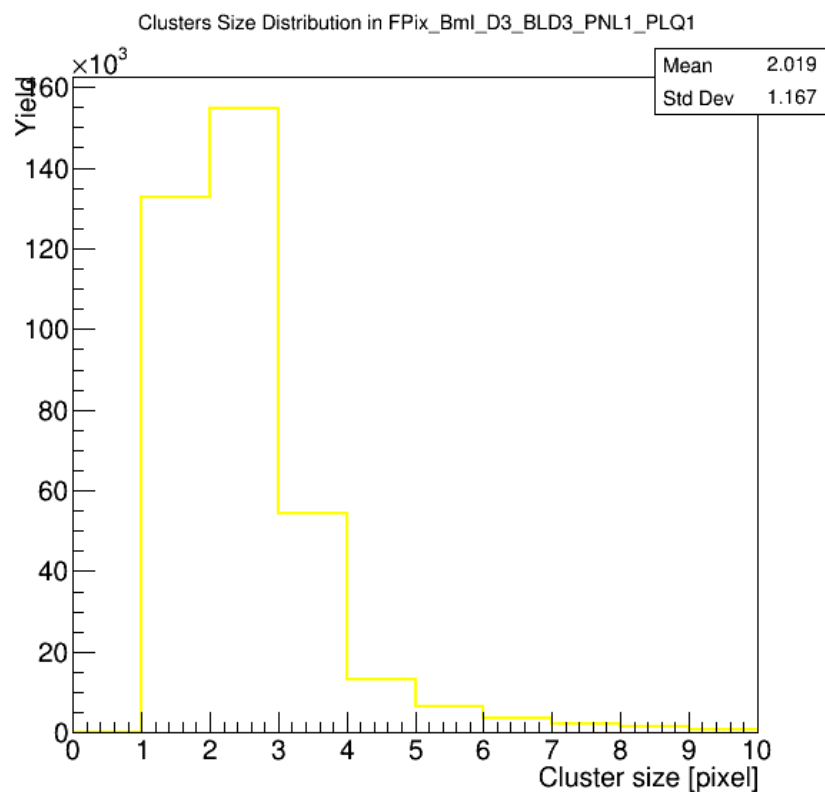


Cluster size

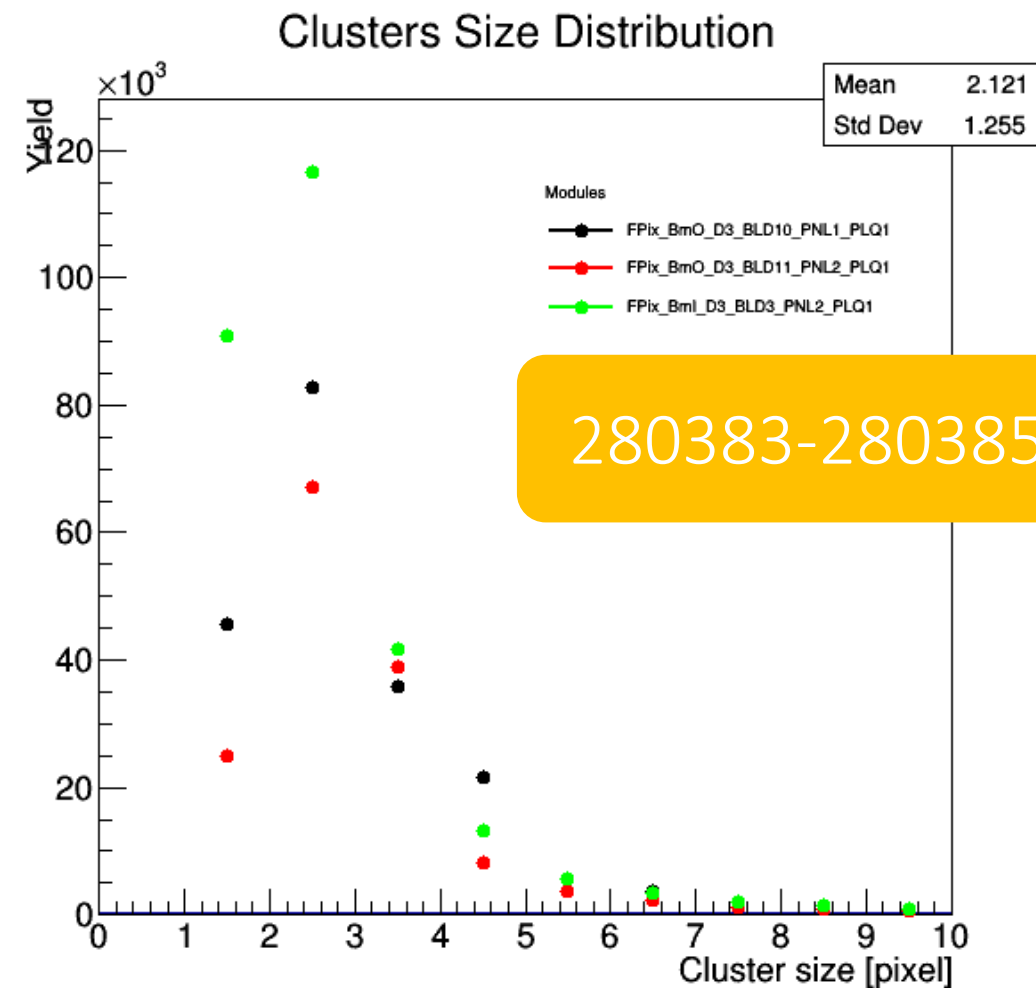
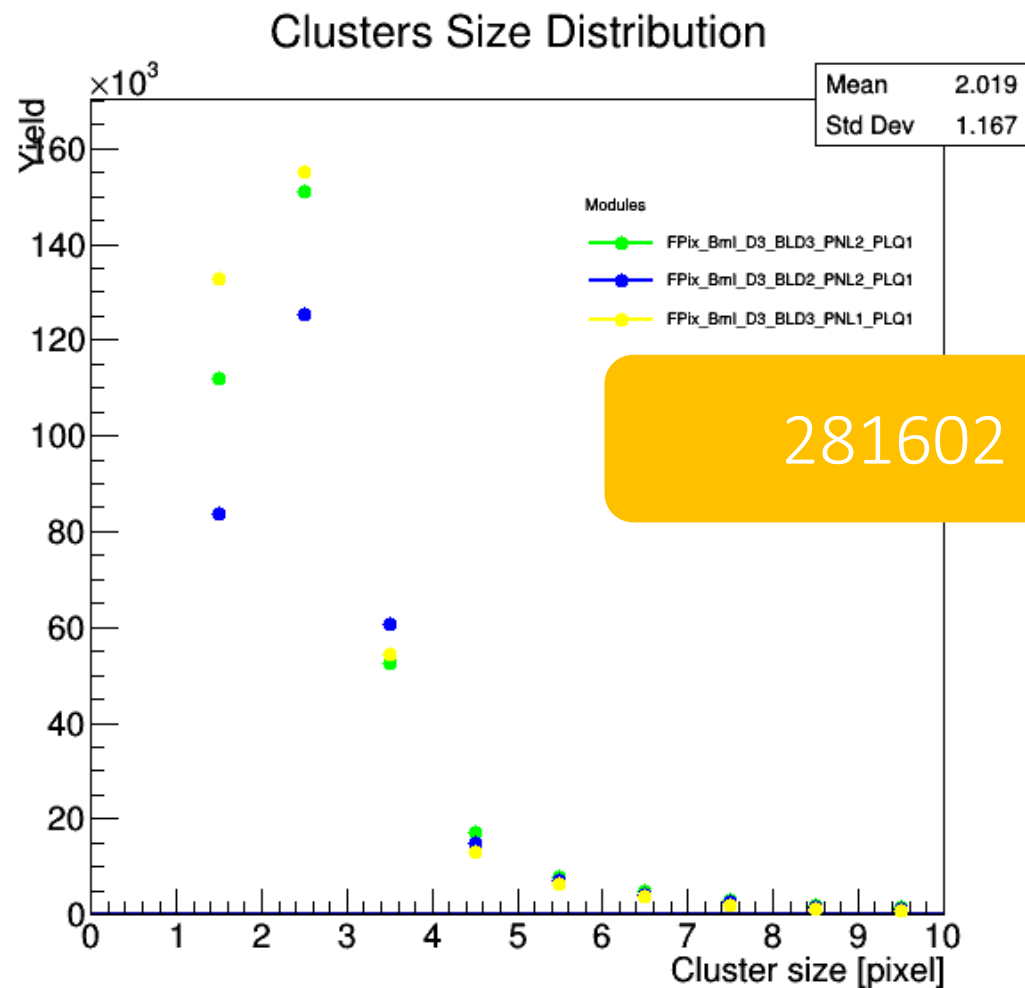


Pilot Blades

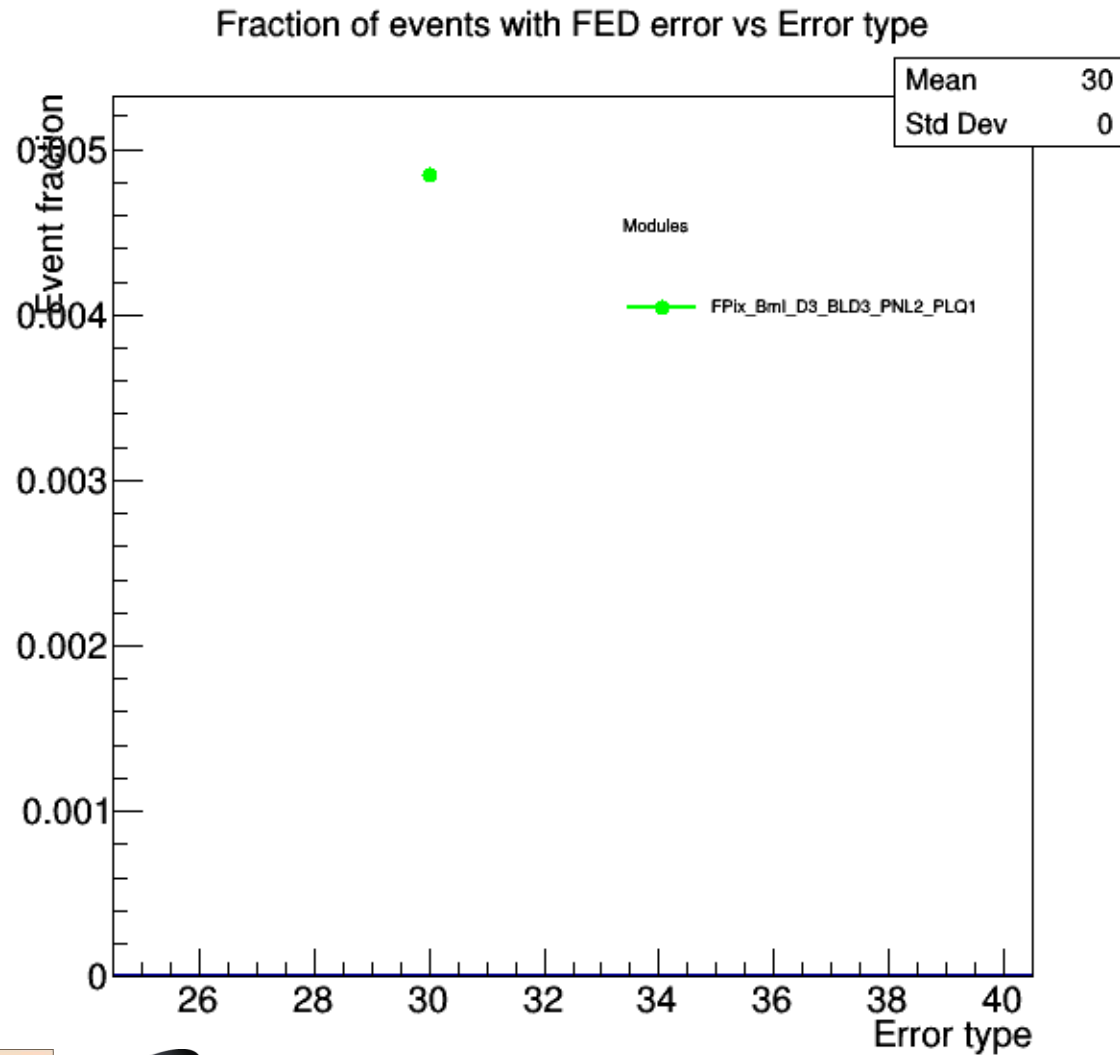
Cluster size



Cluster size comparison

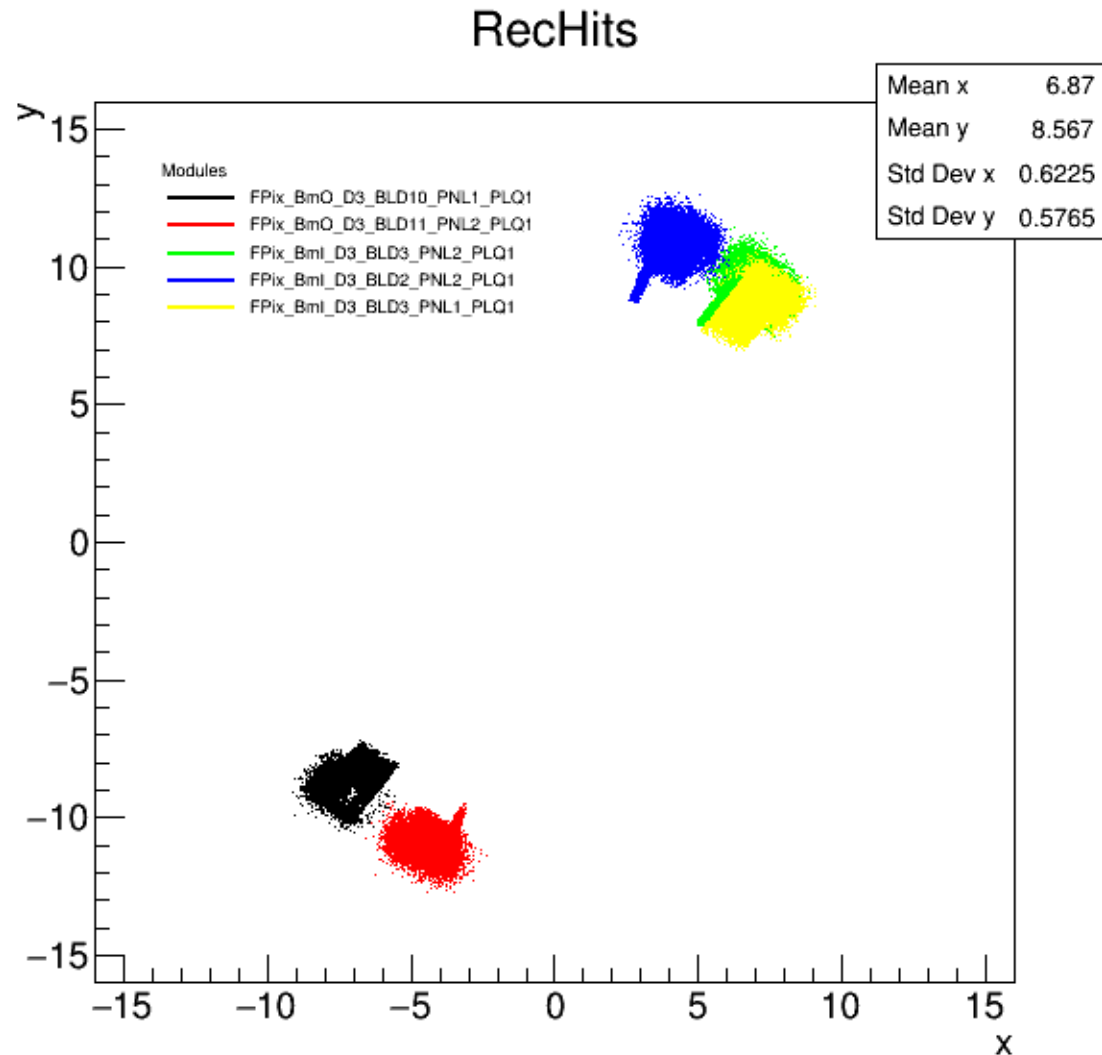


FED Errors



Error 30:
TBM error trailer

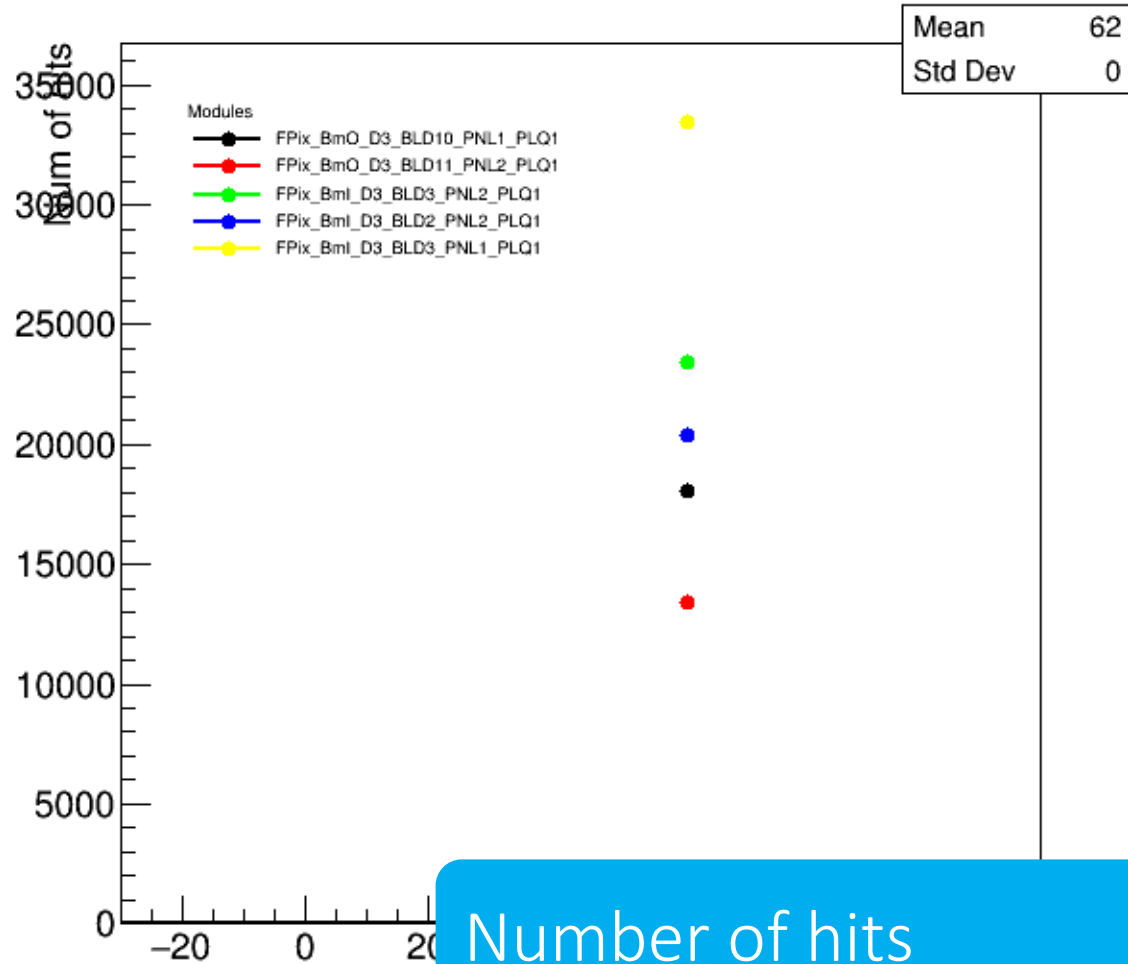
RecHits on track



No fiducial region is defined yet

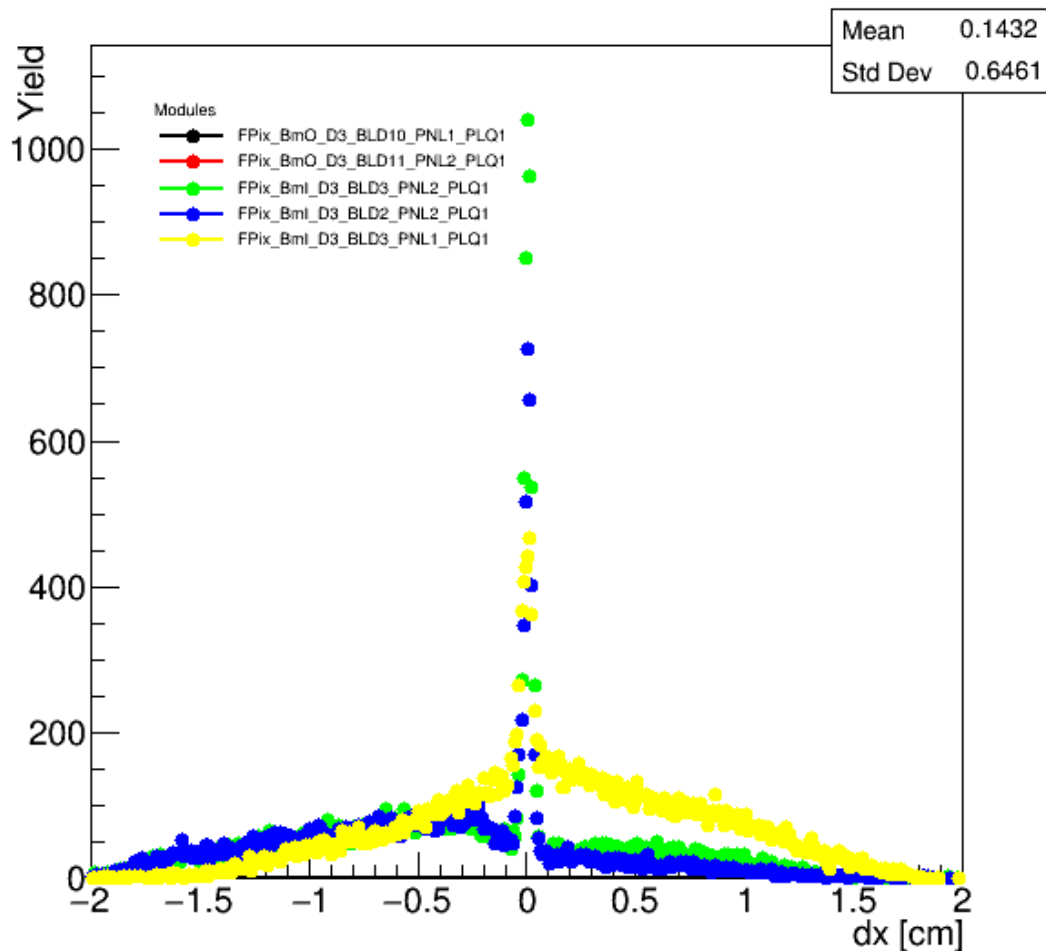
RecHits on track

Num of RecHits vs Delay



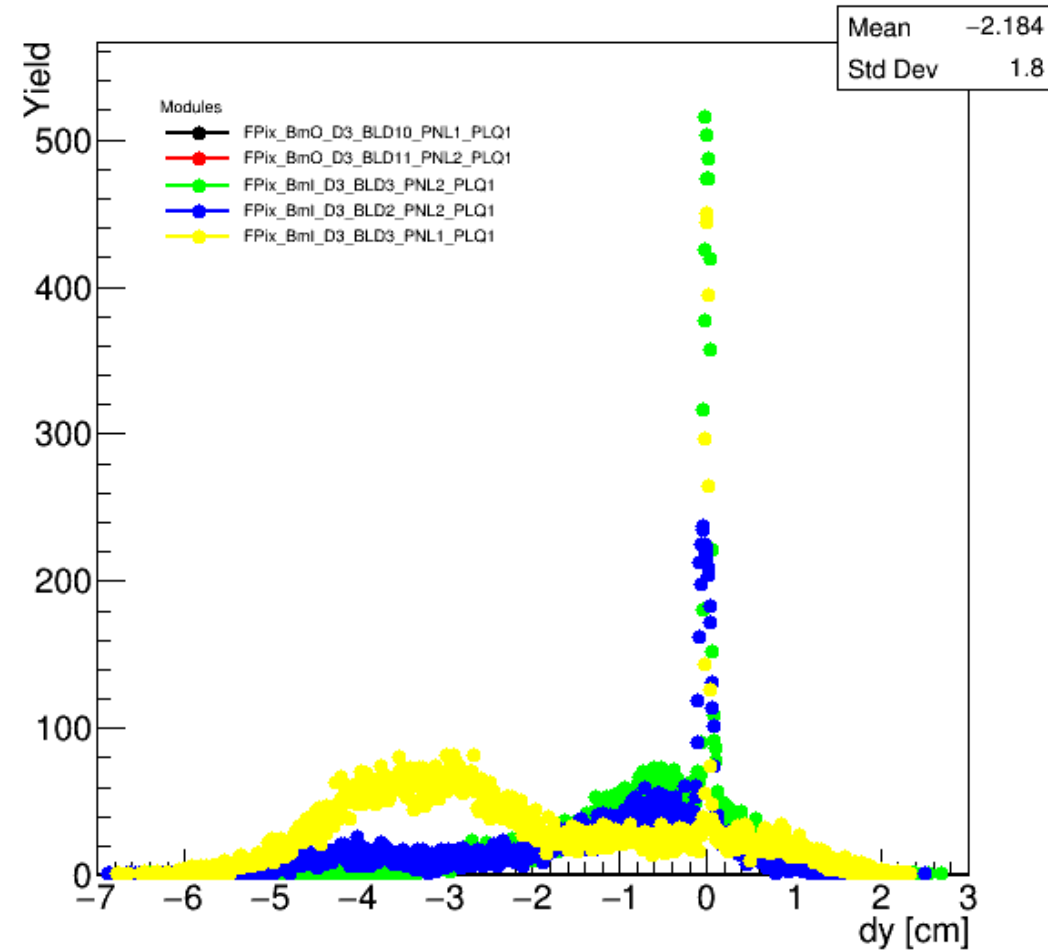
Residuals

Rechit to nearest cluster distance



Radial direction

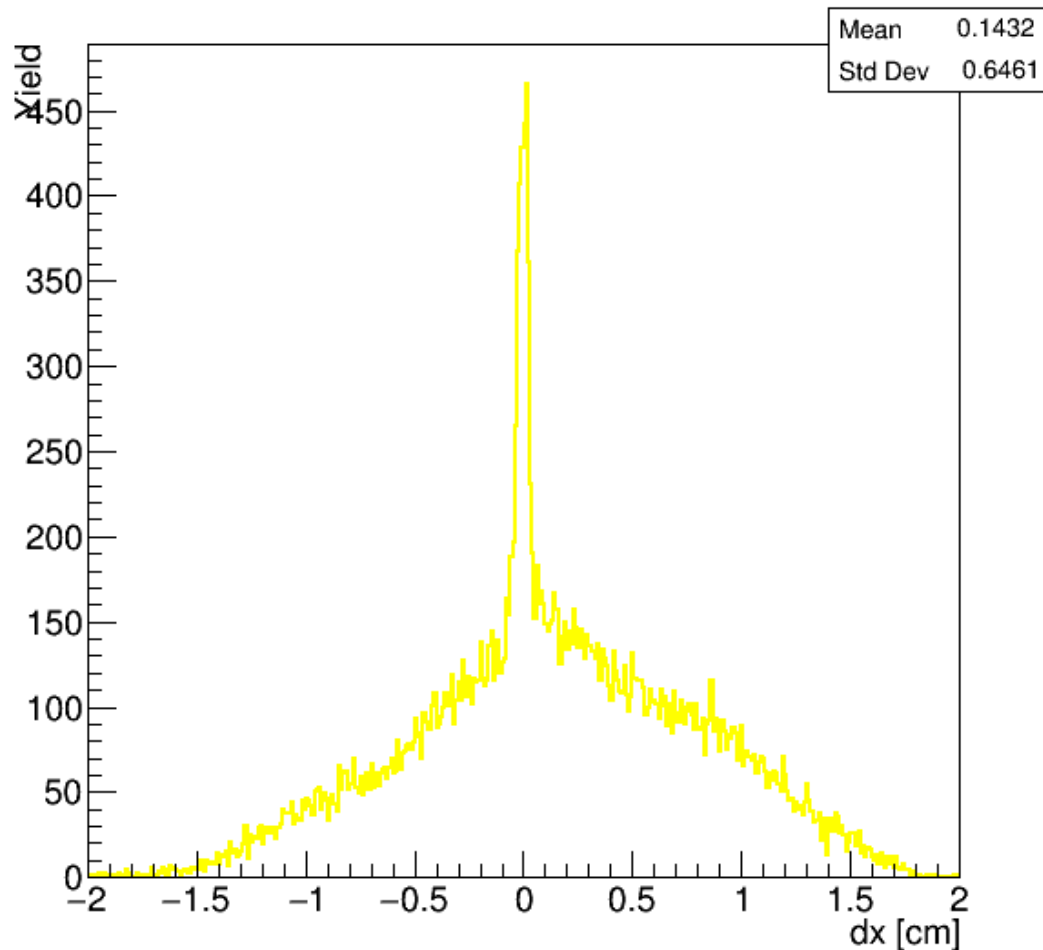
Rechit to nearest cluster distance



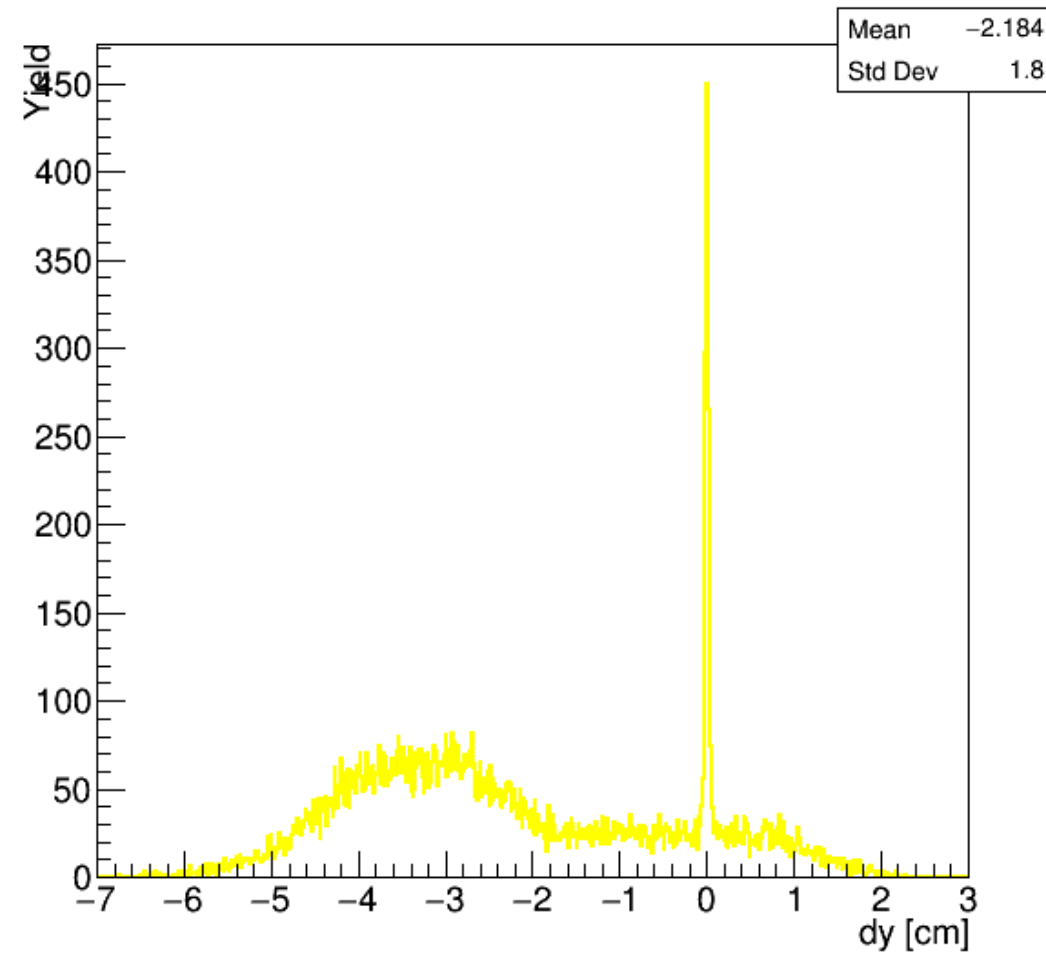
Residuals

FPix_Bml_D3_BLD3_PNL1

Rechit to nearest cluster distance in FPix_Bml_D3_BLD3_PNL1_PLQ1



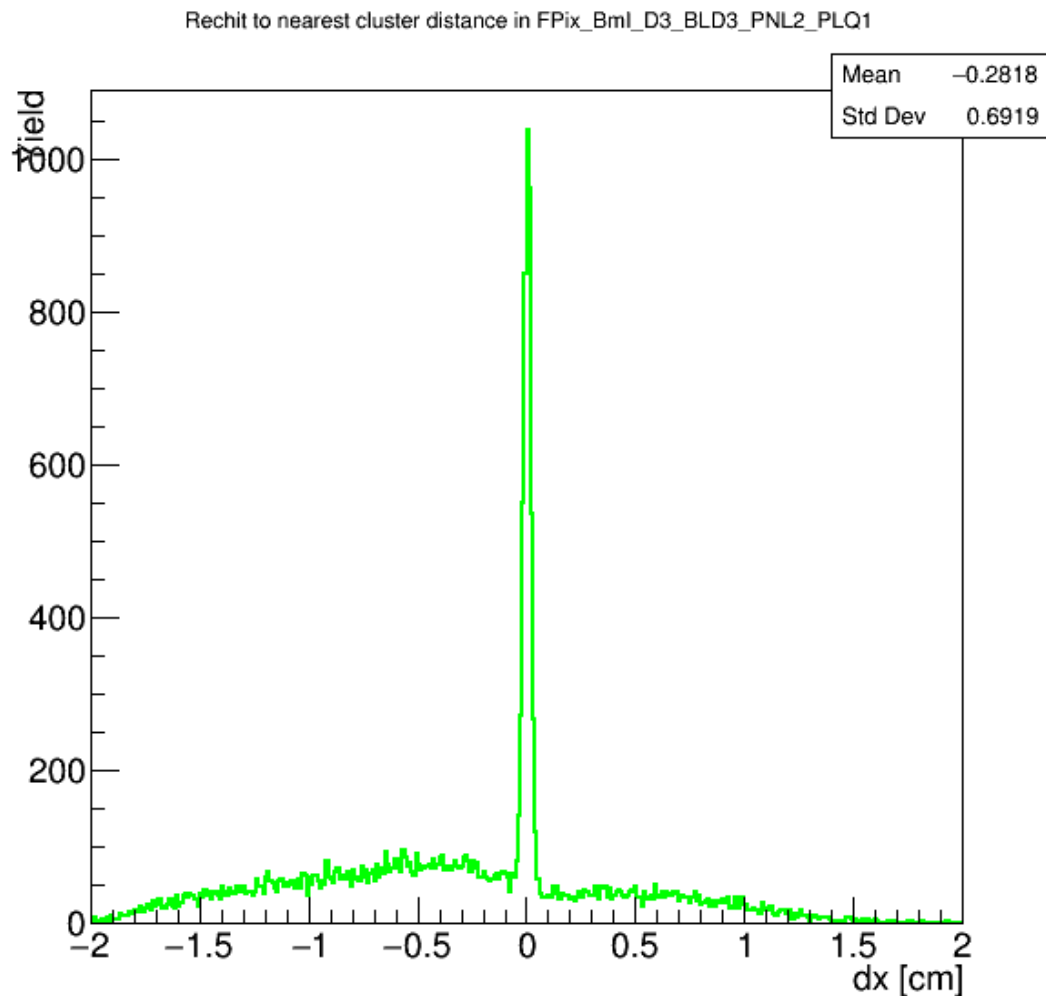
Rechit to nearest cluster distance in FPix_Bml_D3_BLD3_PNL1_PLQ1



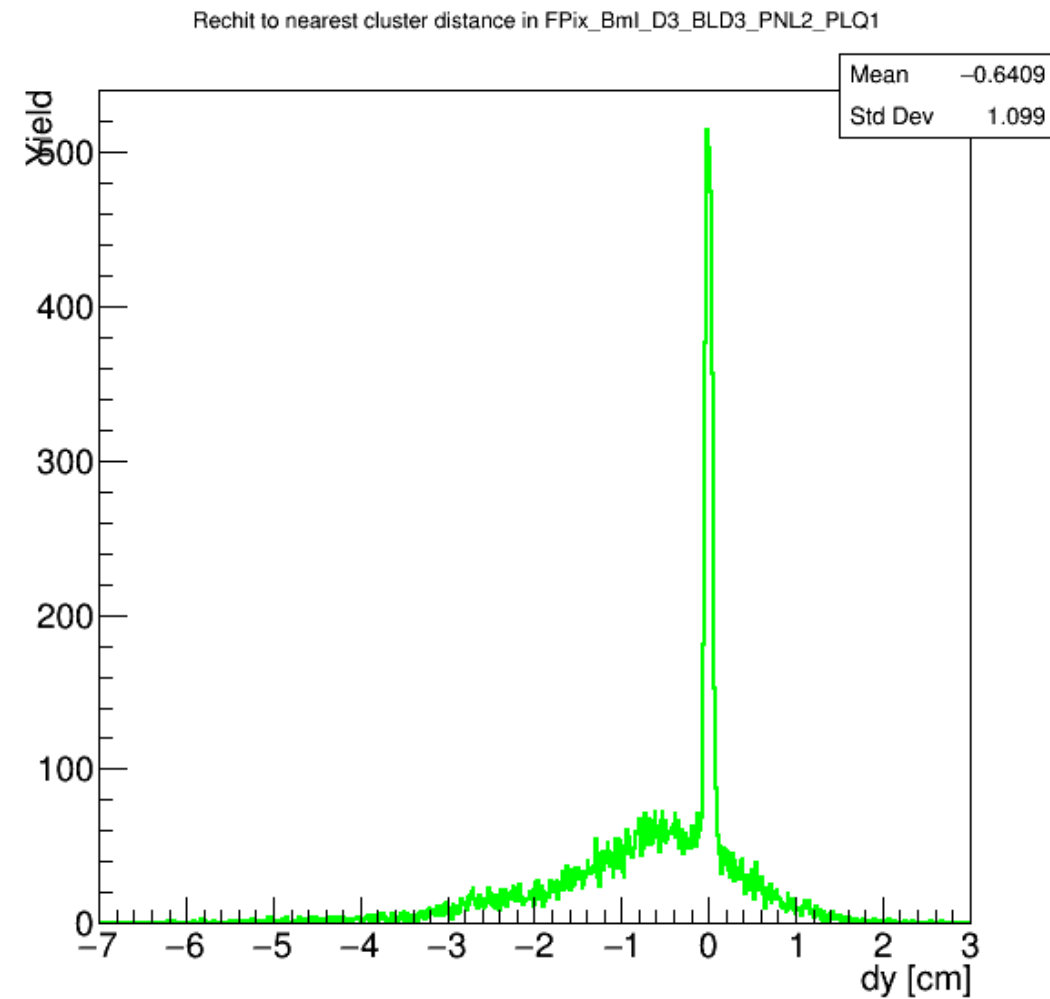
Residuals

FPix_Bml_D3_BLD3_PNL2

Azimuthal
direction

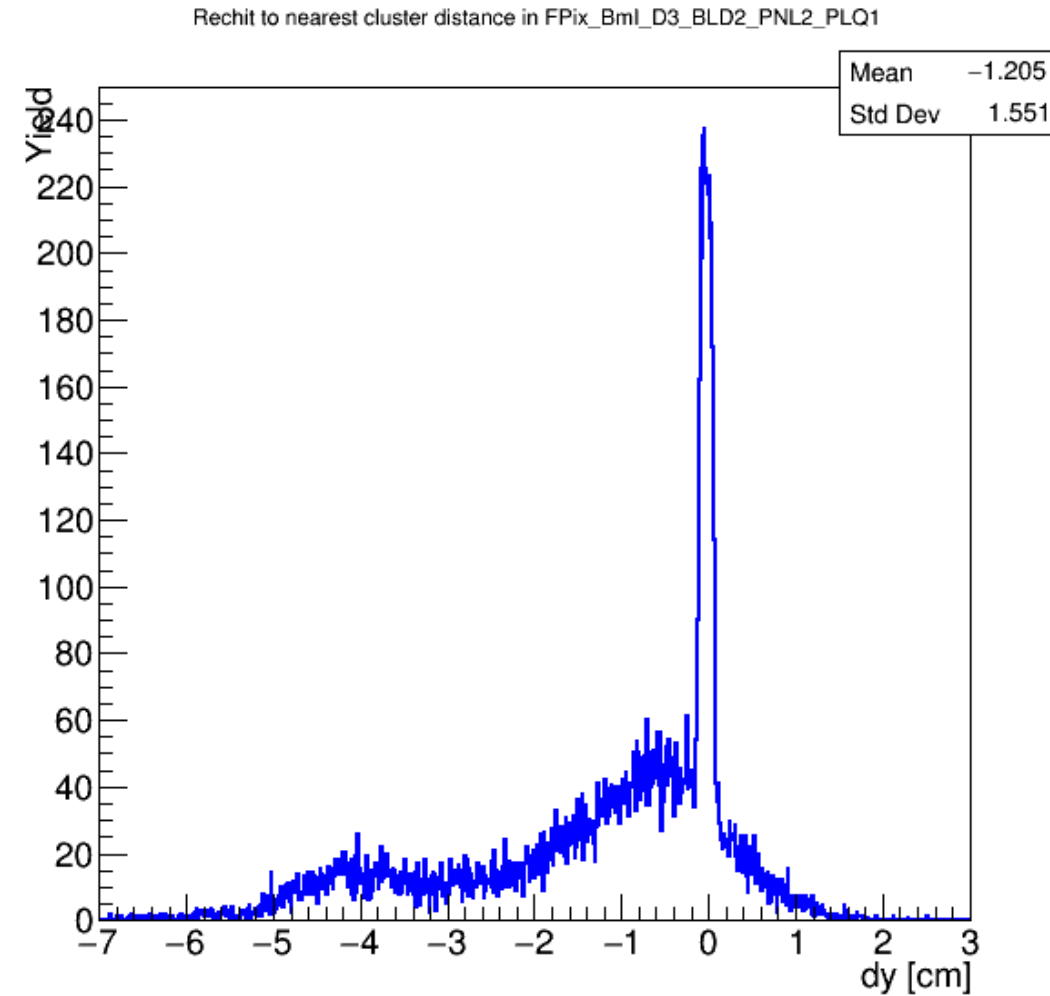
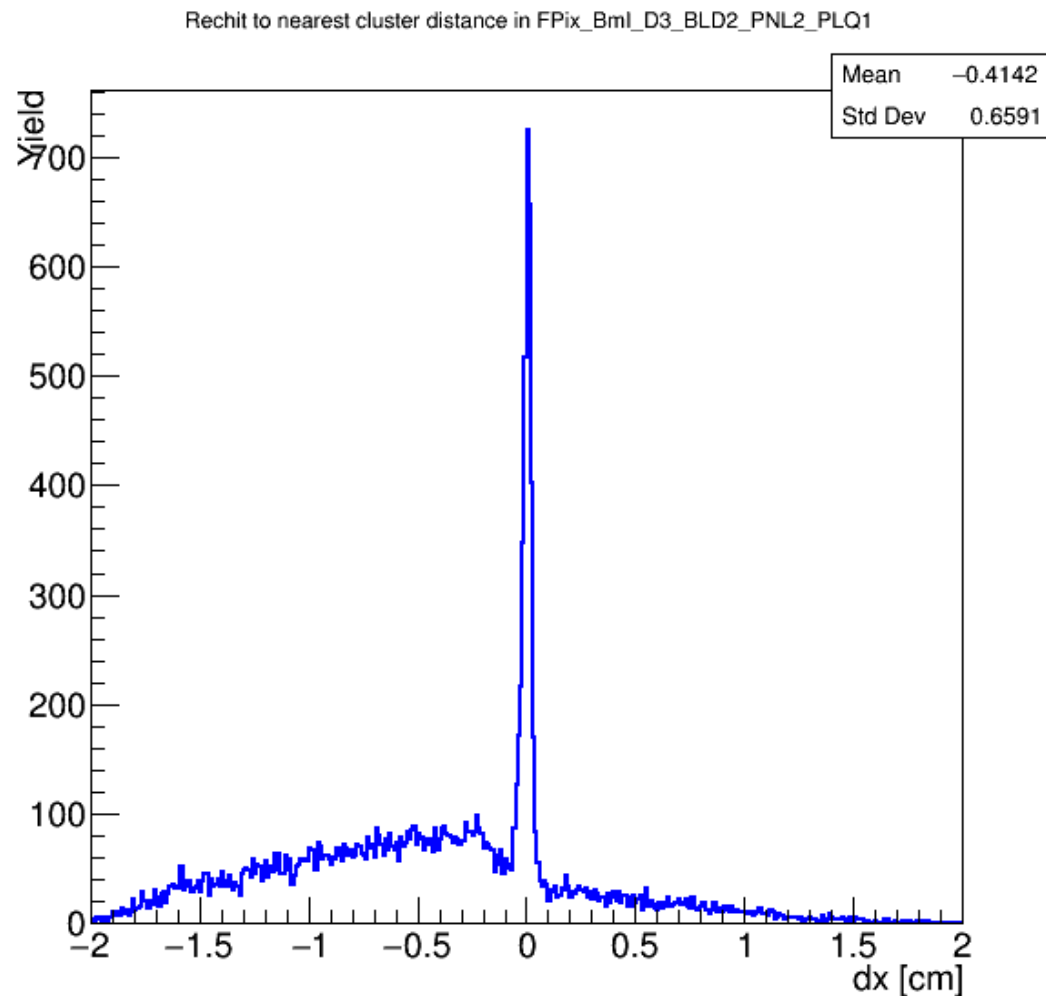


Radial direction



Residuals

FPix_Bml_D3_BLD2_PNL2



Global Runs in September (282033 and 282036)

LHC Fill 5352

InjectionScheme 25ns_2220b_2208_1940_2036_96bpi_24inj

Date: 2016-09-30

Run number: 282033 (from 20:58 until 21:45)

Run number: 282036 (from 22:20 until 22:24)

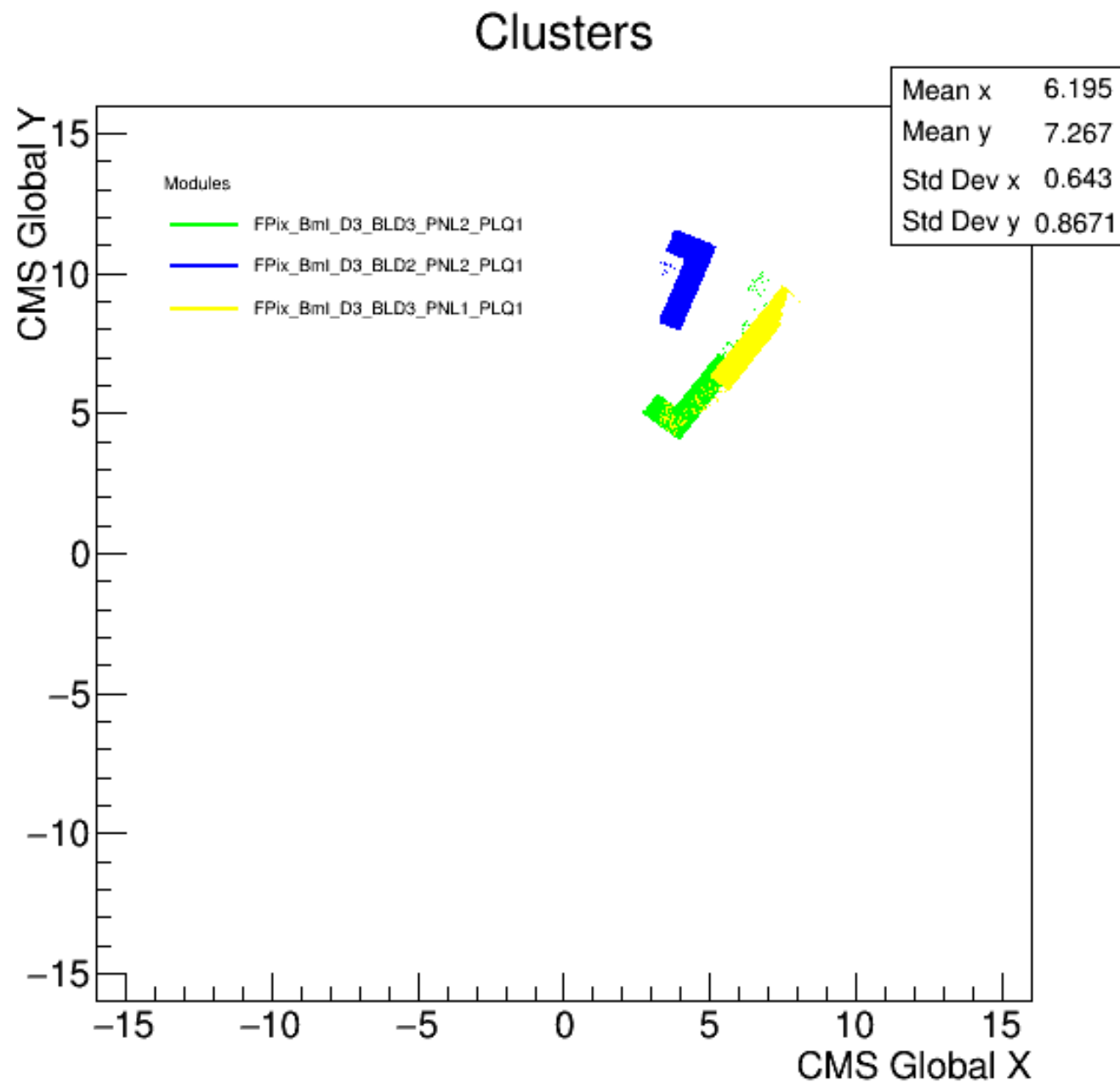
All: around 1 hour

Number of
events: 22k

[https://tvami.web.cern.ch/tvami/projects/PilotBlade/
Runs282033and282036_ZeroBias /](https://tvami.web.cern.ch/tvami/projects/PilotBlade/Runs282033and282036_ZeroBias/)

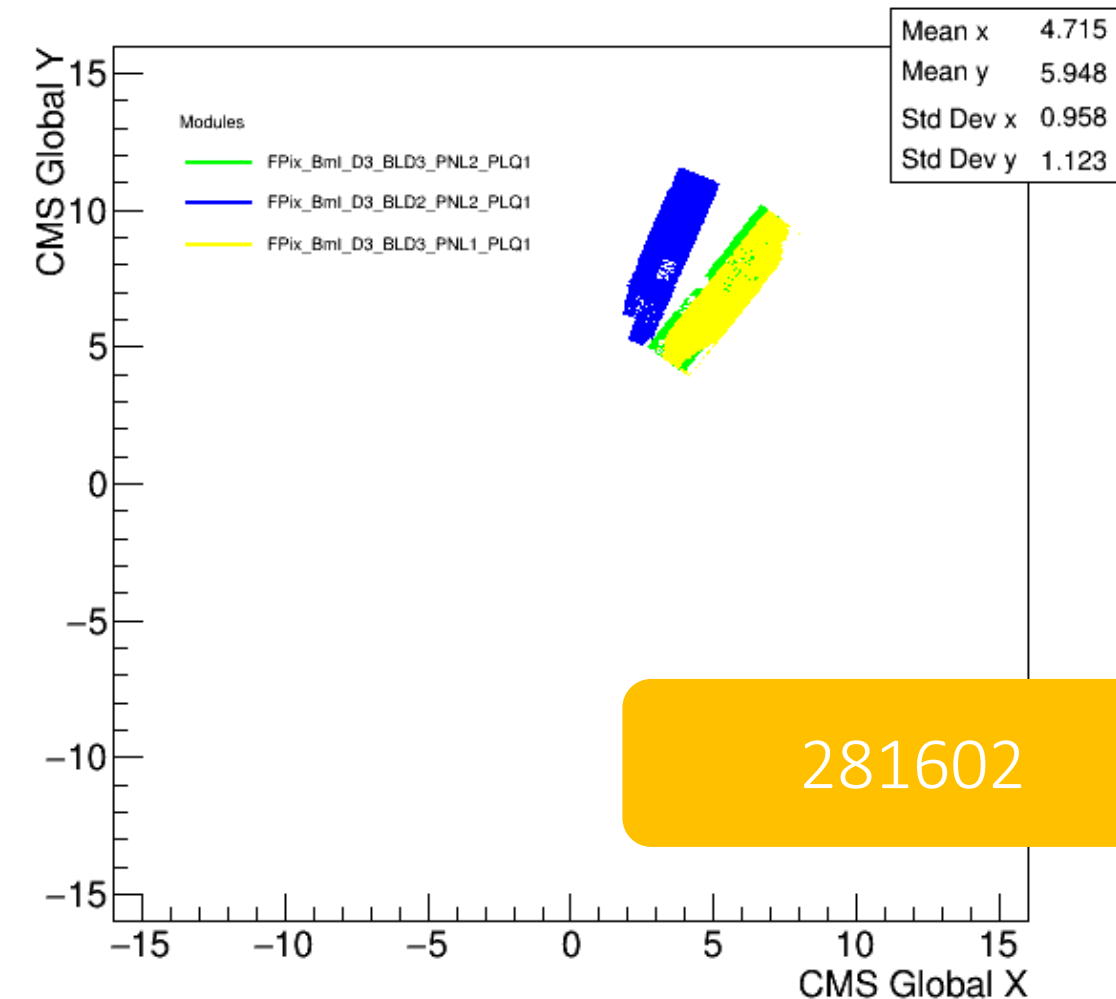
Clusters

Global positions

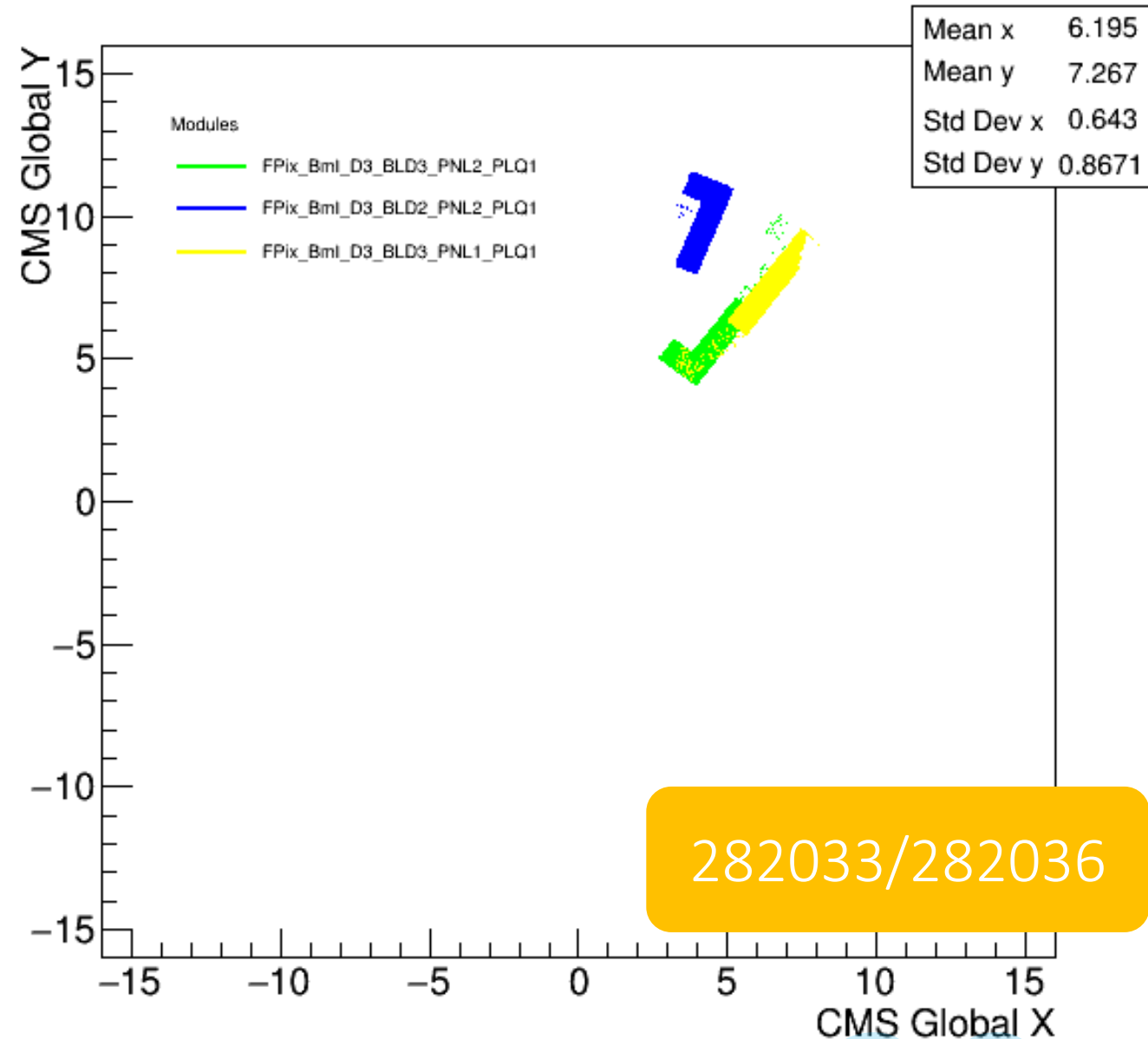


Cluster comparison

Clusters



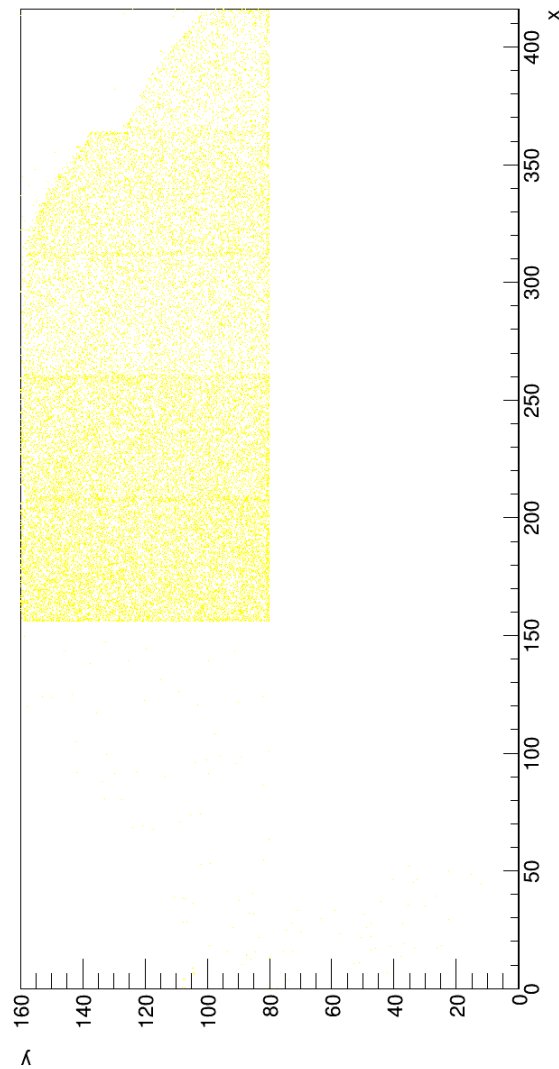
Clusters



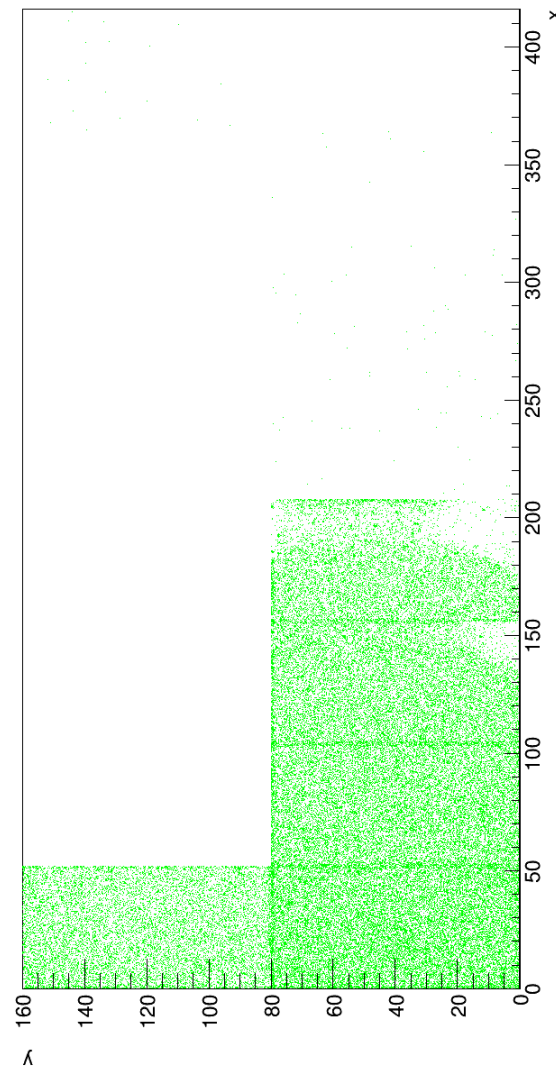
Clusters

Local positions

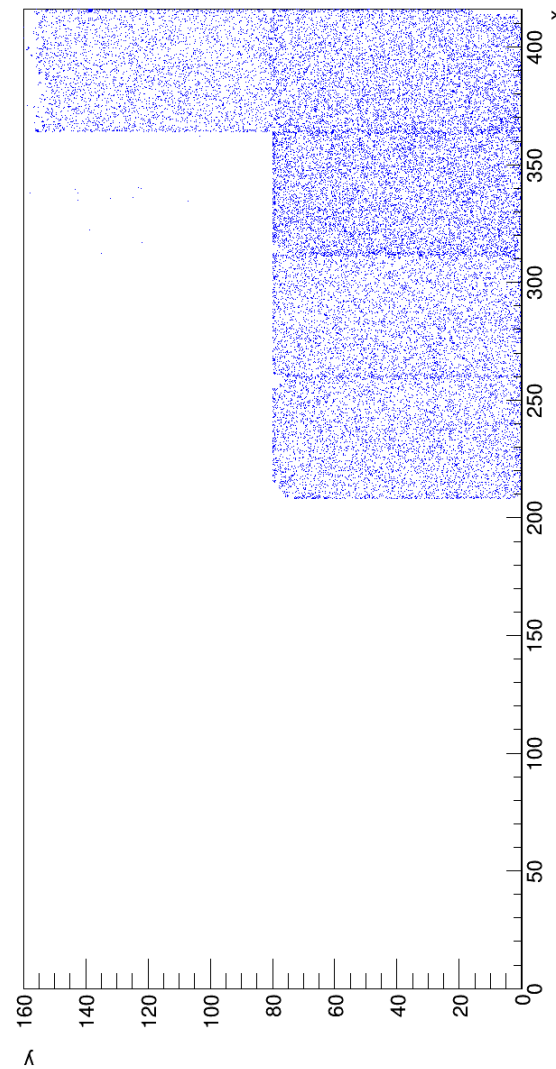
Clusters in FPix_Bml_D3_BLD3_PNL1_PLQ1



Clusters in FPix_Bml_D3_BLD3_PNL2_PLQ1



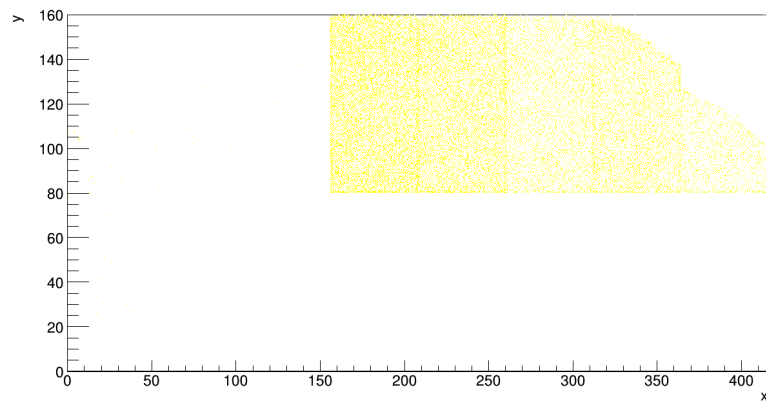
Clusters in FPix_Bml_D3_BLD2_PNL2_PLQ1



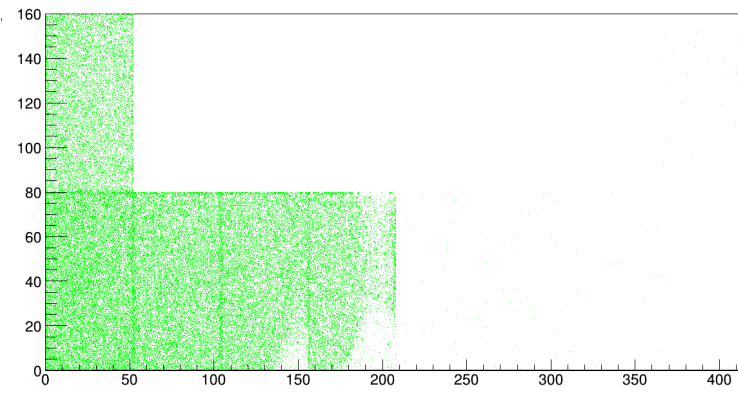
Cluster comparison

282033/282036

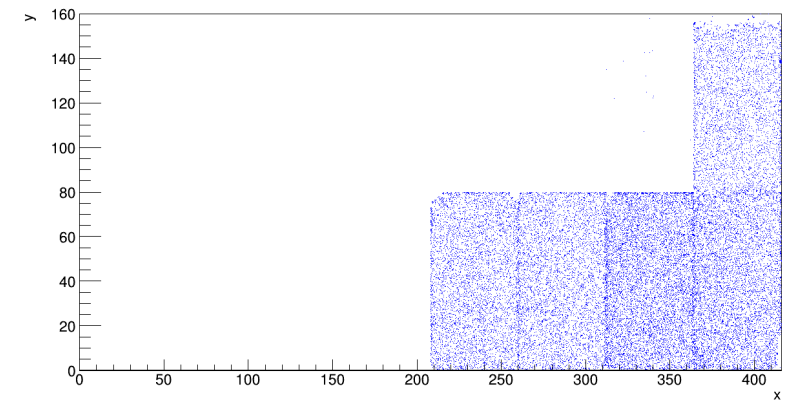
Clusters in FPix_Bml_D3_BLD3_PNL1_PLQ1



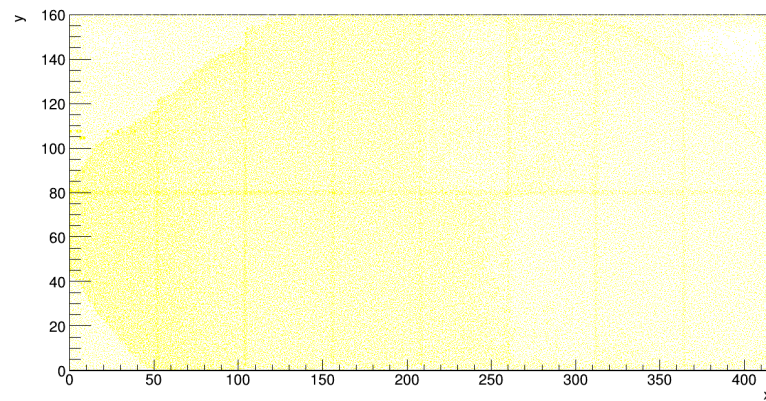
Clusters in FPix_Bml_D3_BLD3_PNL2_PLQ1



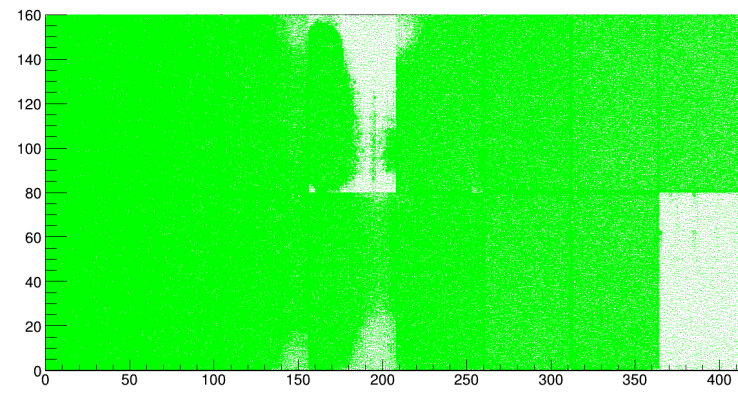
Clusters in FPix_Bml_D3_BLD2_PNL2_PLQ1



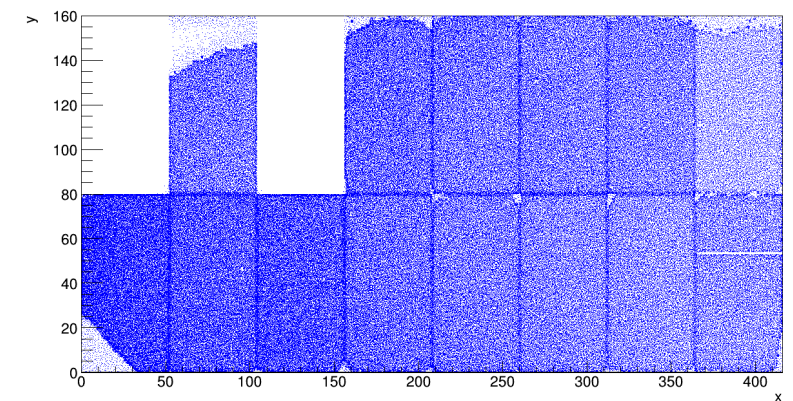
Clusters in FPix_Bml_D3_BLD3_PNL1_PLQ1



Clusters in FPix_Bml_D3_BLD3_PNL2_PLQ1

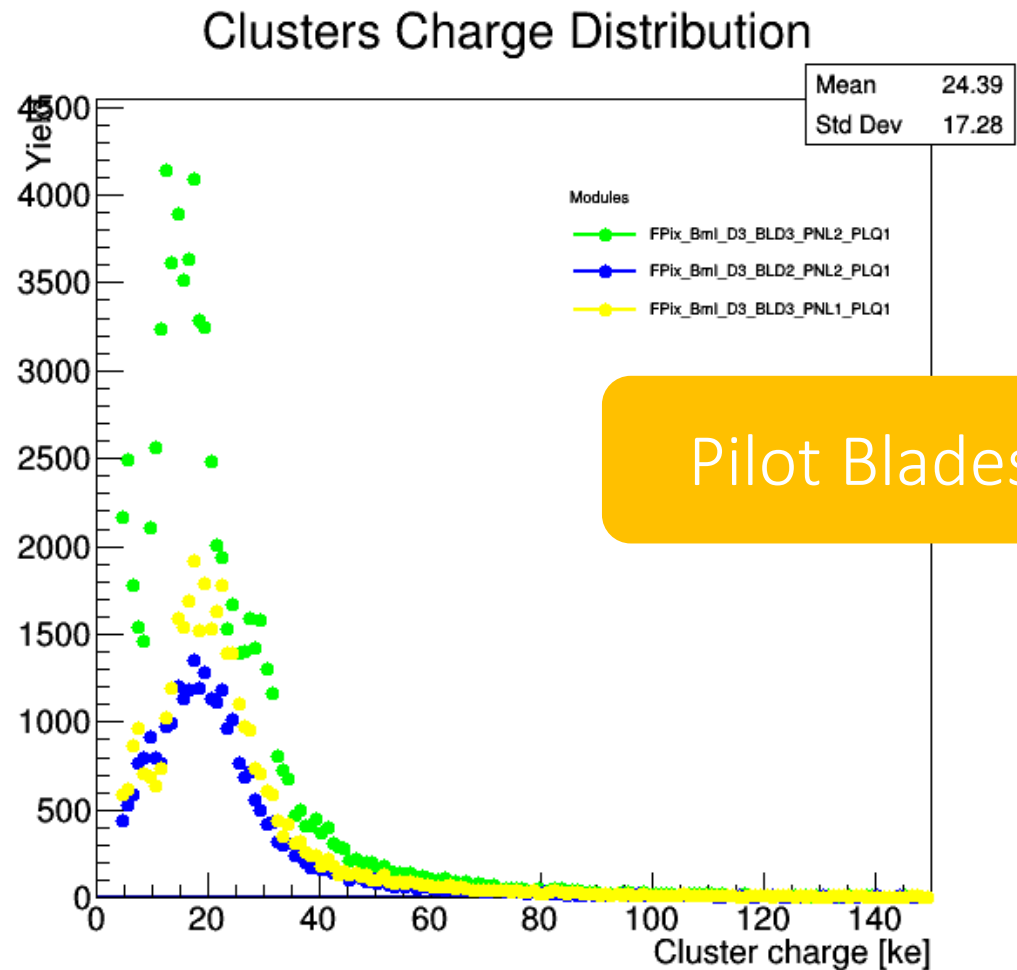


Clusters in FPix_Bml_D3_BLD2_PNL2_PLQ1

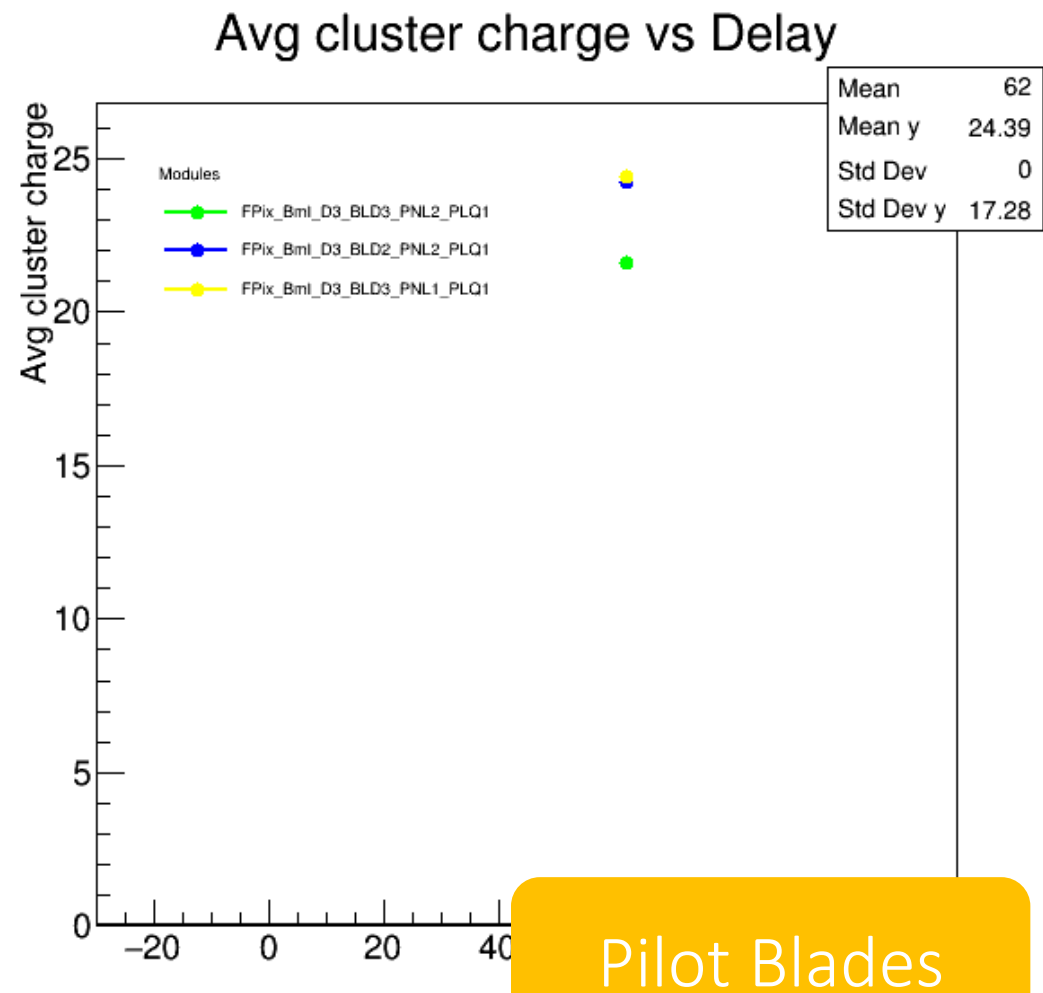


280329-280346

Cluster charge



Pilot Blades

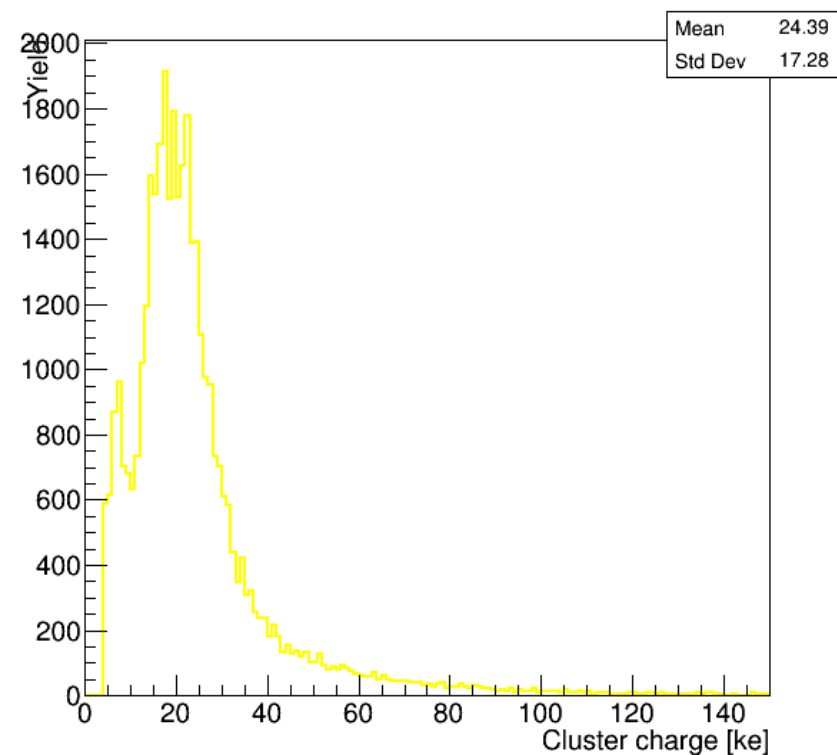


Pilot Blades

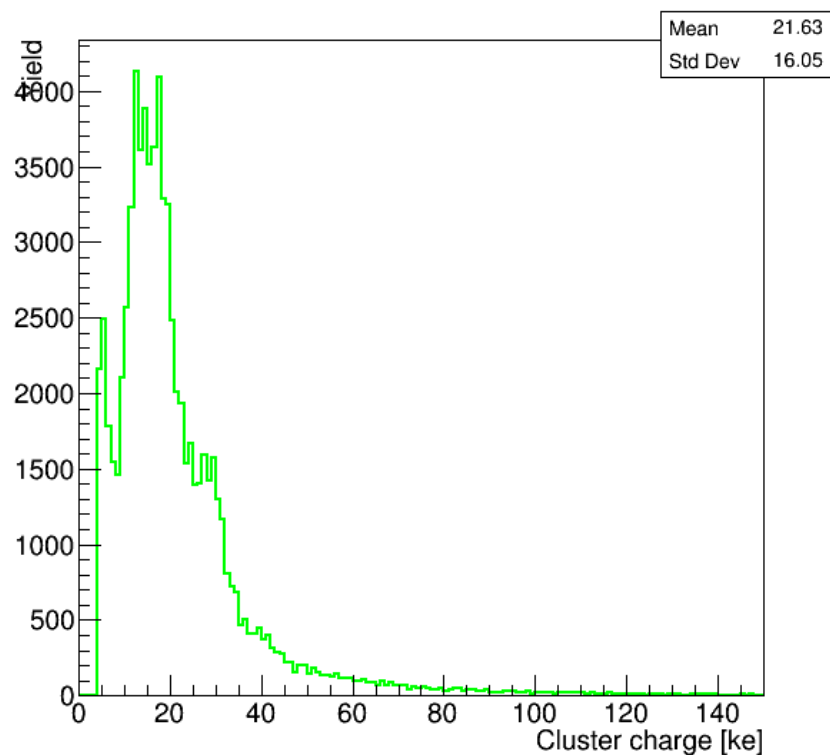
Cluster charge

282033/282036

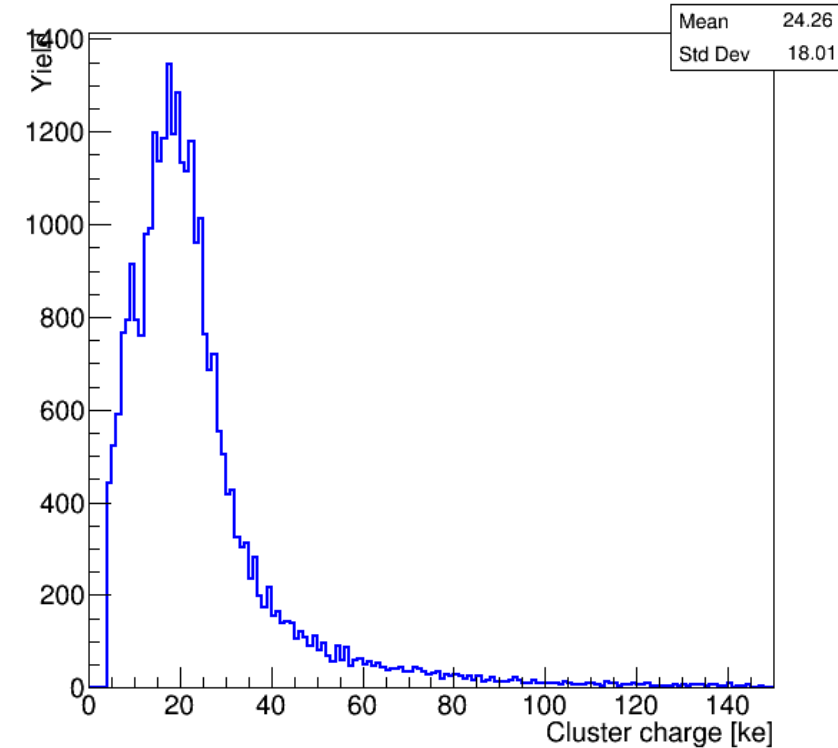
Clusters Charge Distribution in FPix_Bml_D3_BLD3_PNL1_PLQ1



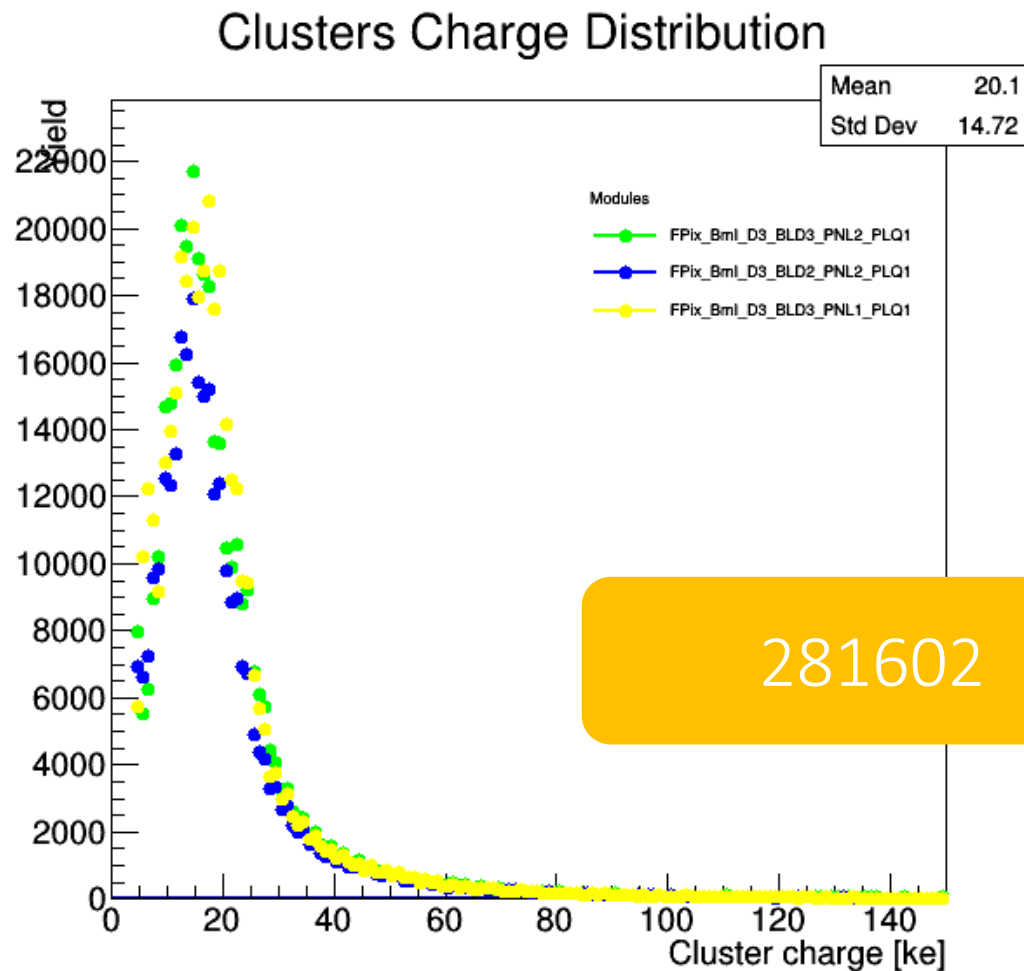
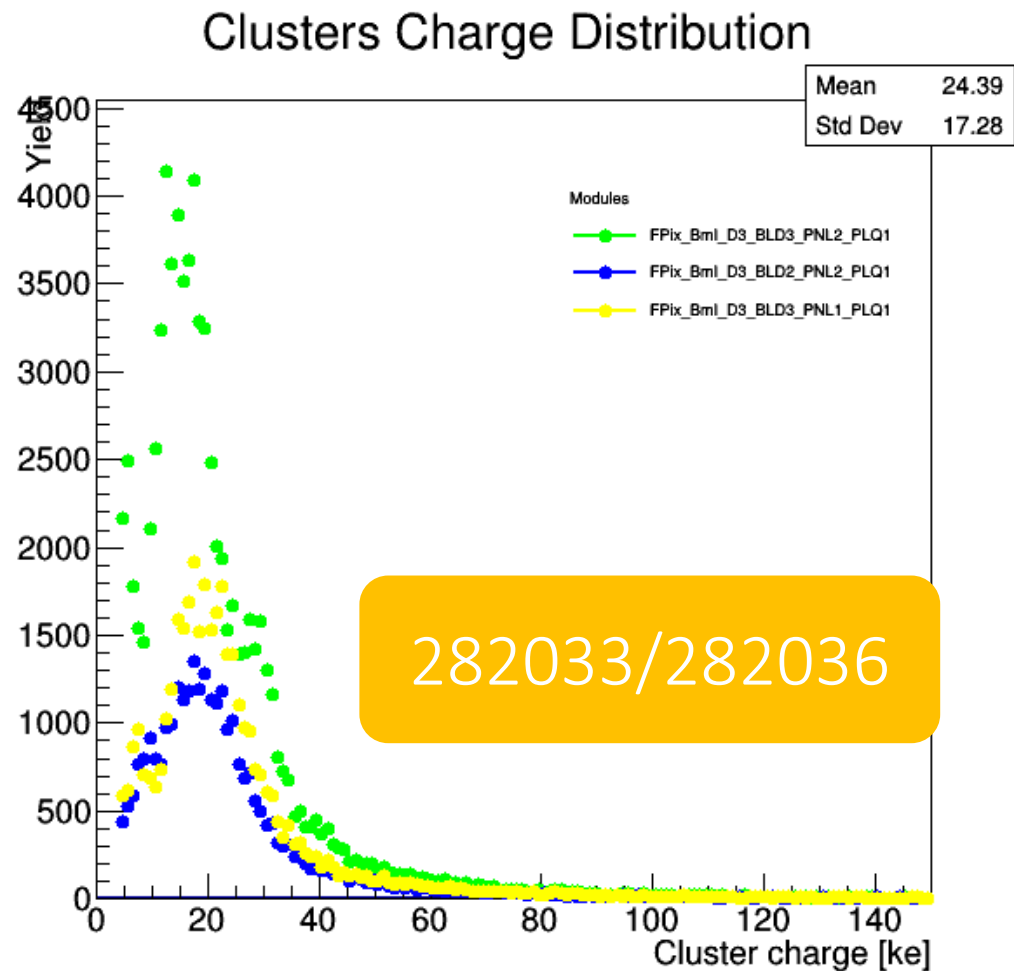
Clusters Charge Distribution in FPix_Bml_D3_BLD3_PNL2_PLQ1



Clusters Charge Distribution in FPix_Bml_D3_BLD2_PNL2_PLQ1

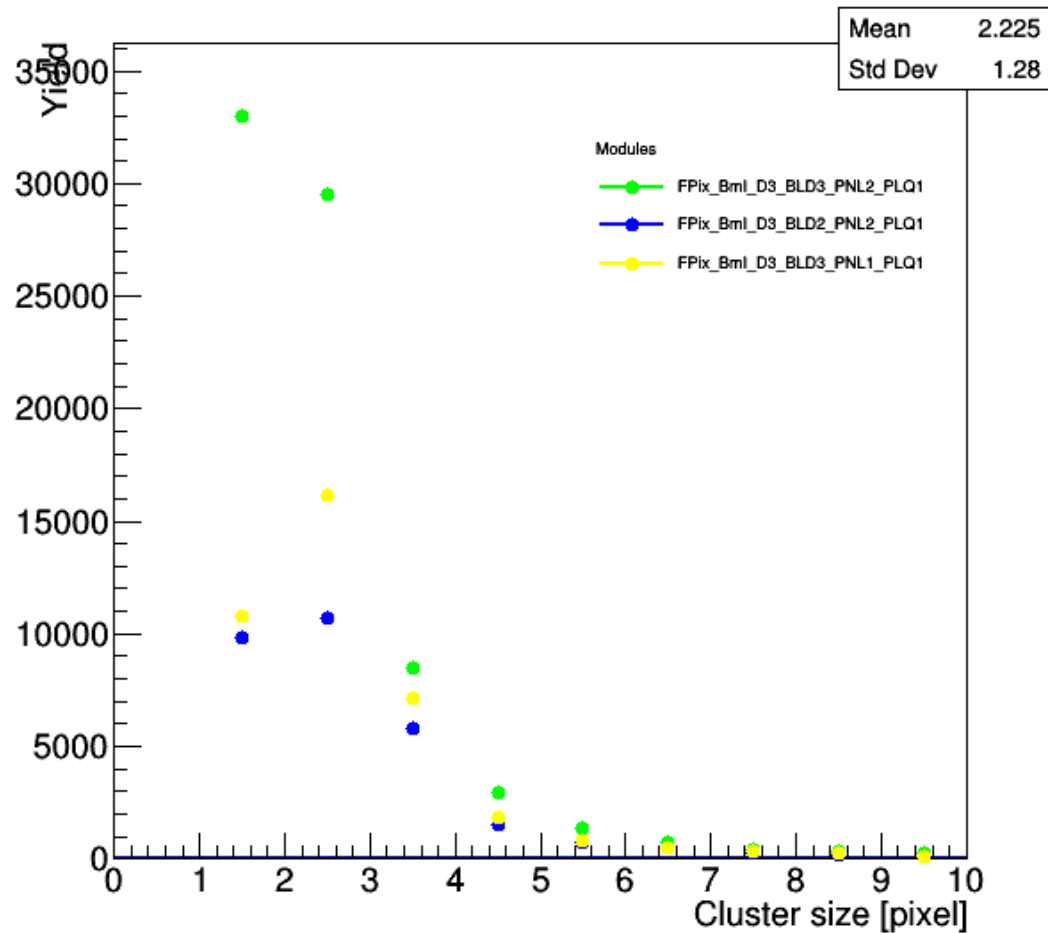


Cluster charge comparison

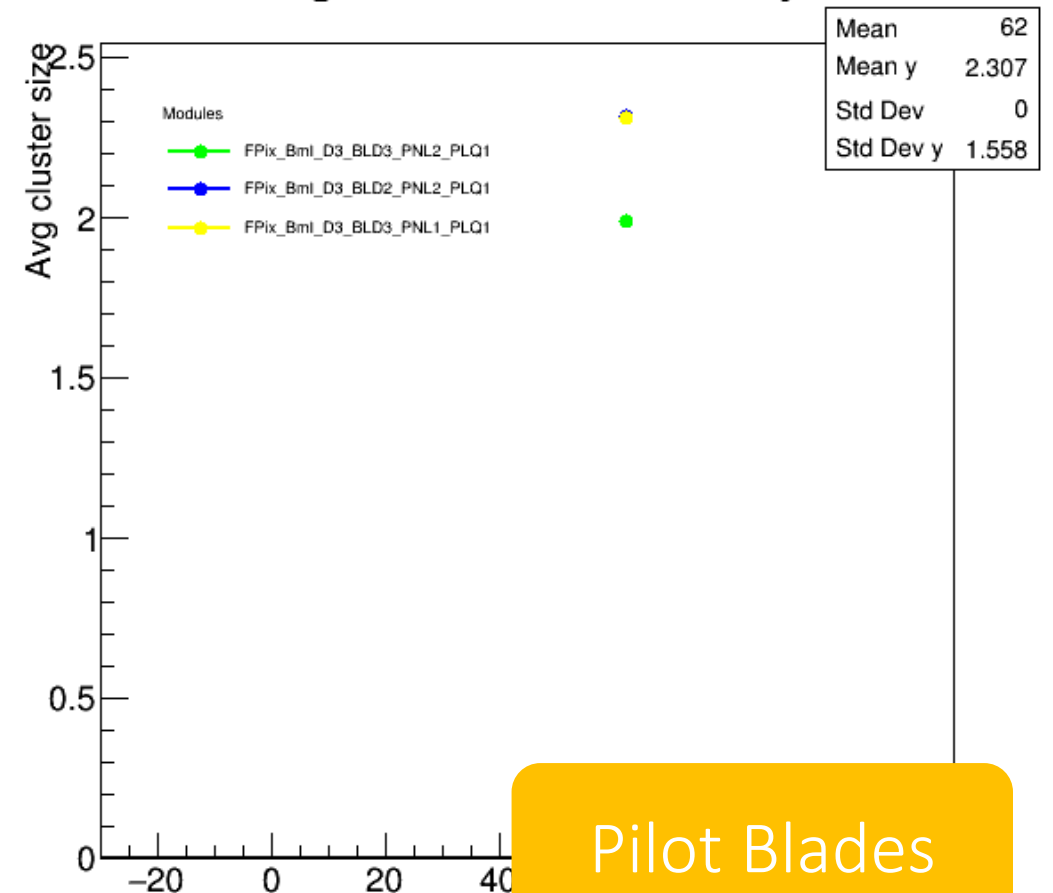


Cluster size

Clusters Size Distribution

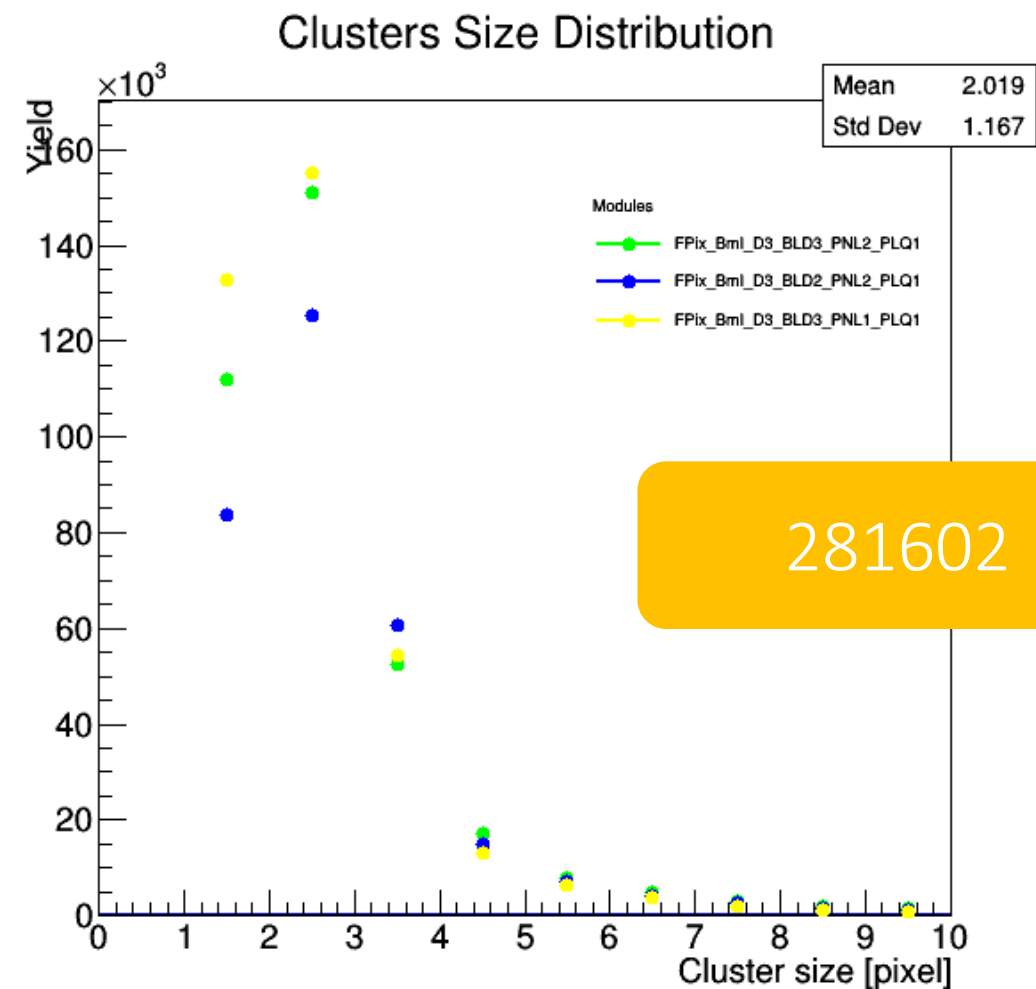
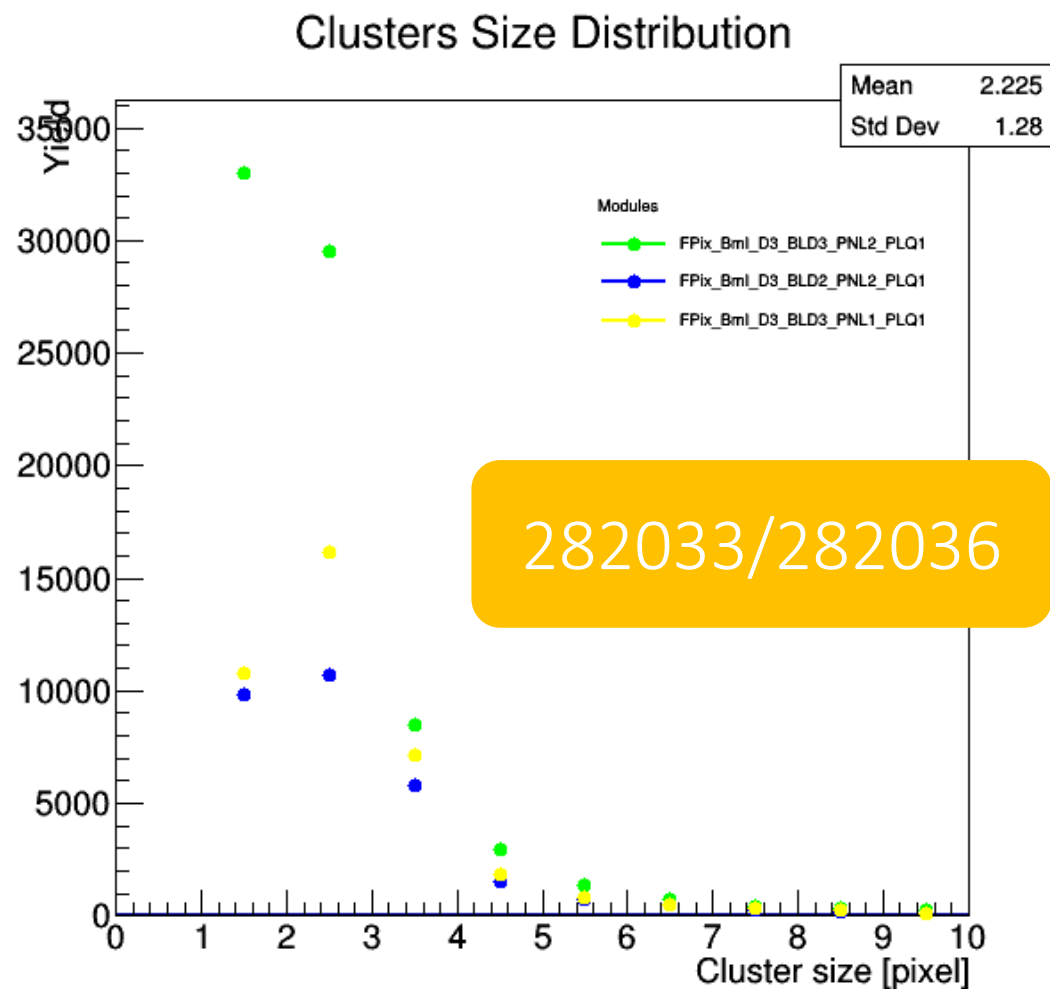


Avg cluster size vs Delay



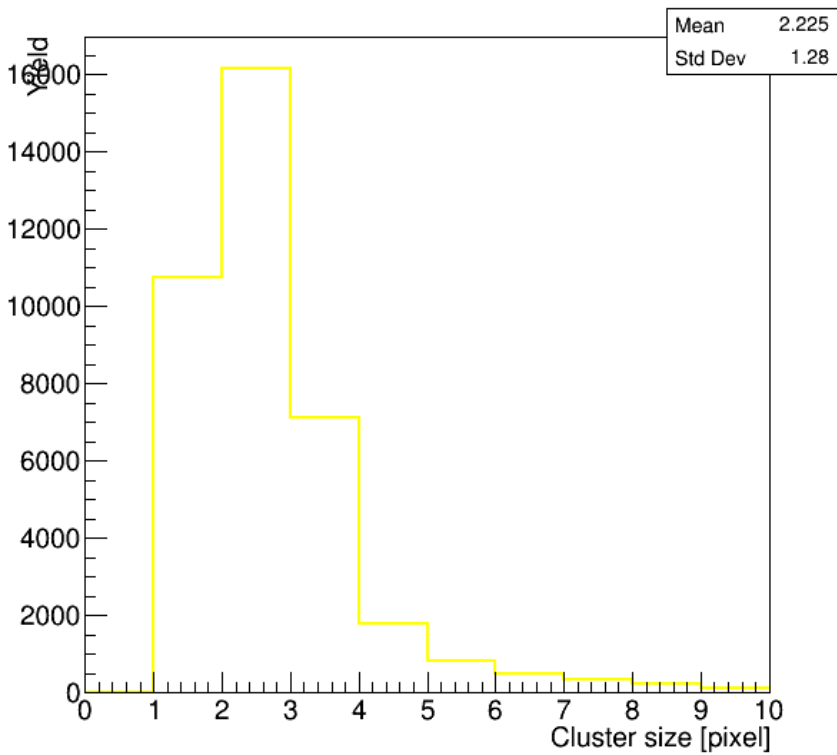
Pilot Blades

Cluster size comparison

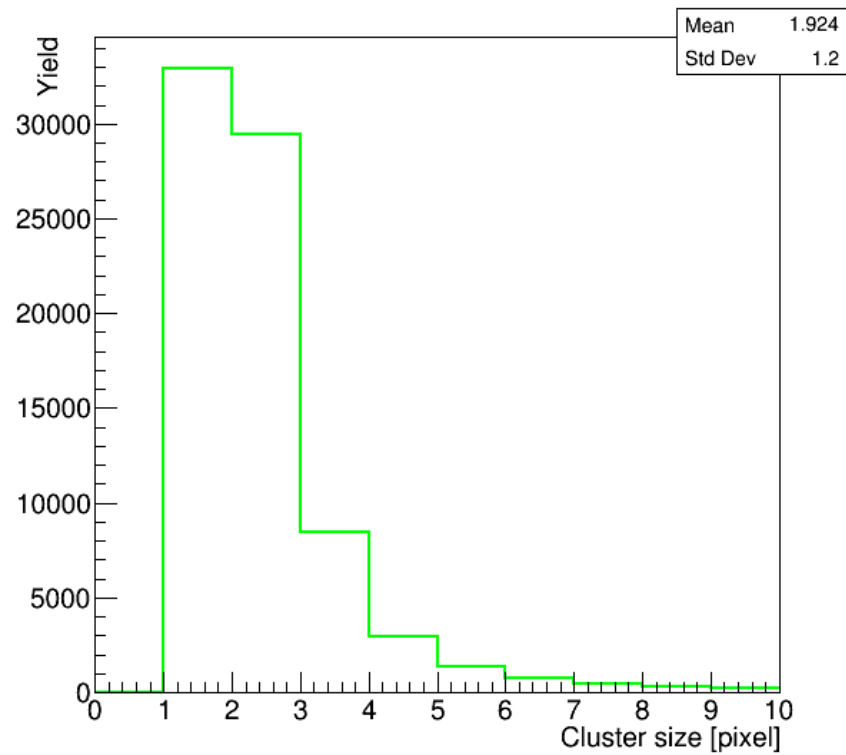


Cluster size

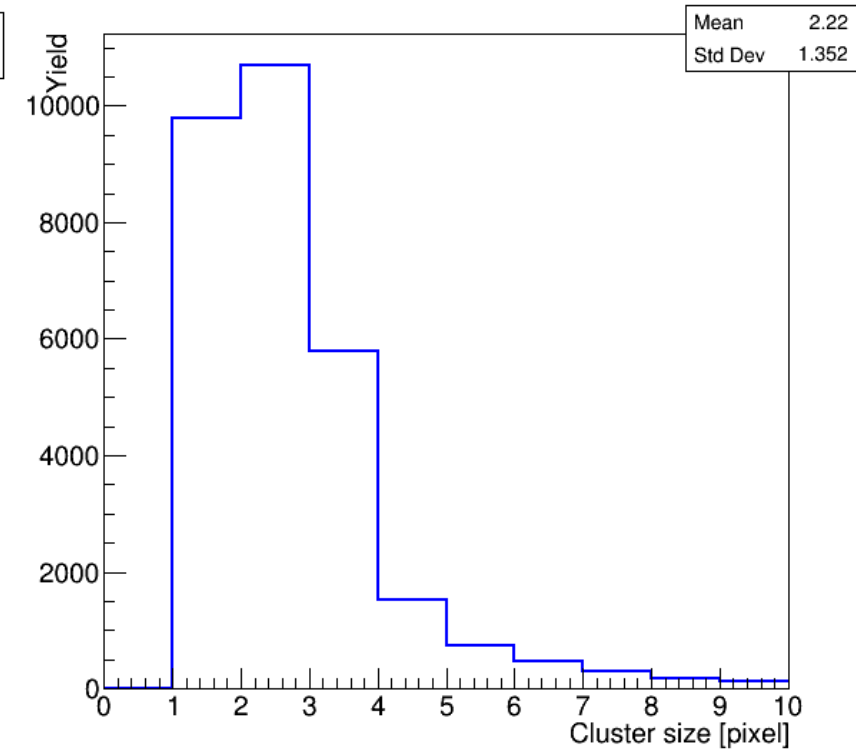
Clusters Size Distribution in FPix_Bml_D3_BLD3_PNL1_PLQ1



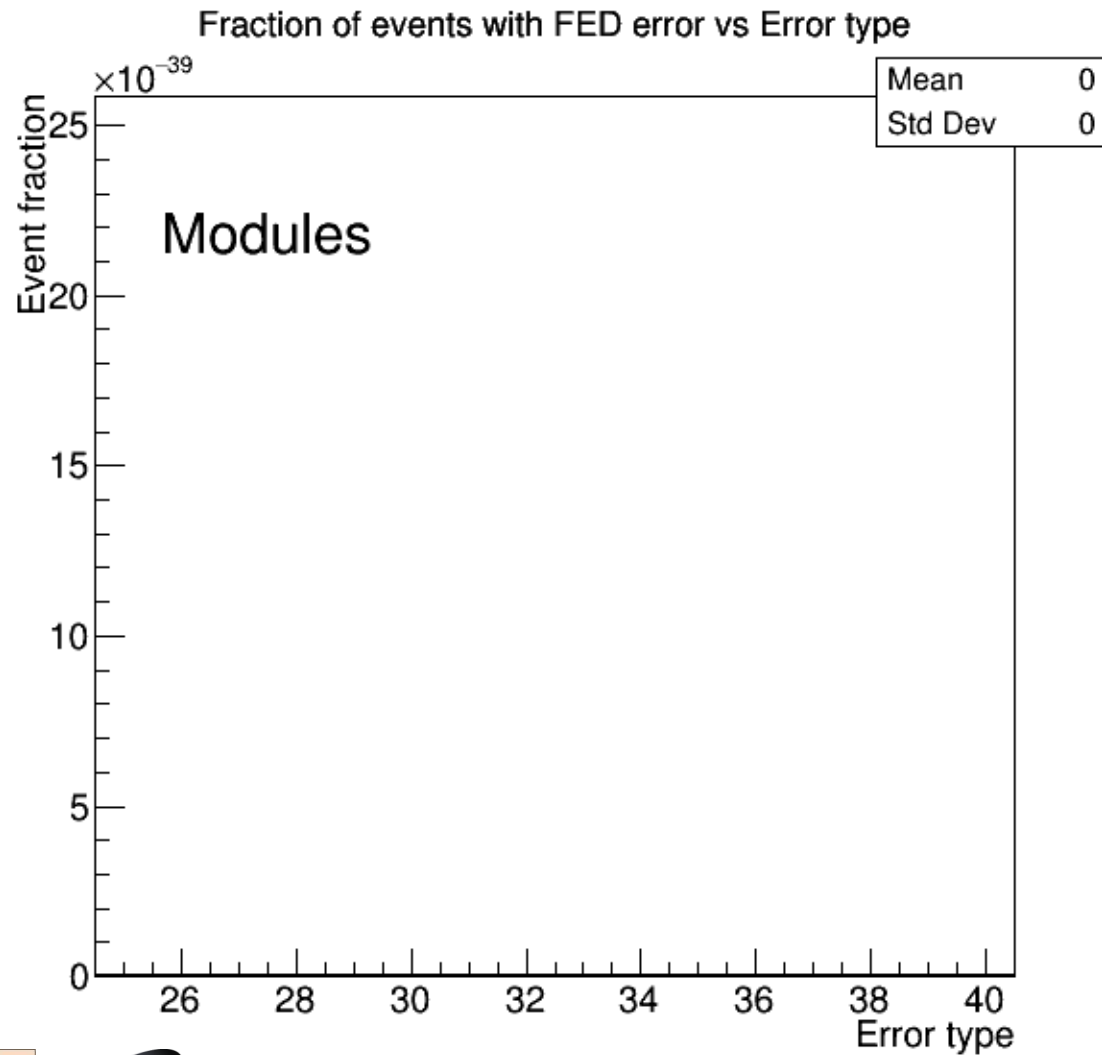
Clusters Size Distribution in FPix_Bml_D3_BLD3_PNL2_PLQ1



Clusters Size Distribution in FPix_Bml_D3_BLD2_PNL2_PLQ1



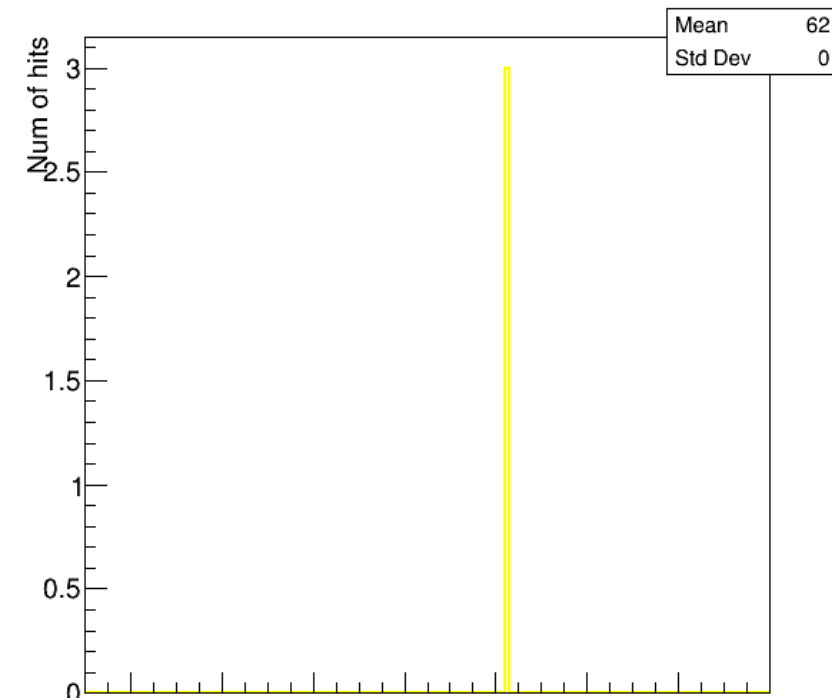
FED Errors



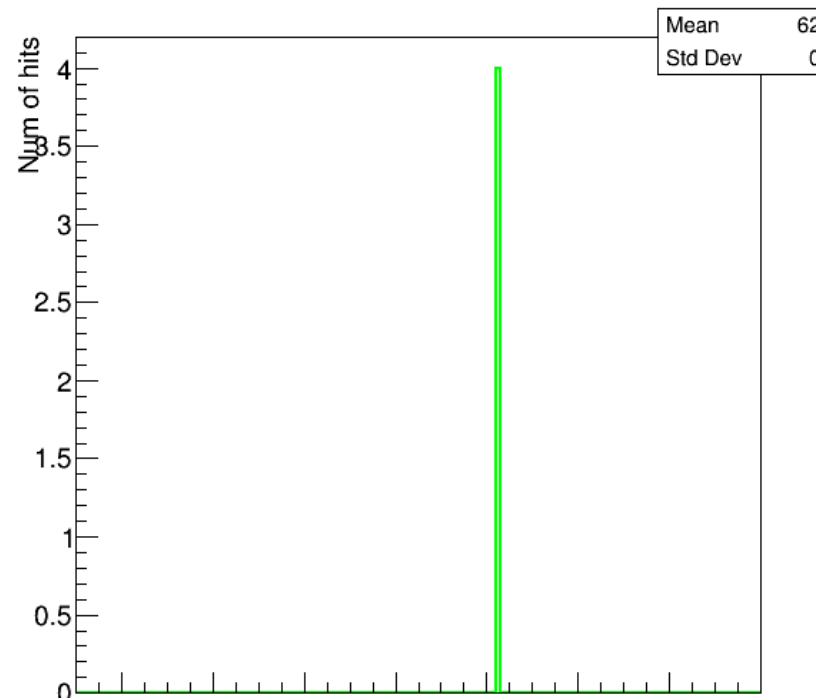
None

RecHits on track

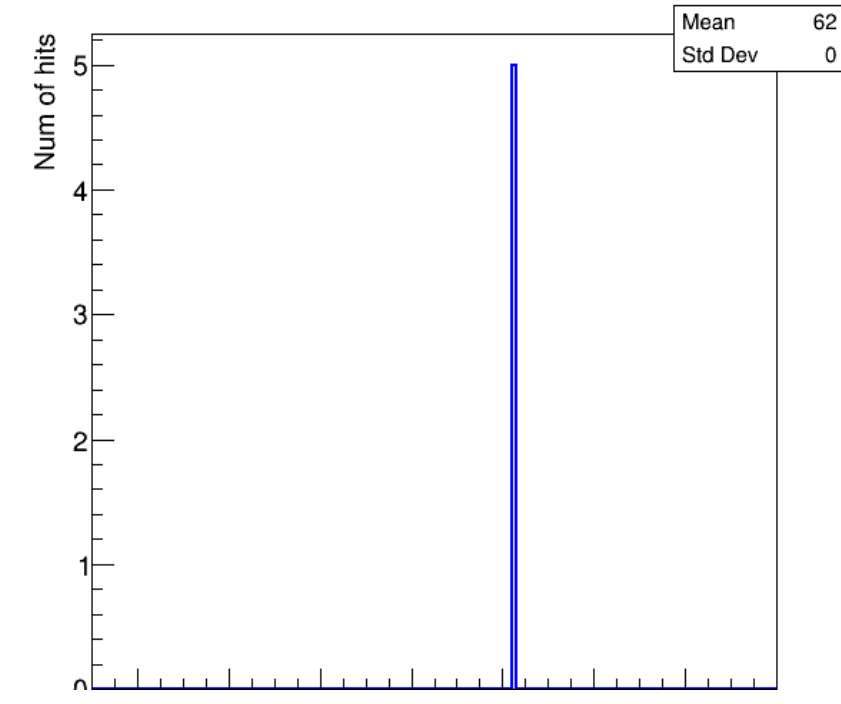
Num of RecHits vs Delay in FPix_Bml_D3_BLD3_PNL1_PLQ1



Num of RecHits vs Delay in FPix_Bml_D3_BLD3_PNL2_PLQ1



Num of RecHits vs Delay in FPix_Bml_D3_BLD2_PNL2_PLQ1



Thus the global map is hardly visible and residuals are not informative