

Pilot blade data analysis with the best ROCs

Tamás Álmos VÁMI¹, Viktor VESZPRÉMI¹

¹ Wigner RCP, Budapest



Tracker DPG meeting



Reminder

WBC scan, Fine timing scan and 18 ns for BmO data analyzed and presented at the offline meeting

[Link to the slides](#)

Per ROC study presented at the DPG meeting

[Link to the slides](#)

Now the performance of the best ROCs with a wider margin is shown

Global Runs

Global Run 286519: Fine timing scan

„Fine timing” plots per ROC

https://tvami.web.cern.ch/tvami/projects/PilotBlade/Runs286519_FEVT/PerROCStudy_Margin20

Global Run 286520: 18 ns for BmO

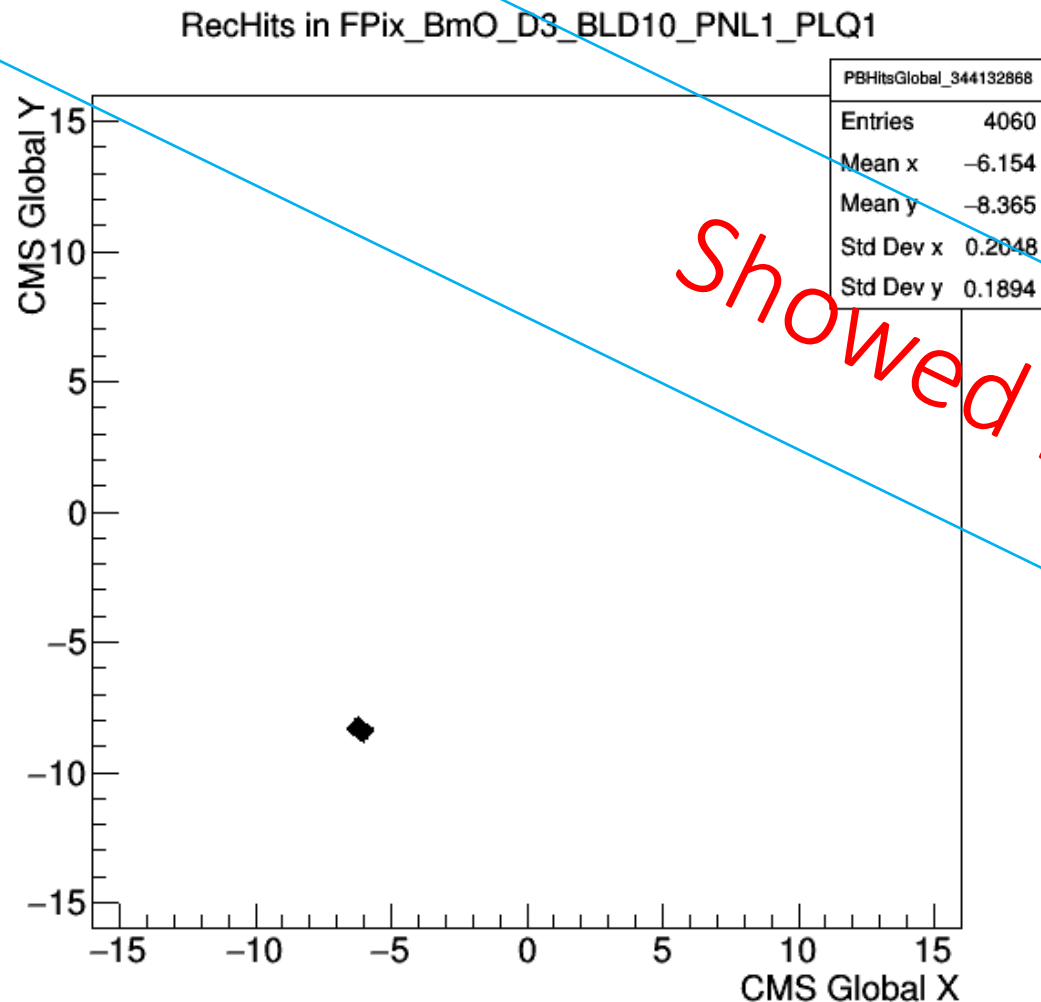
„Residual” and „Position vs Residuals” plots per ROC

https://tvami.web.cern.ch/tvami/projects/PilotBlade/Runs286520_FEVT/PerROCStudy_Margin20/

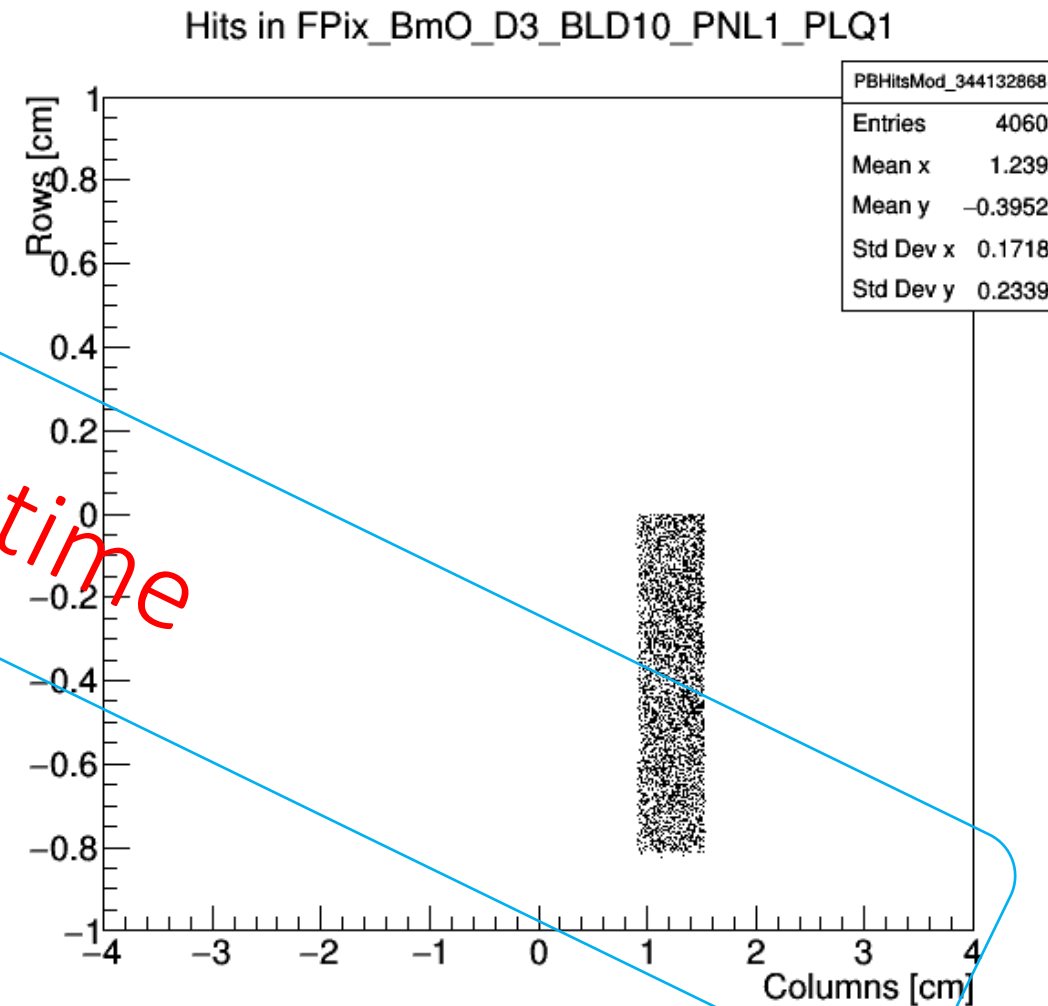
Position of the ROC

FPix_BmO_D3_BLD10_PNL1_ROC(b)

Global Position



Local Position

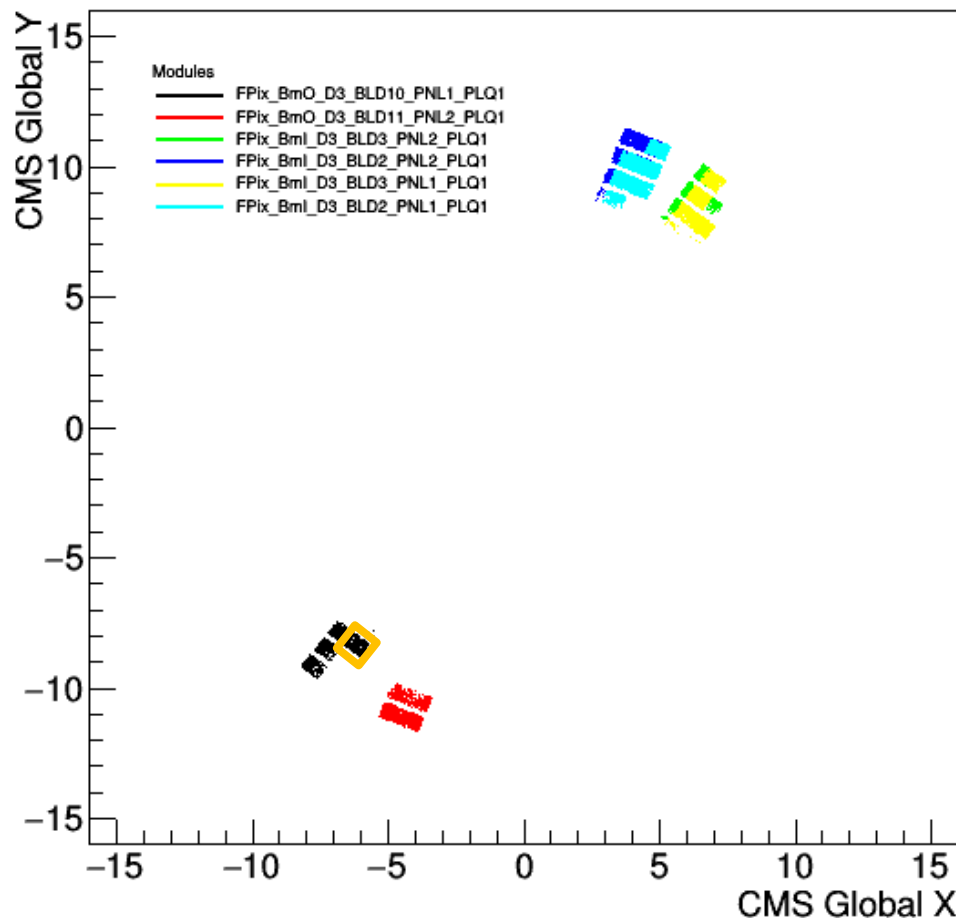


Shown last time

Position of the ROC

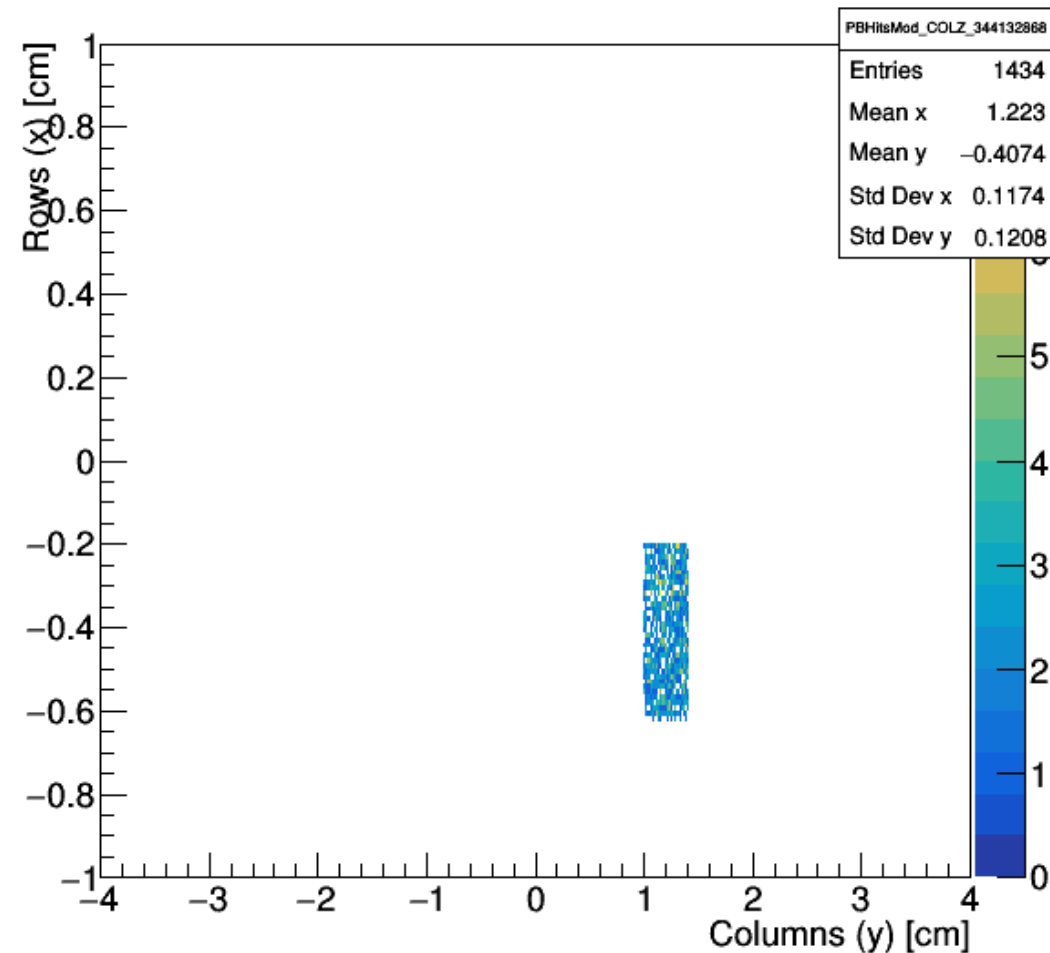
FPix_BmO_D3_BLD10_PNL1_ROC(b)

ReHits



Global Position

Hits in FPix_BmO_D3_BLD10_PNL1_PLQ1



Local Position

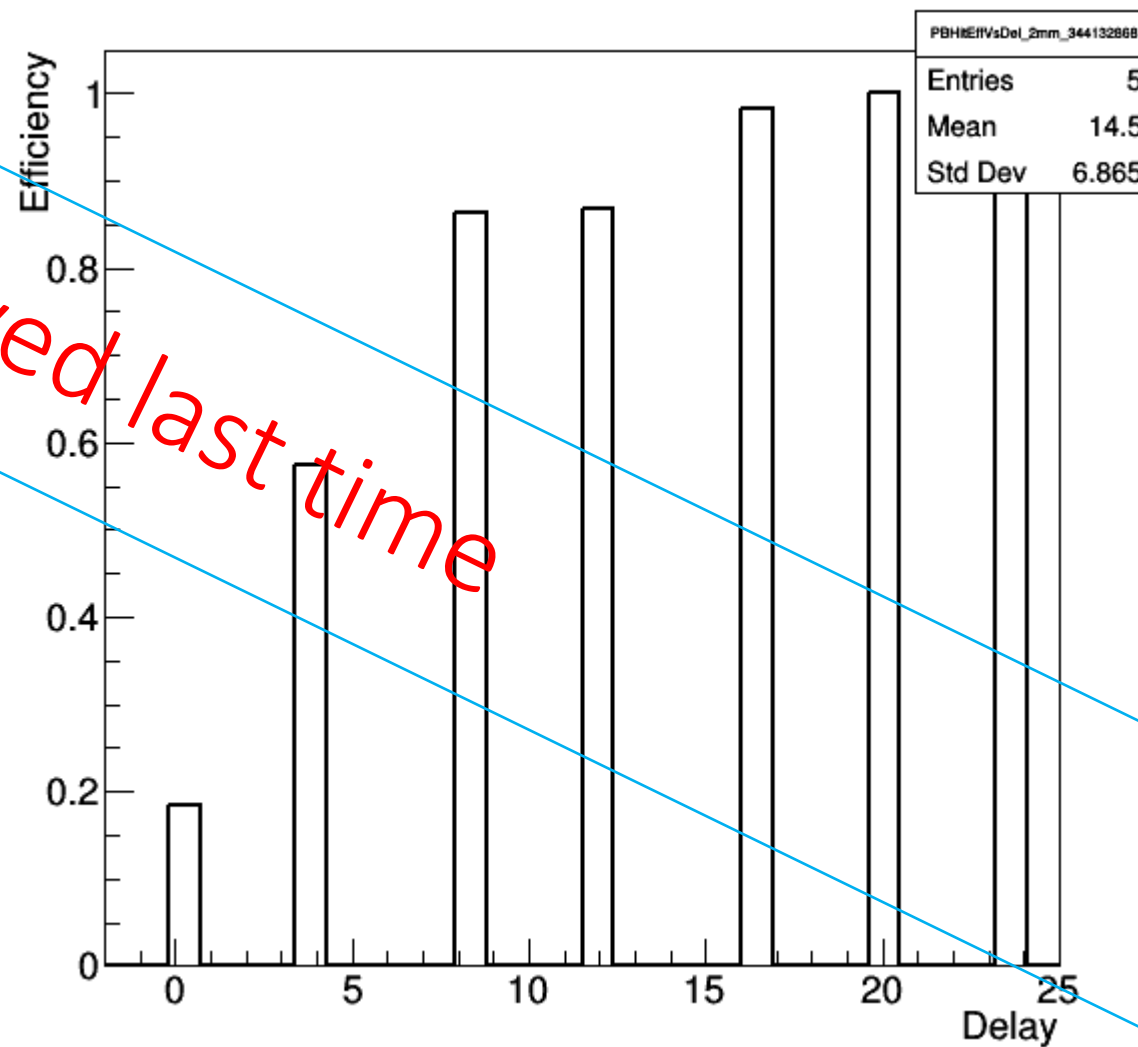
Efficiencies

FPix_BmO_D3_BLD10_PNL1_ROC(b)

$$\text{Efficiency} := \frac{\text{\#Found clusters}}{\text{\#expected clusters}}$$

In 2mm range

RecHit efficiency vs Delay in FPix_BmO_D3_BLD10_PNL1_PLQ1



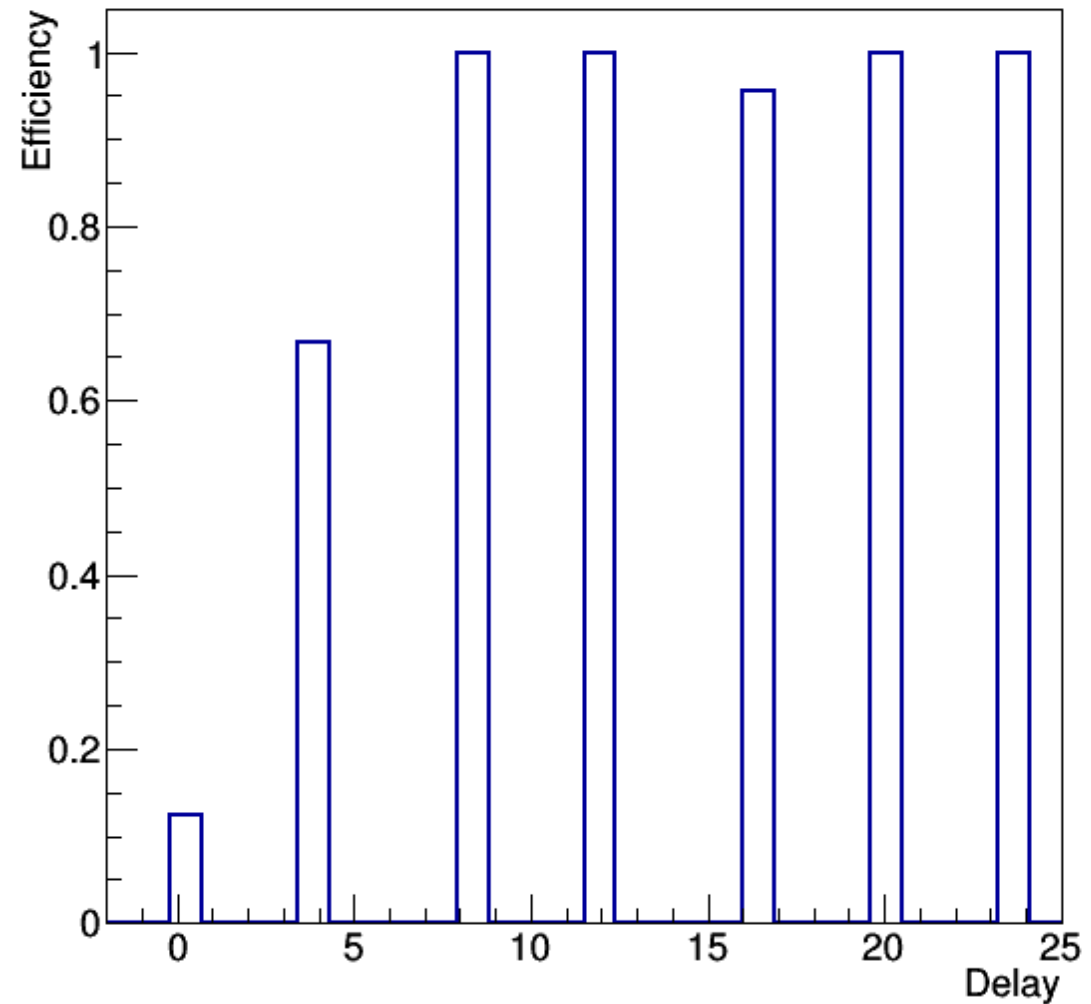
Efficiencies

$$\text{Efficiency} := \frac{\text{\#Found clusters}}{\text{\#expected clusters}}$$

In 2mm range

FPix_BmO_D3_BLD10_PNL1_ROC(b)

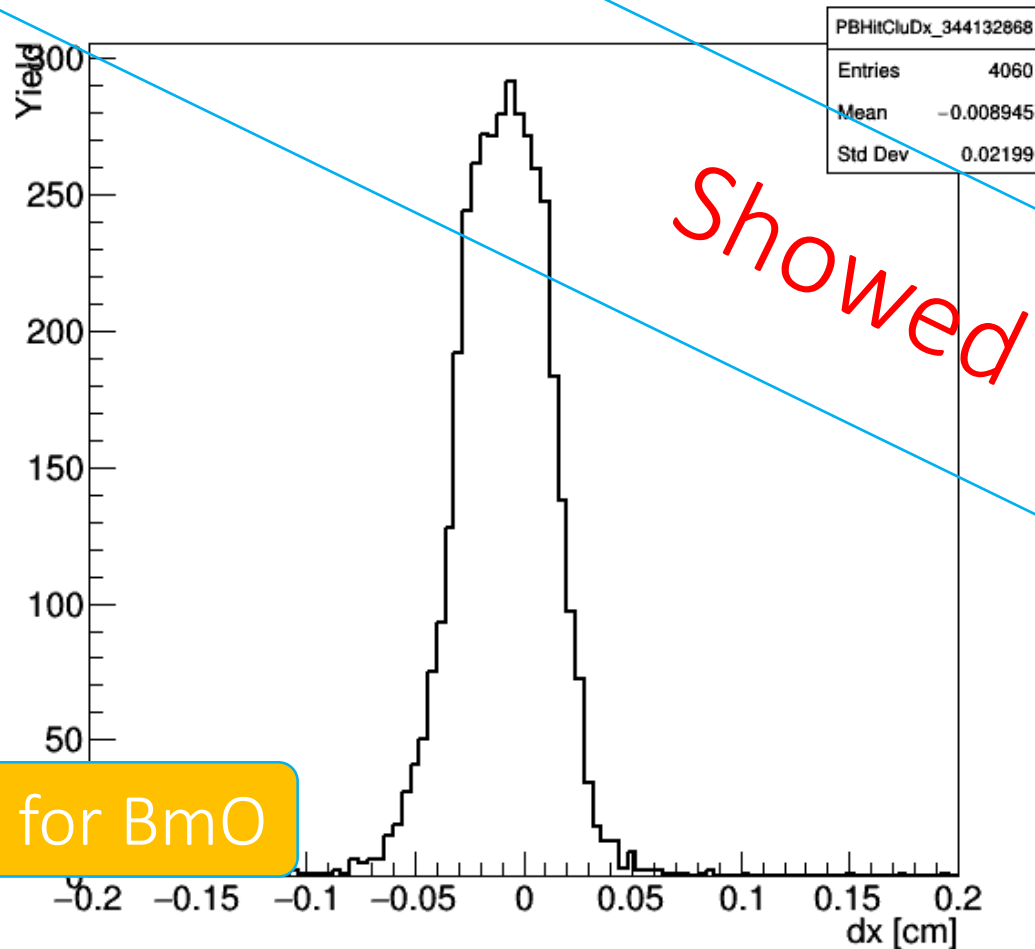
RecHit efficiency vs Delay in FPix_BmO_D3_BLD10_PNL1_PLQ1



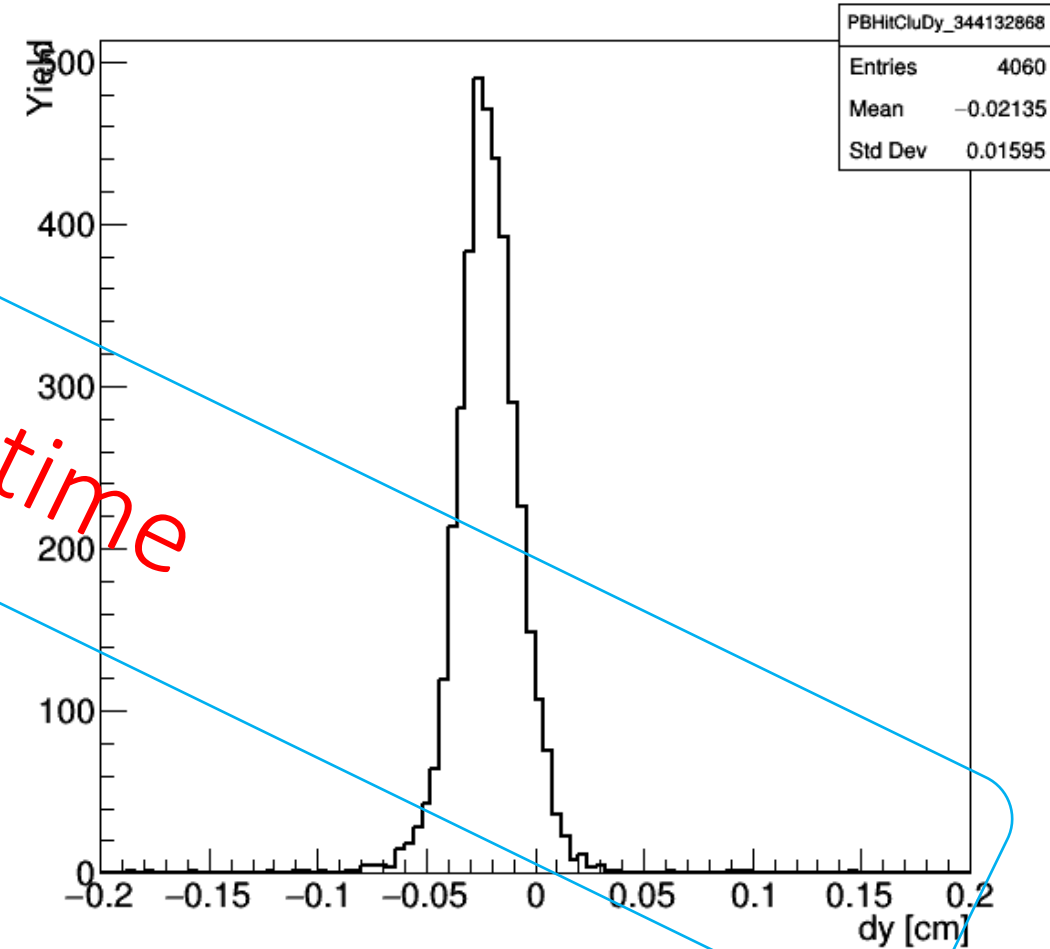
Residuals (Zoomed)

FPix_BmO_D3_BLD10_PNL1_ROC(b)

Recht to nearest cluster distance in FPix_BmO_D3_BLD10_PNL1_PLQ1



Recht to nearest cluster distance in FPix_BmO_D3_BLD10_PNL1_PLQ1

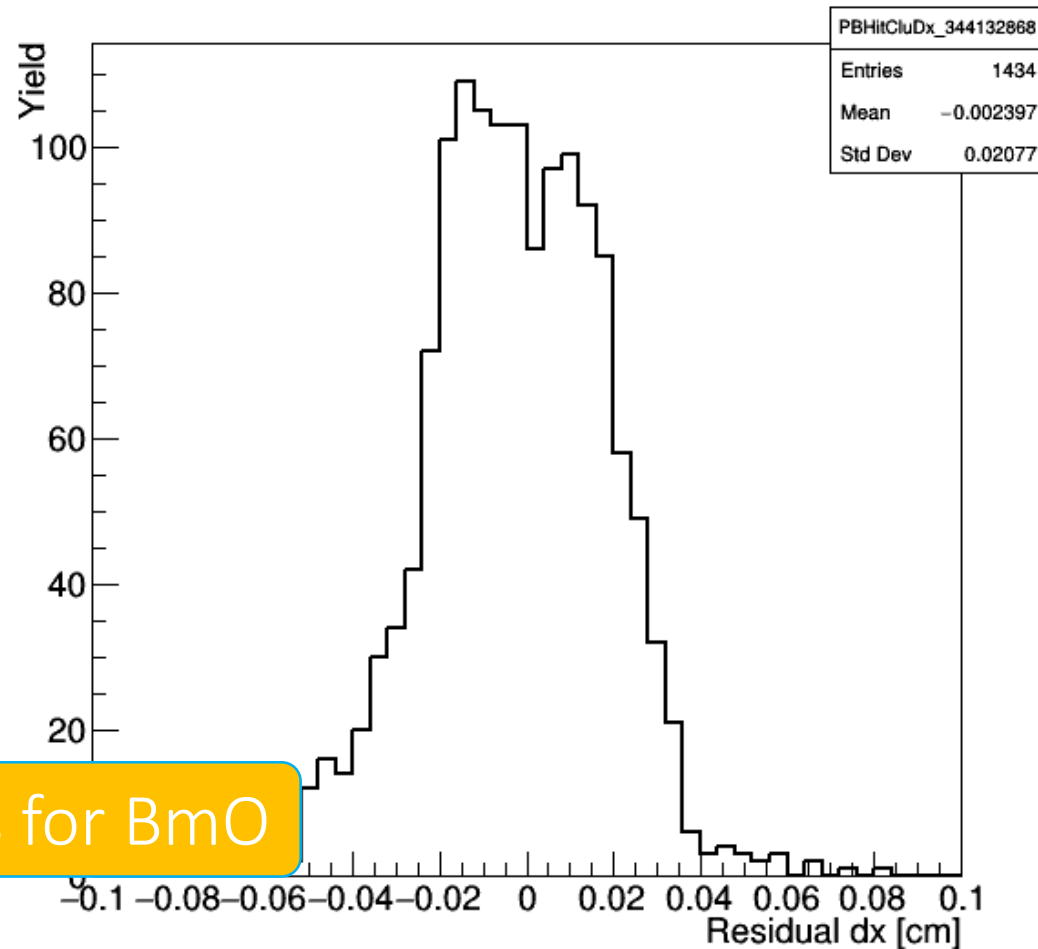


Shown last time

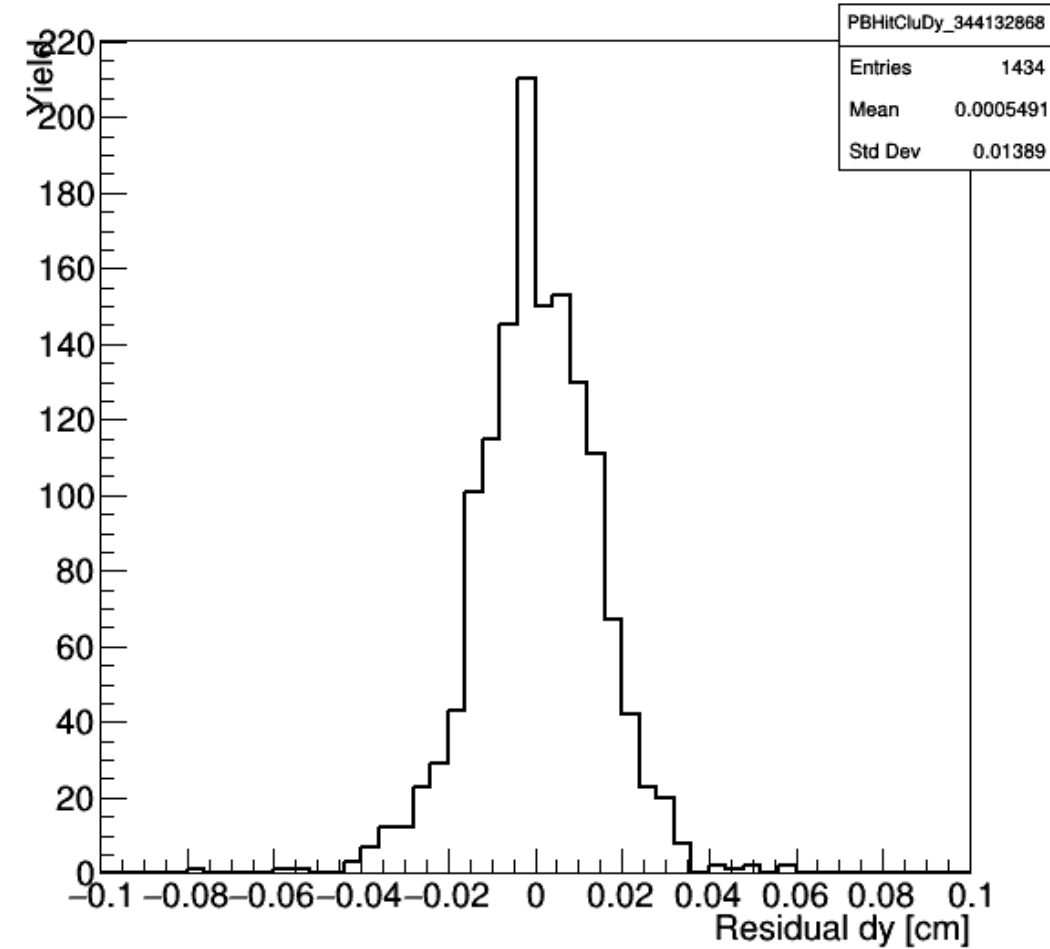
Residuals (Zoomed)

FPix_BmO_D3_BLD10_PNL1_ROC(b)

Rehit to nearest cluster distance in FPix_BmO_D3_BLD10_PNL1_PLQ1



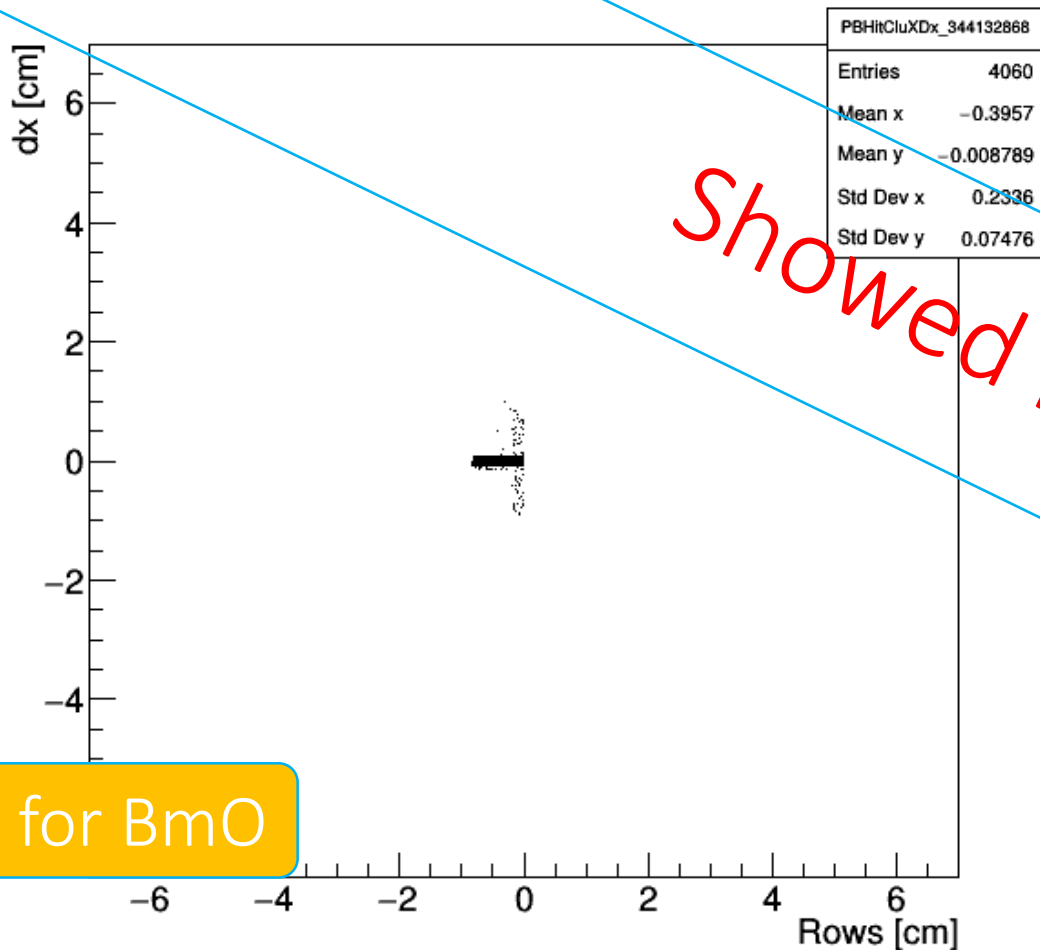
Rehit to nearest cluster distance in FPix_BmO_D3_BLD10_PNL1_PLQ1



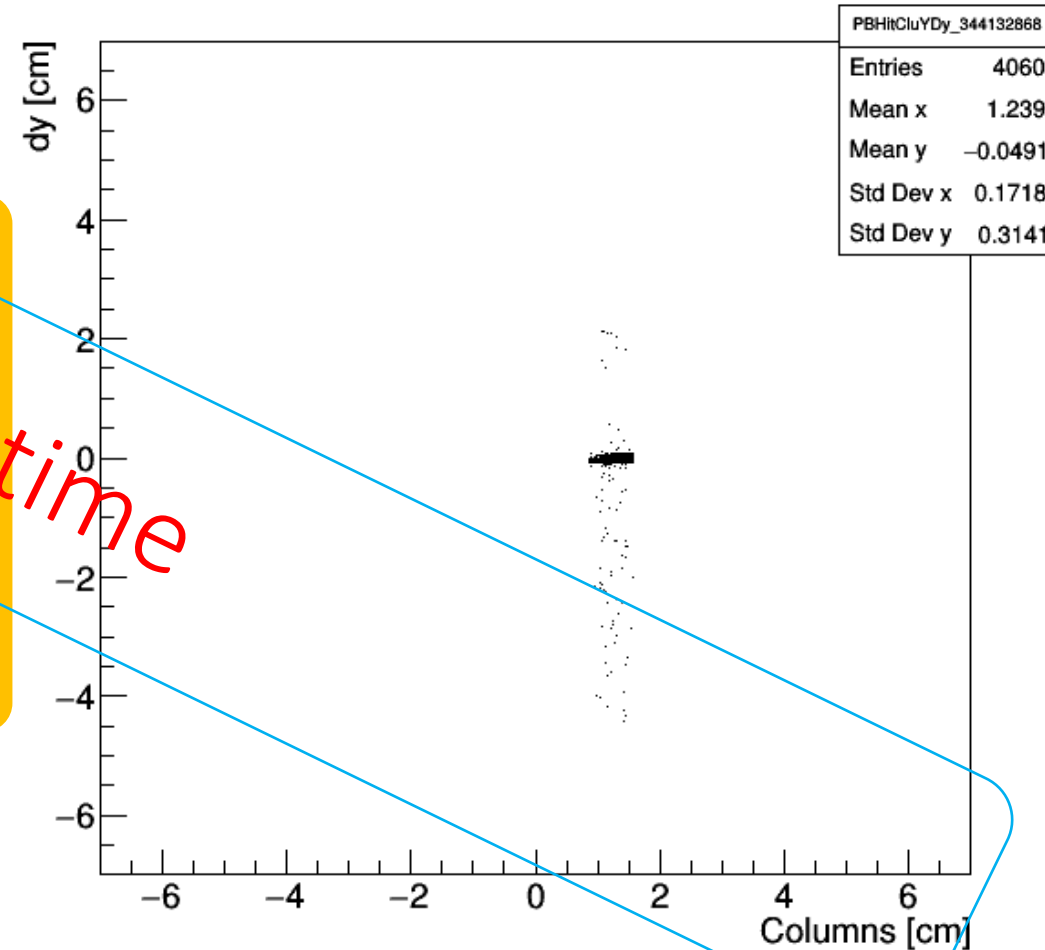
Position vs Residuals

FPix_BmO_D3_BLD10_PNL1_ROC(b)

Inactive rechit position (x) and the x residual FPix_BmO_D3_BLD10_PNL1_PLQ1



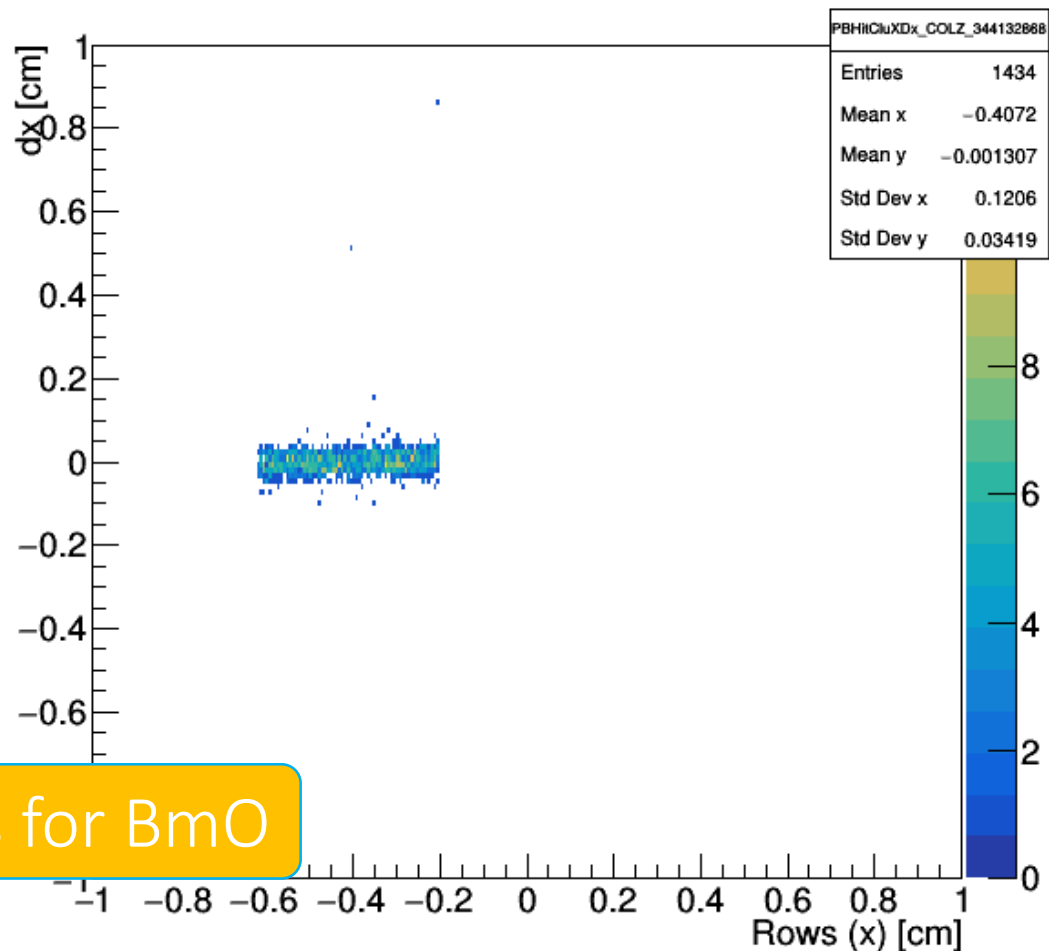
Inactive rechit position (y) and the y residual FPix_BmO_D3_BLD10_PNL1_PLQ1



Position vs Residuals

FPix_BmO_D3_BLD10_PNL1_ROC(b)

Inactive rechit position (x) and the x residual FPix_BmO_D3_BLD10_PNL1_PLQ1

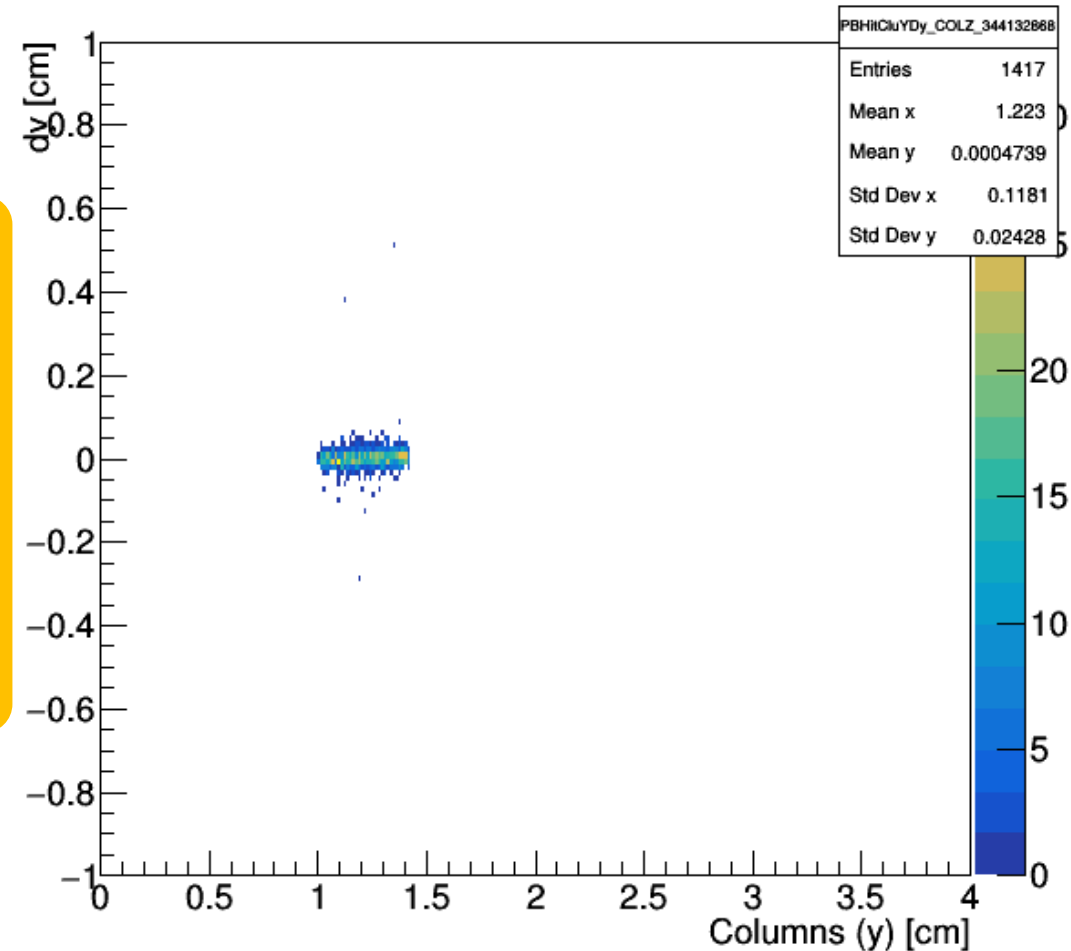


Azimuthal
direction

18 ns for BmO

Radial direction

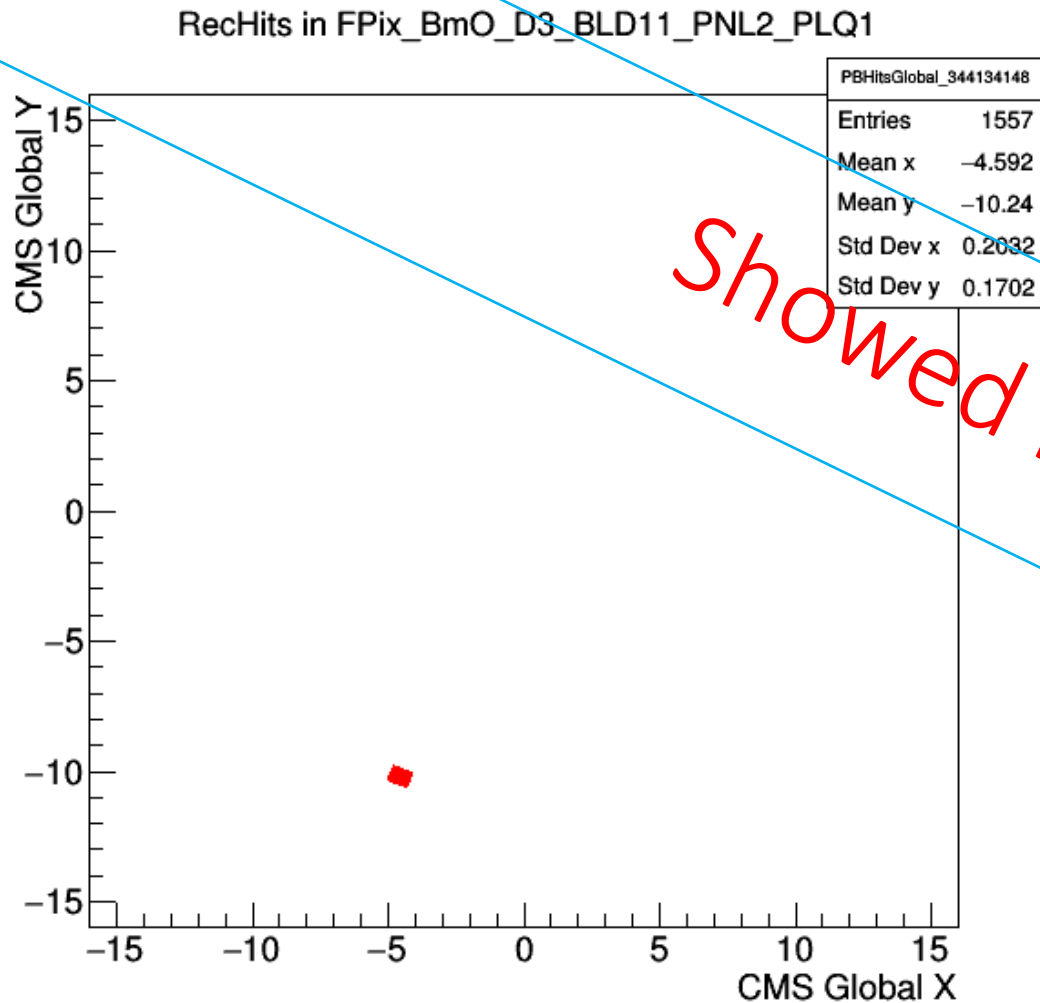
Inactive rechit position (y) and the y residual FPix_BmO_D3_BLD10_PNL1_PLQ1



Position of the ROC

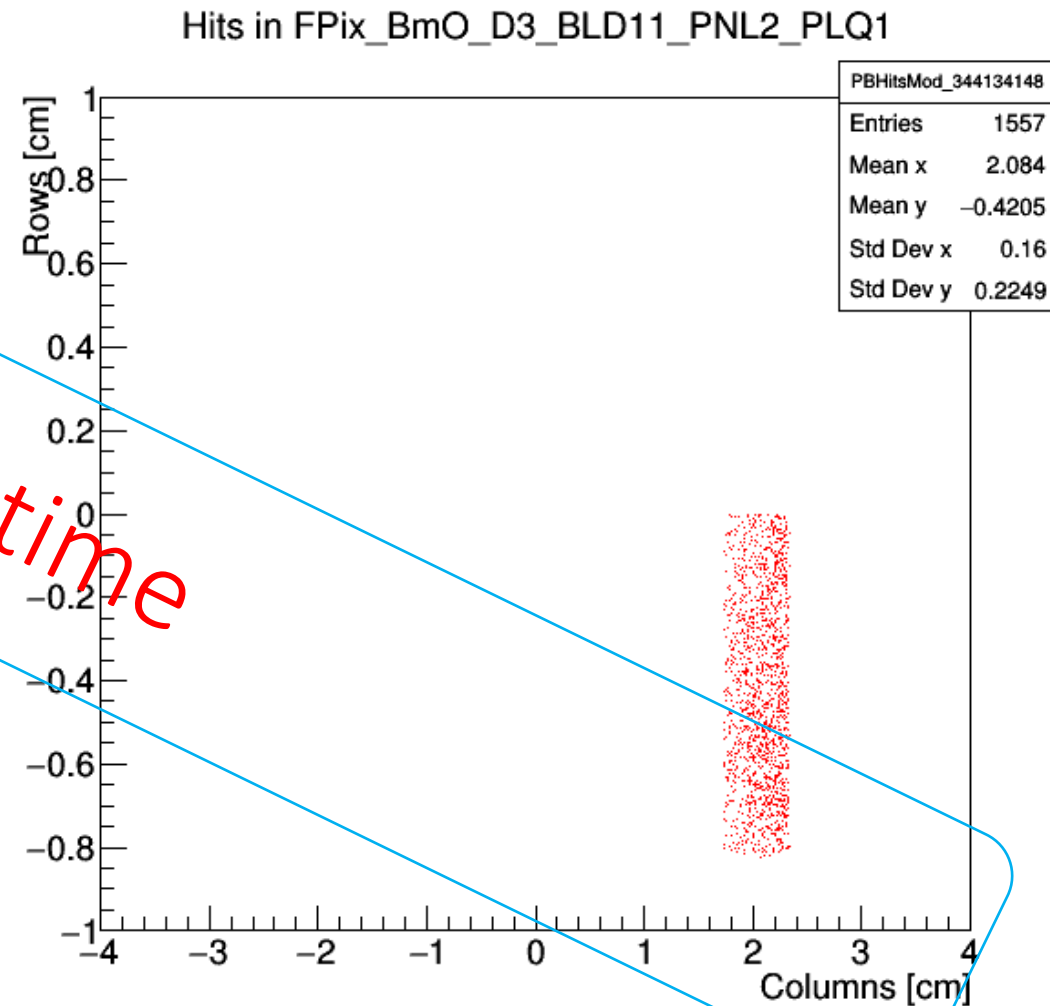
FPix_BmO_D3_BLD11_PNL2_ROC(c)

Global Position



Shown last time

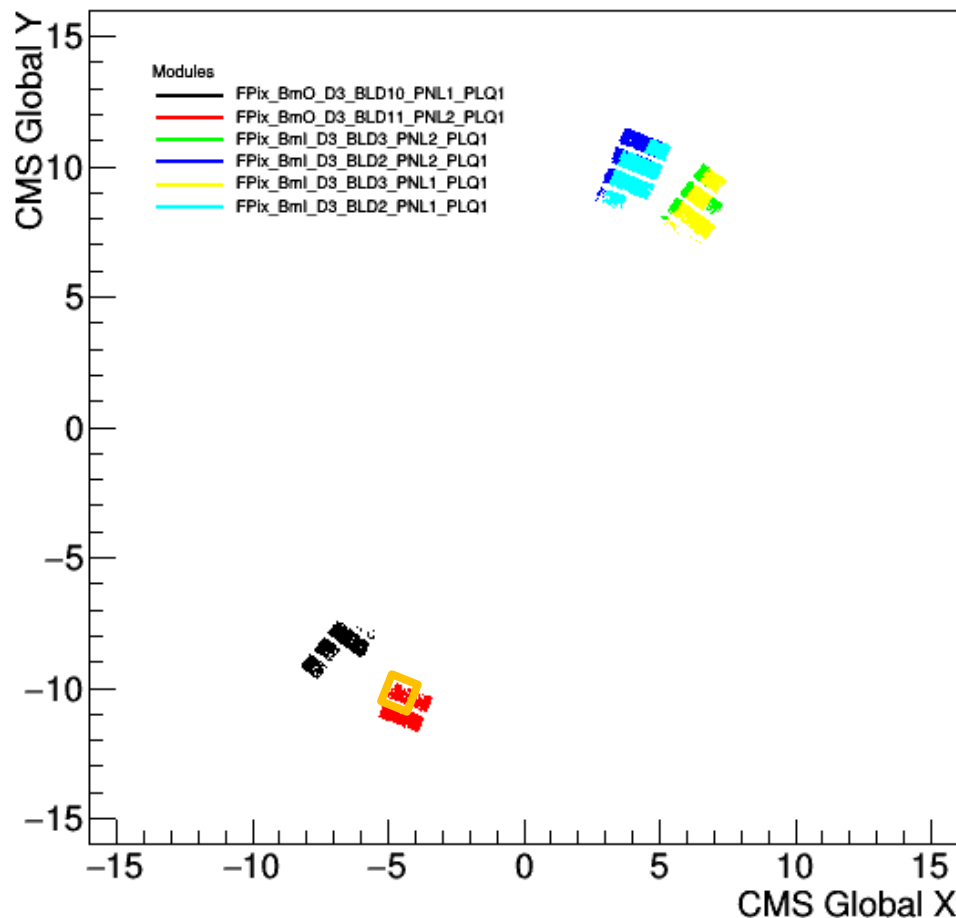
Local Position



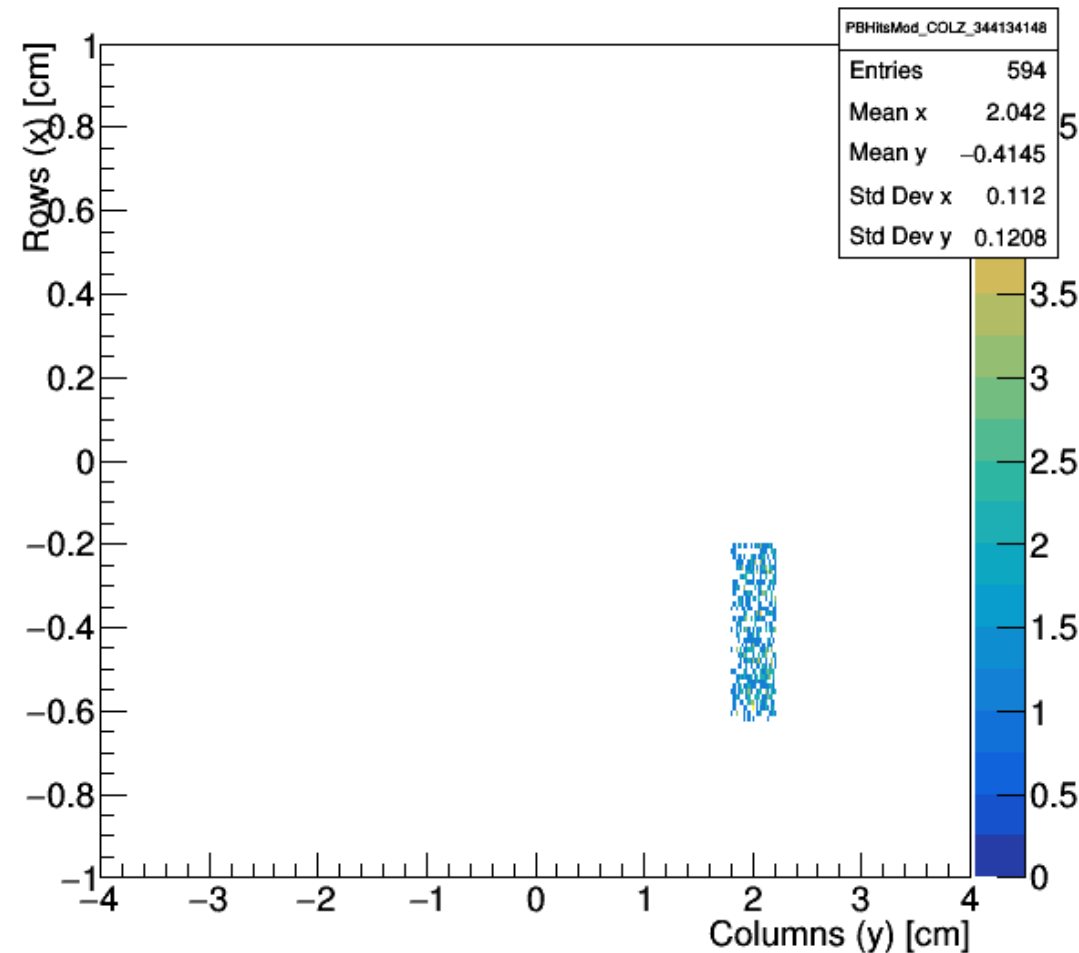
Position of the ROC

FPix_BmO_D3_BLD11_PNL2_ROC(c)

ReHits



Hits in FPix_BmO_D3_BLD11_PNL2_PLQ1



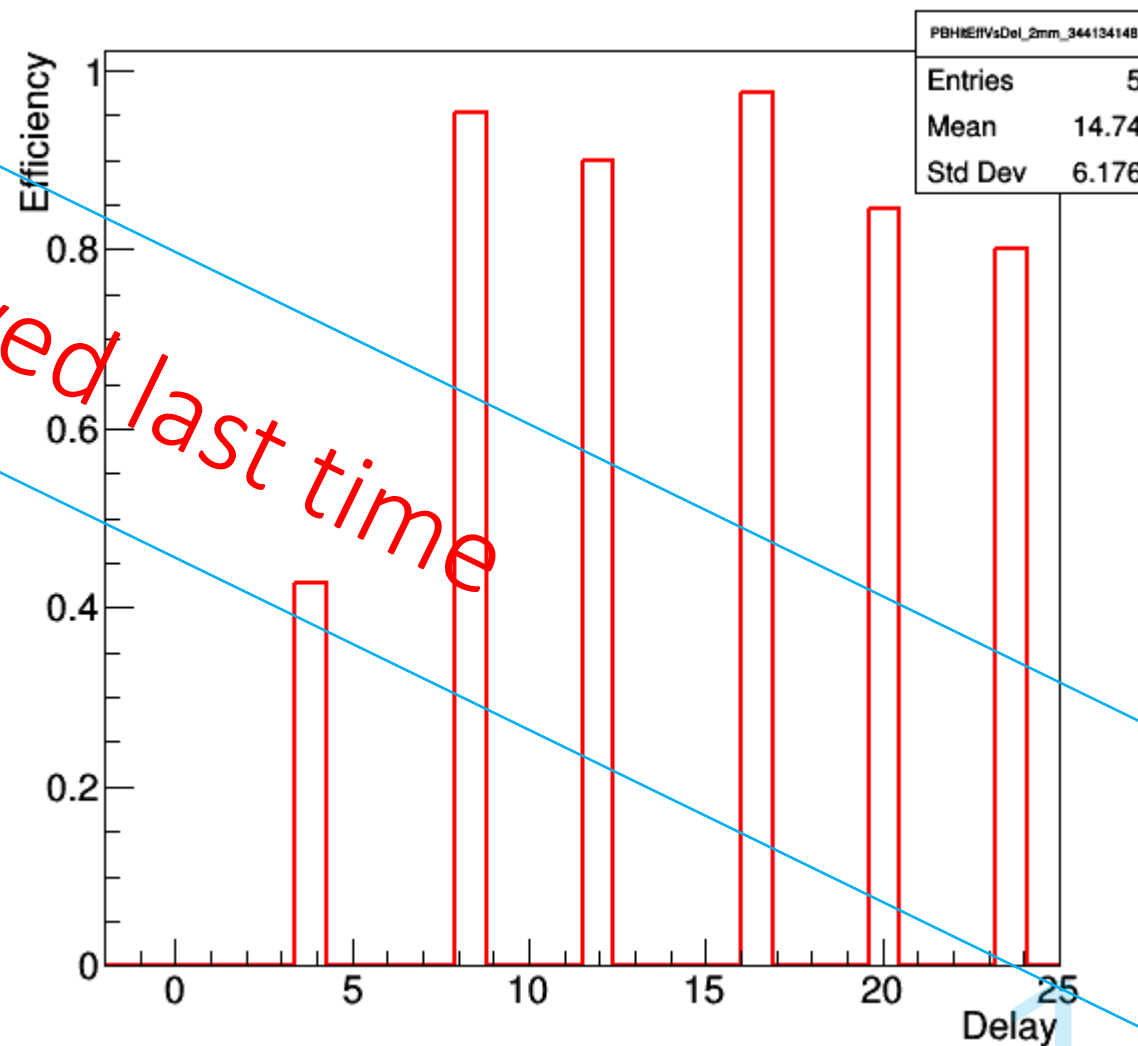
Efficiencies

FPix_BmO_D3_BLD11_PNL2_ROC(c)

$$\text{Efficiency} := \frac{\text{\#Found clusters}}{\text{\#expected clusters}}$$

In 2mm range

RecHit efficiency vs Delay in FPix_BmO_D3_BLD11_PNL2_PLQ1



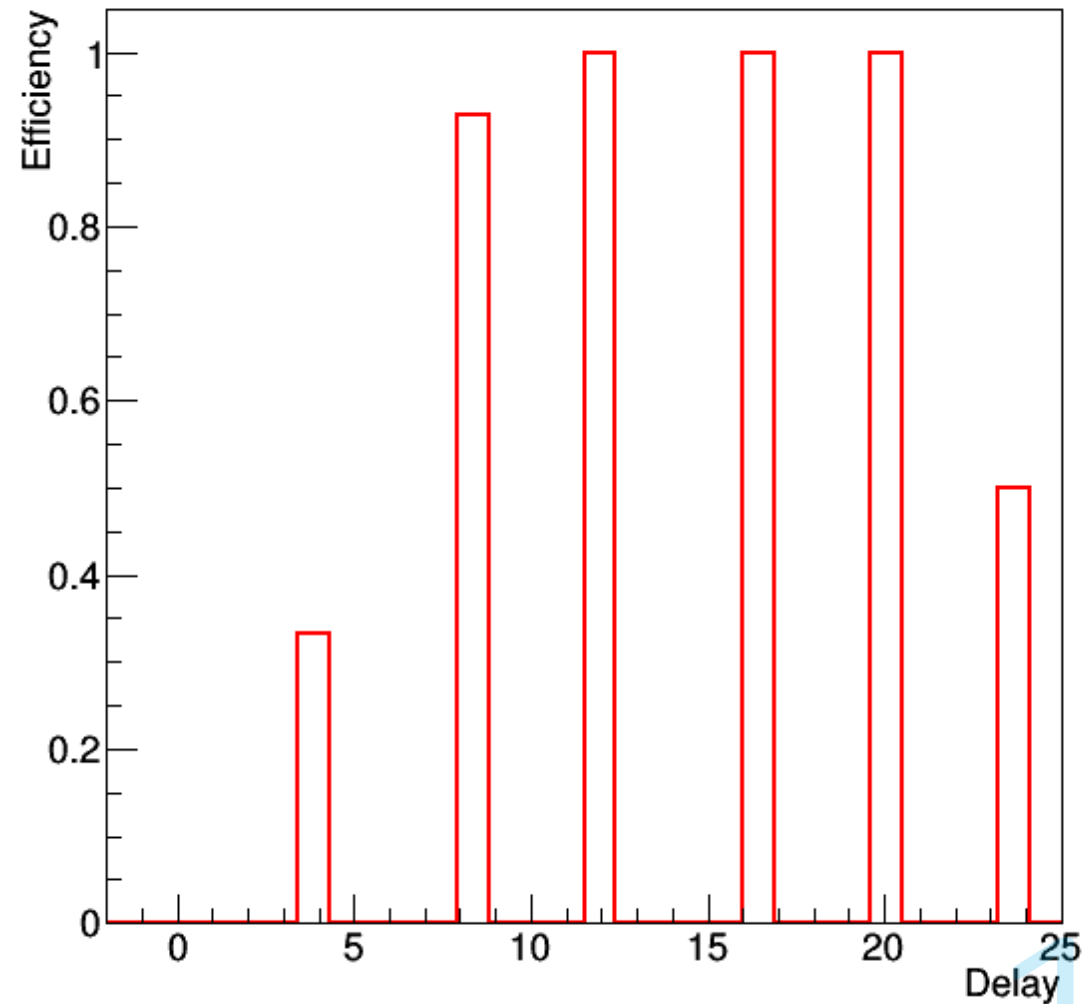
Efficiencies

$$\text{Efficiency} := \frac{\text{\#Found clusters}}{\text{\#expected clusters}}$$

In 2mm range

FPix_BmO_D3_BLD11_PNL2_ROC(c)

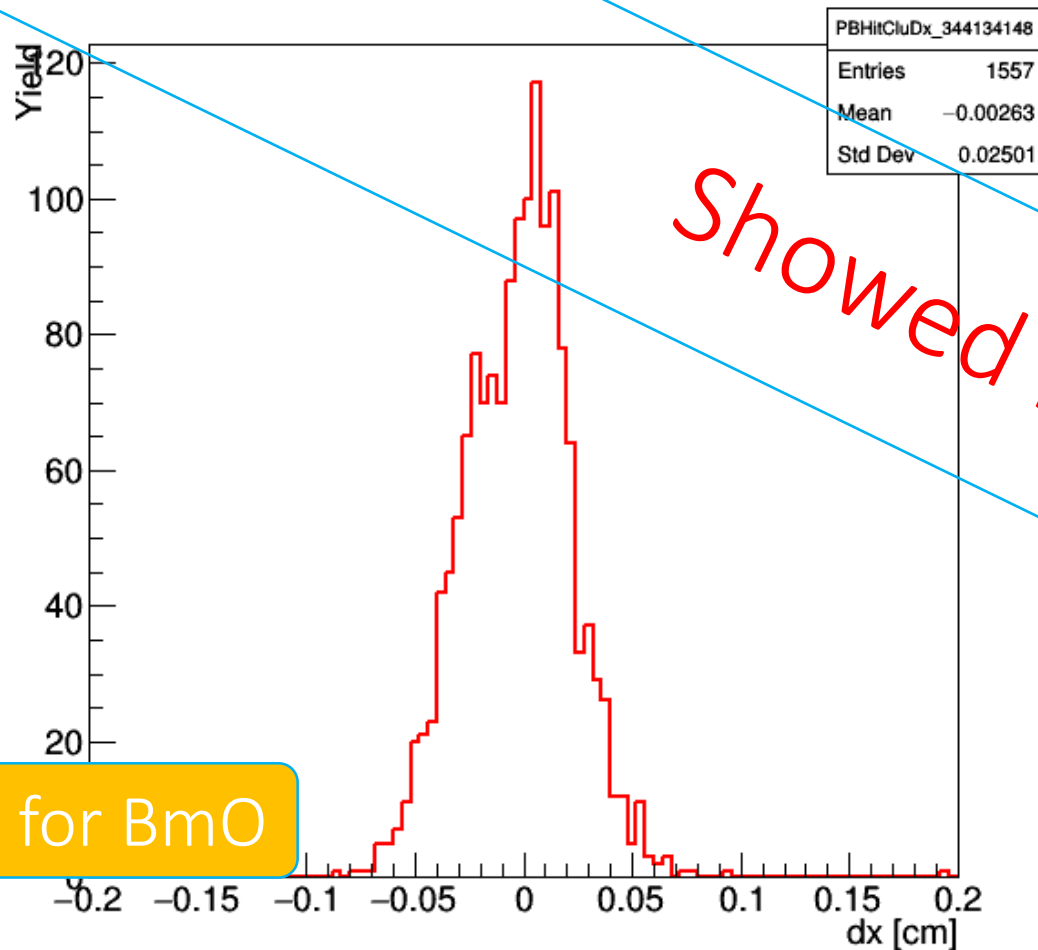
RecHit efficiency vs Delay in FPix_BmO_D3_BLD11_PNL2_PLQ1



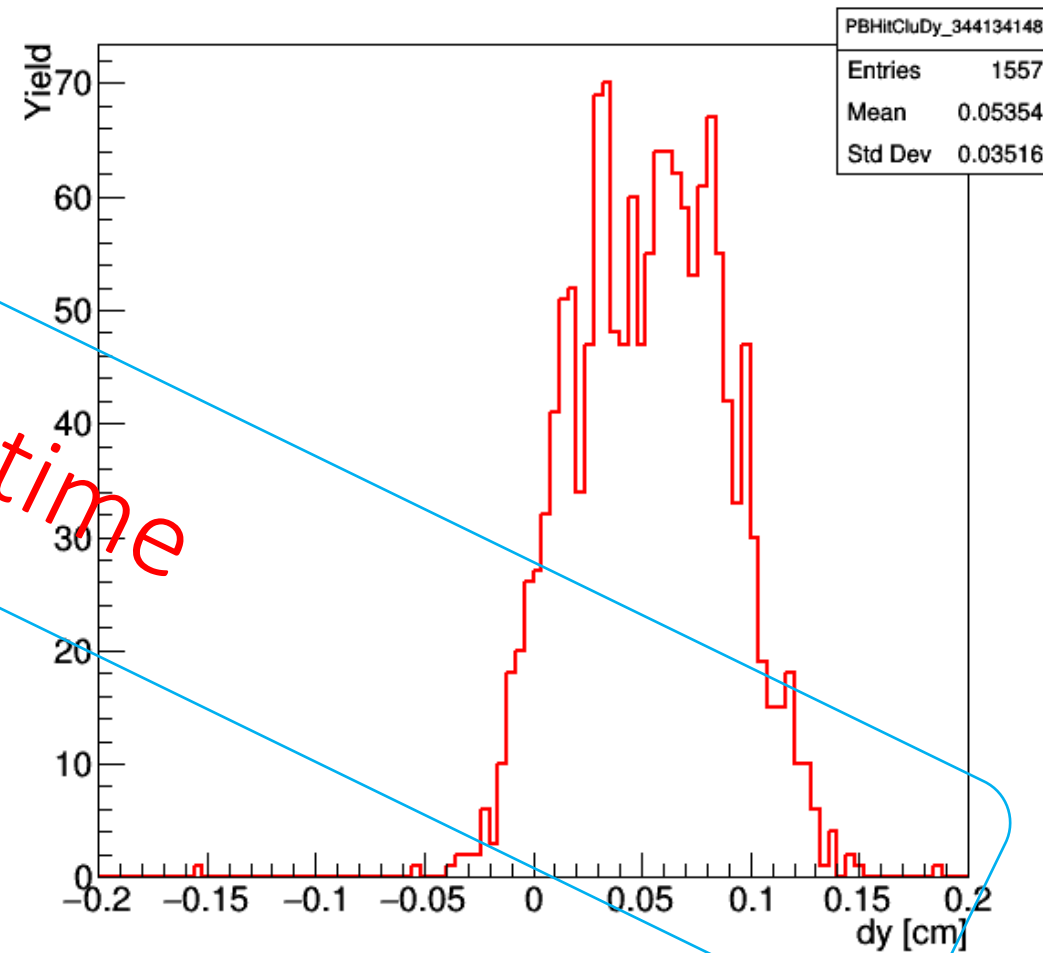
Residuals (Zoomed)

FPix_BmO_D3_BLD11_PNL2_ROC(c)

Rechit to nearest cluster distance in FPix_BmO_D3_BLD11_PNL2_PLQ1



Rechit to nearest cluster distance in FPix_BmO_D3_BLD11_PNL2_PLQ1



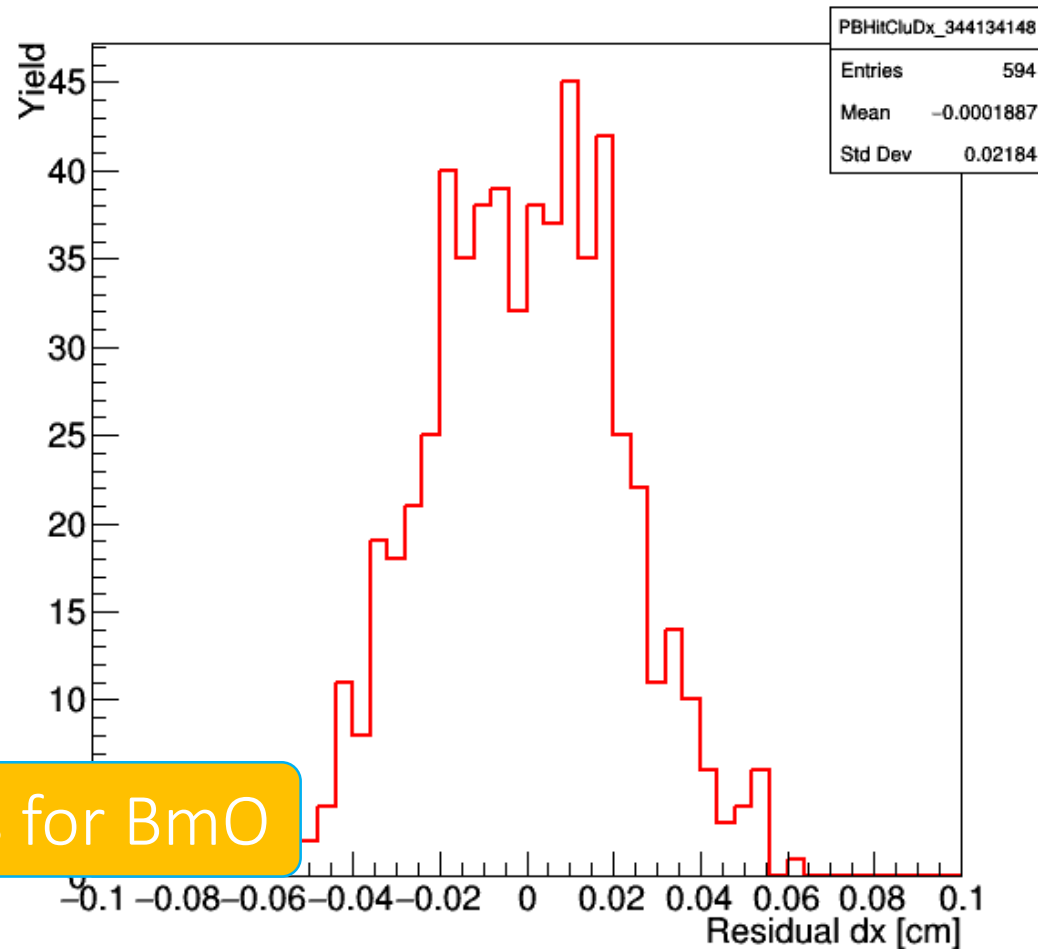
Showed last time

18 ns for BmO

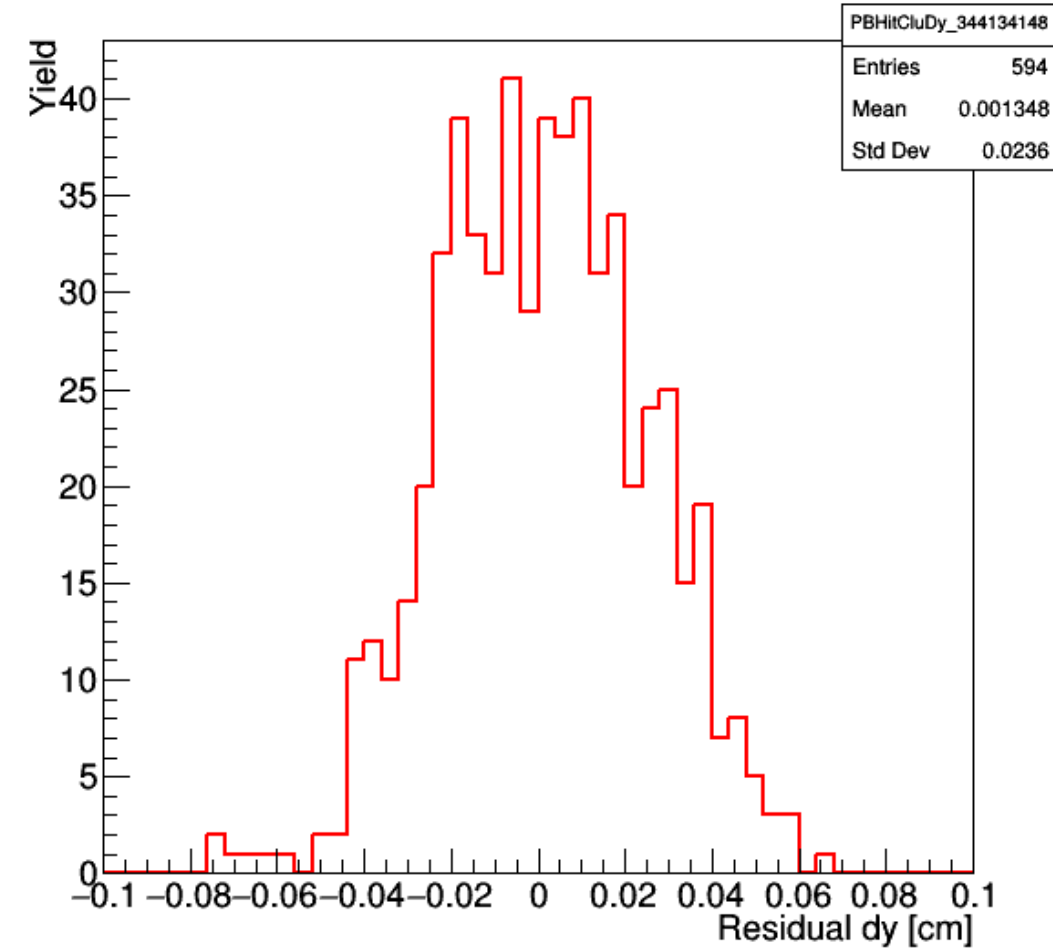
Residuals (Zoomed)

FPix_BmO_D3_BLD11_PNL2_ROC(c)

Rehit to nearest cluster distance in FPix_BmO_D3_BLD11_PNL2_PLQ1



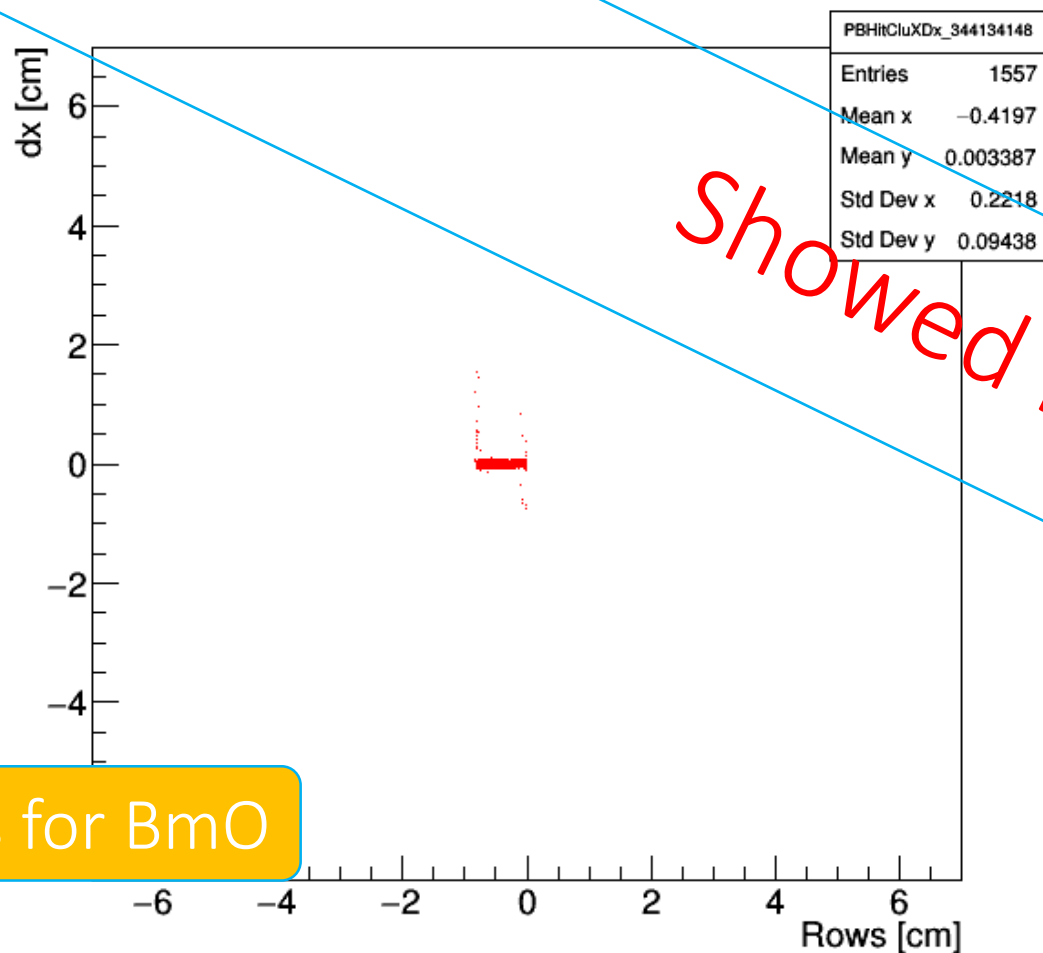
Rehit to nearest cluster distance in FPix_BmO_D3_BLD11_PNL2_PLQ1



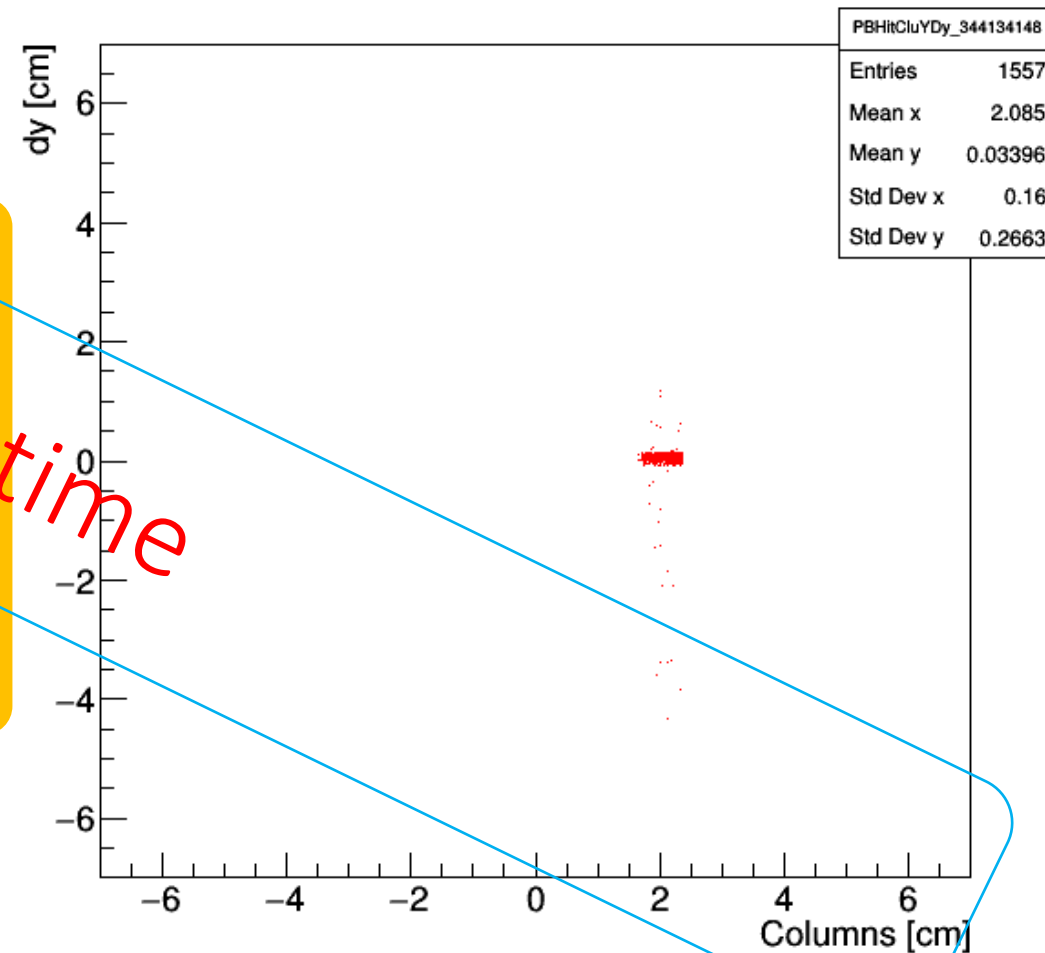
Position vs Residuals

FPix_BmO_D3_BLD11_PNL2_ROC(c)

Inactive rechit position (x) and the x residual FPix_BmO_D3_BLD11_PNL2_PLQ1



Inactive rechit position (y) and the y residual FPix_BmO_D3_BLD11_PNL2_PLQ1

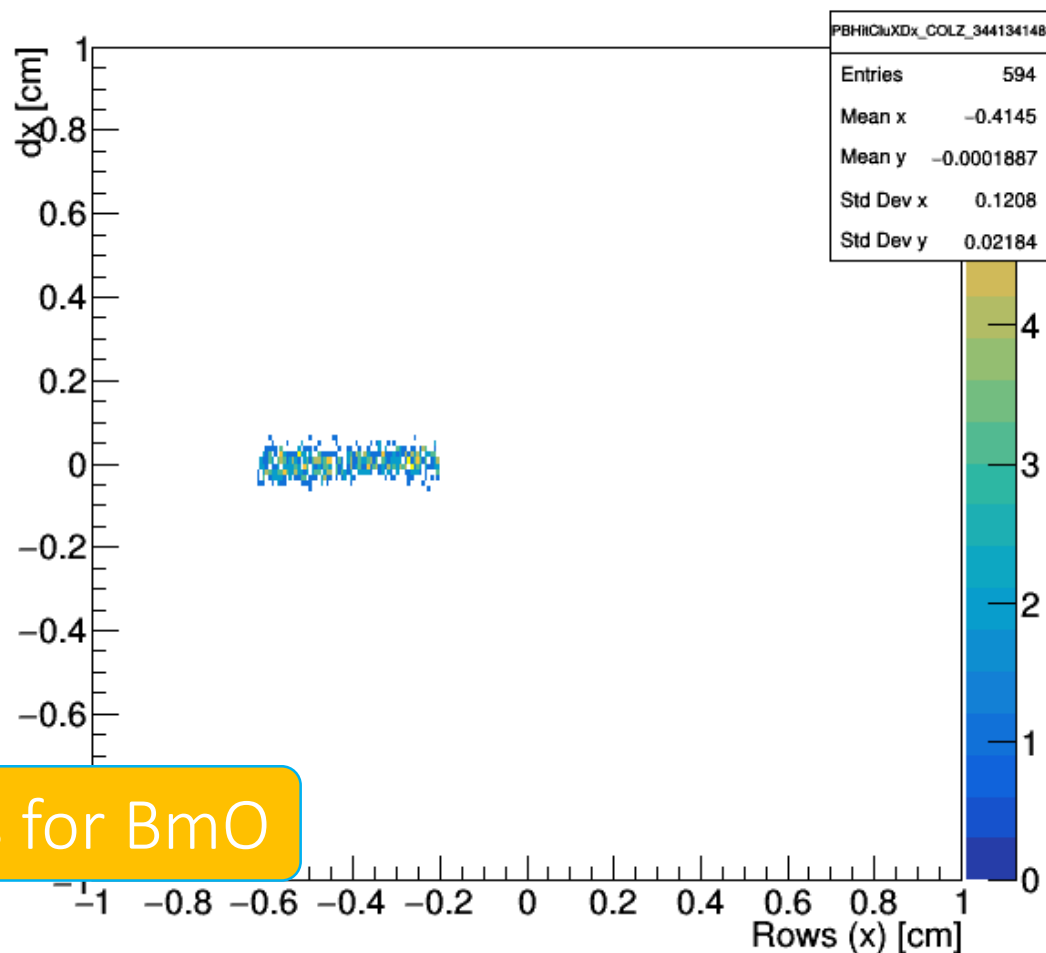


Showed last time

Position vs Residuals

FPix_BmO_D3_BLD11_PNL2_ROC(c)

Inactive rechit position (x) and the x residual FPix_BmO_D3_BLD11_PNL2_PLQ1

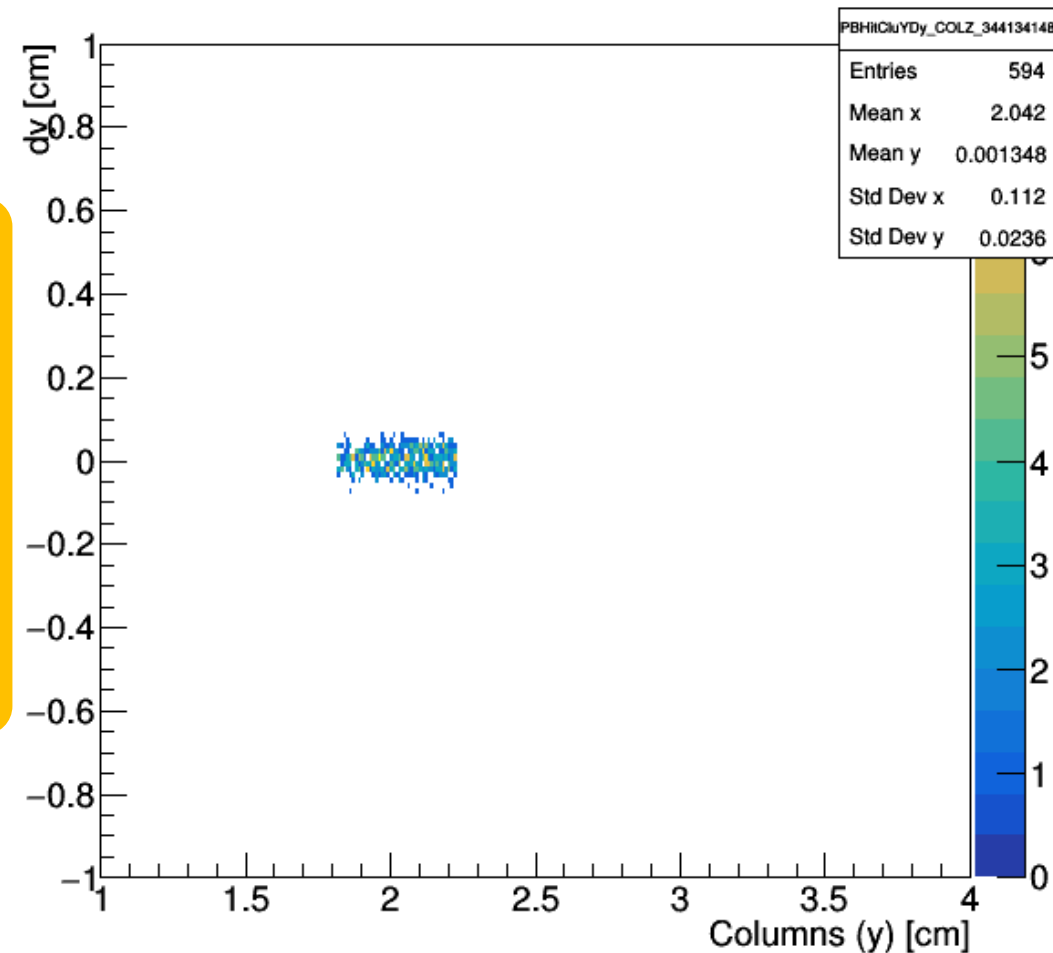


Azimuthal
direction

18 ns for BmO

Radial direction

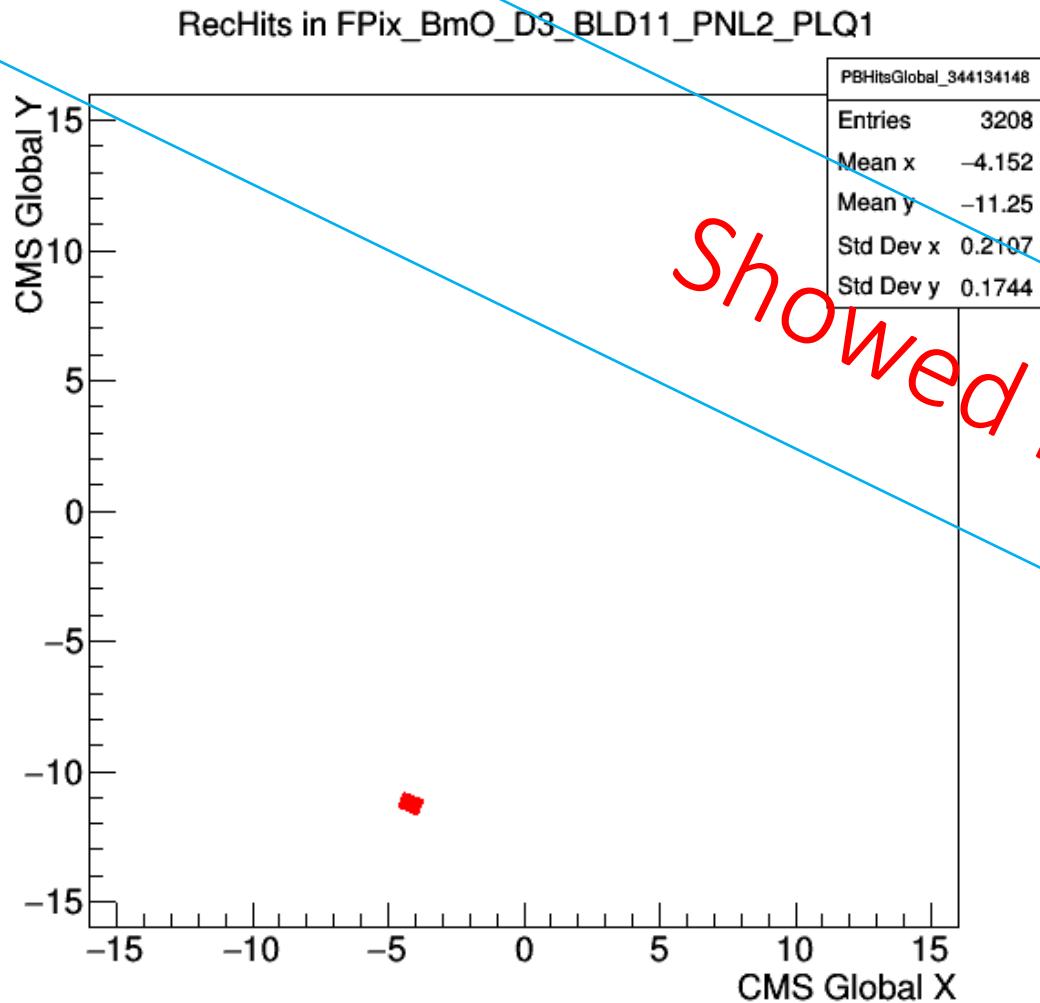
Inactive rechit position (y) and the y residual FPix_BmO_D3_BLD11_PNL2_PLQ1



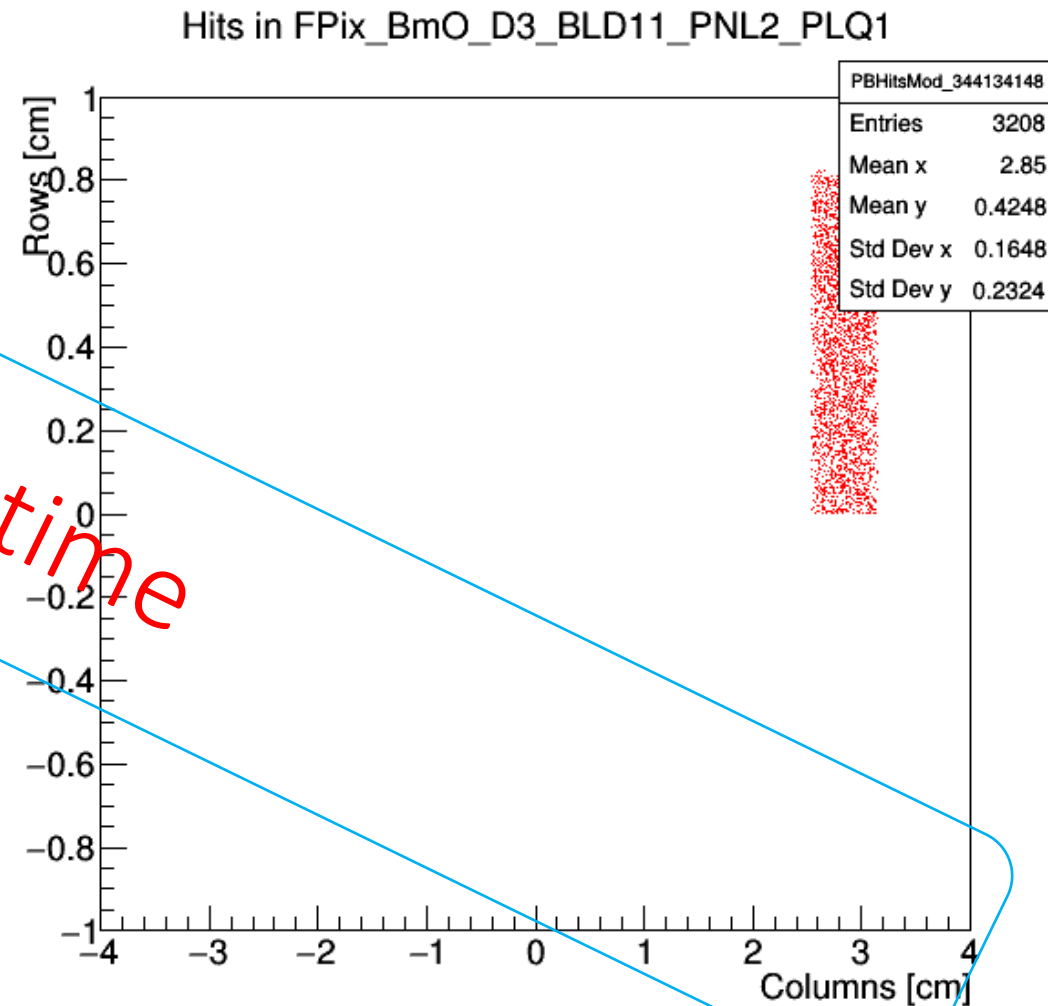
Position of the ROC

FPix_BmO_D3_BLD11_PNL2_ROC(b)

Global Position



Local Position

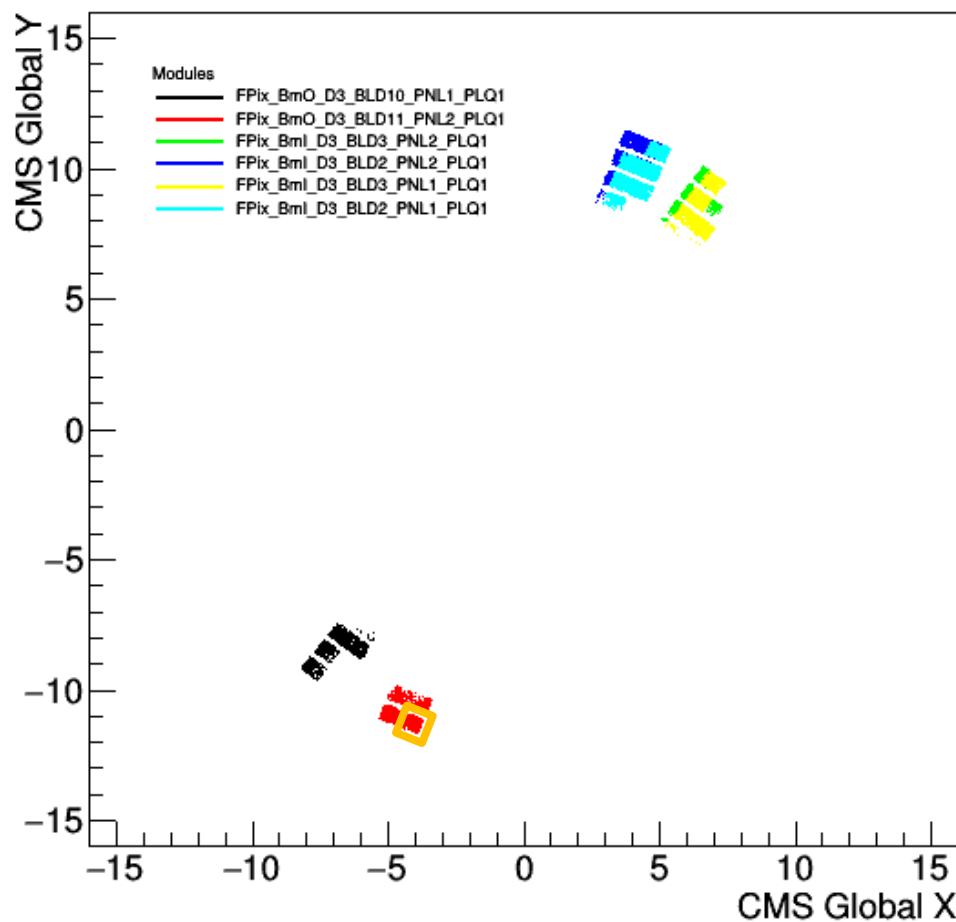


Shown last time

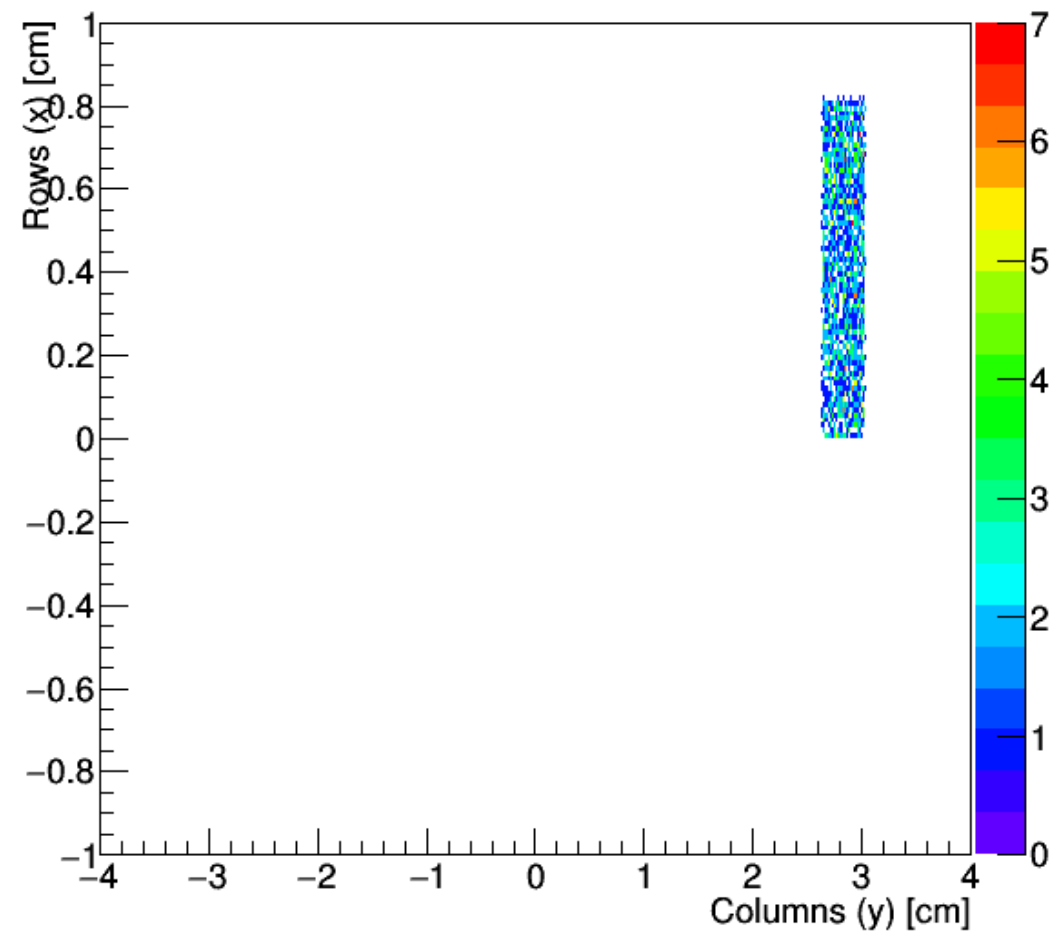
Position of the ROC

FPix_BmO_D3_BLD11_PNL2_ROC(b)

Rechits



Hits in FPix_BmO_D3_BLD11_PNL2_PLQ1



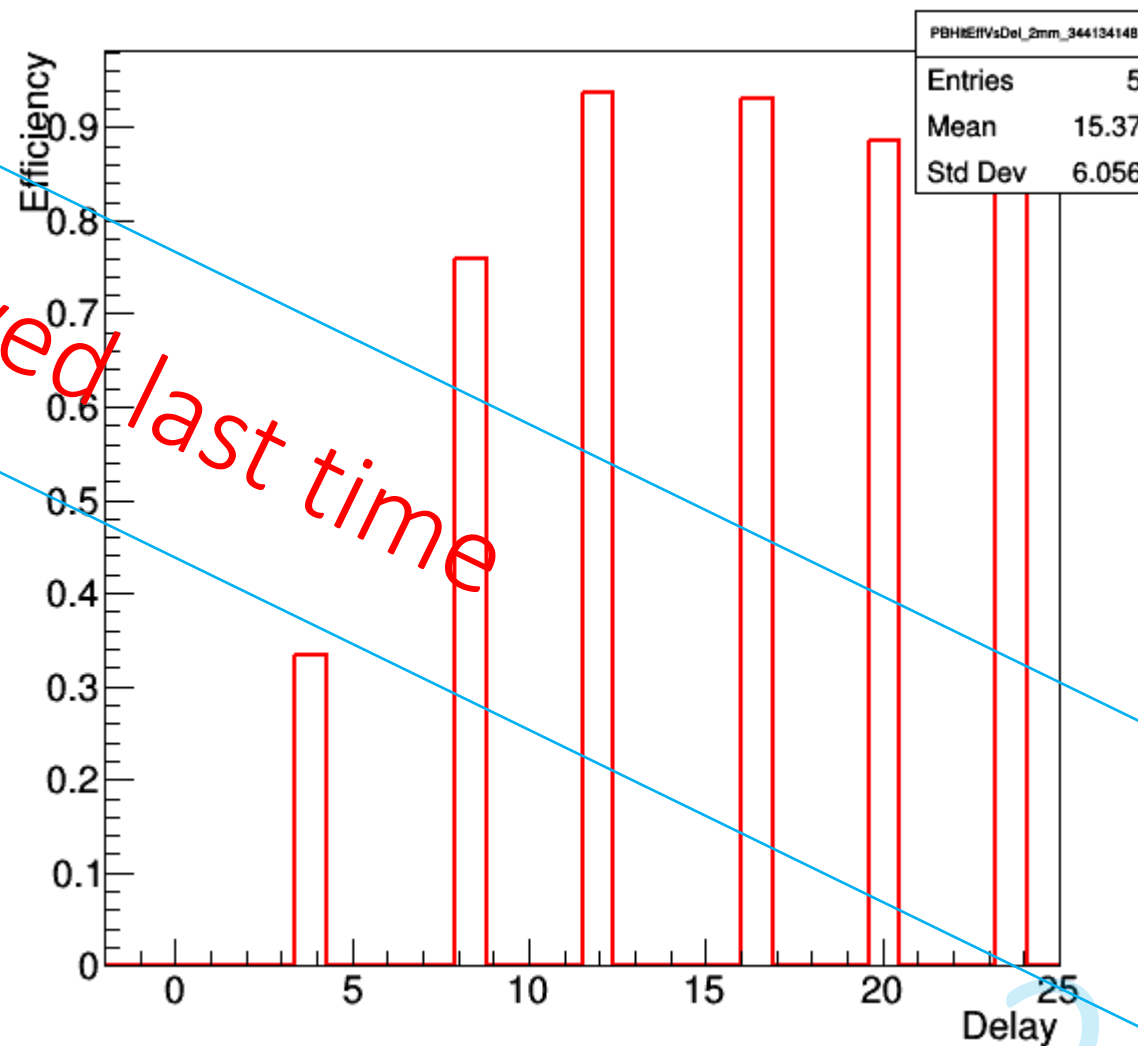
Efficiencies

FPix_BmO_D3_BLD11_PNL2_ROC(b)

$$\text{Efficiency} := \frac{\text{\#Found clusters}}{\text{\#expected clusters}}$$

In 2mm range

RecHit efficiency vs Delay in FPix_BmO_D3_BLD11_PNL2_PLQ1



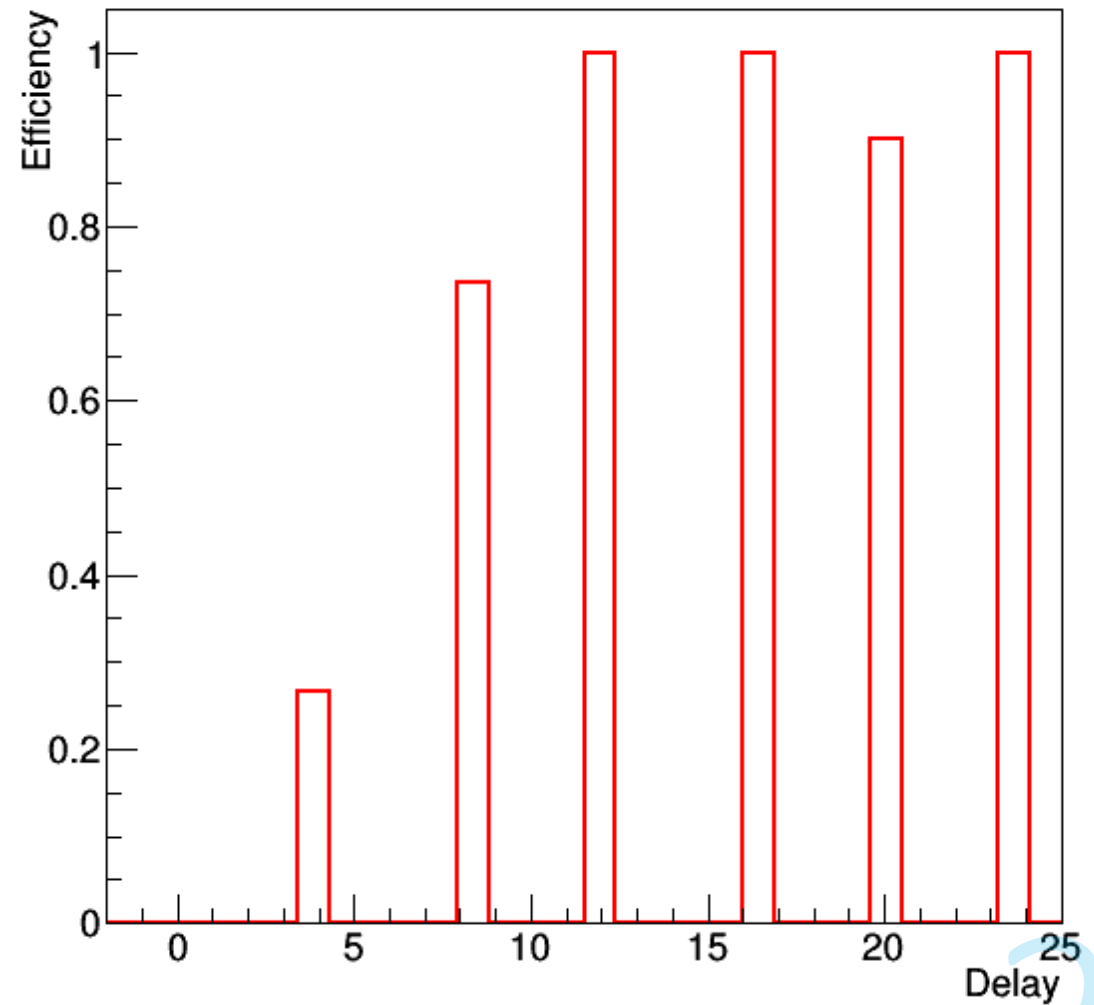
Efficiencies

$$\text{Efficiency} := \frac{\text{\#Found clusters}}{\text{\#expected clusters}}$$

In 2mm range

FPix_BmO_D3_BLD11_PNL2_ROC(b)

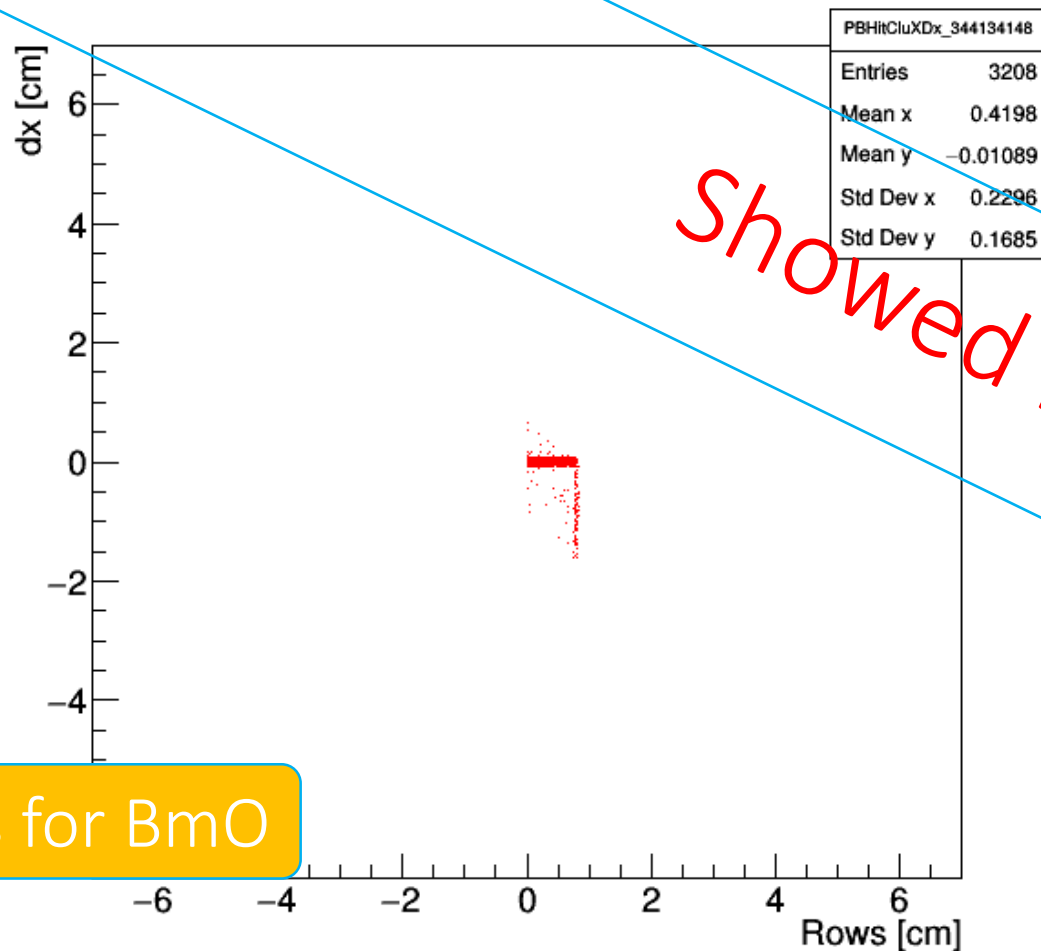
RecHit efficiency vs Delay in FPix_BmO_D3_BLD11_PNL2_PLQ1



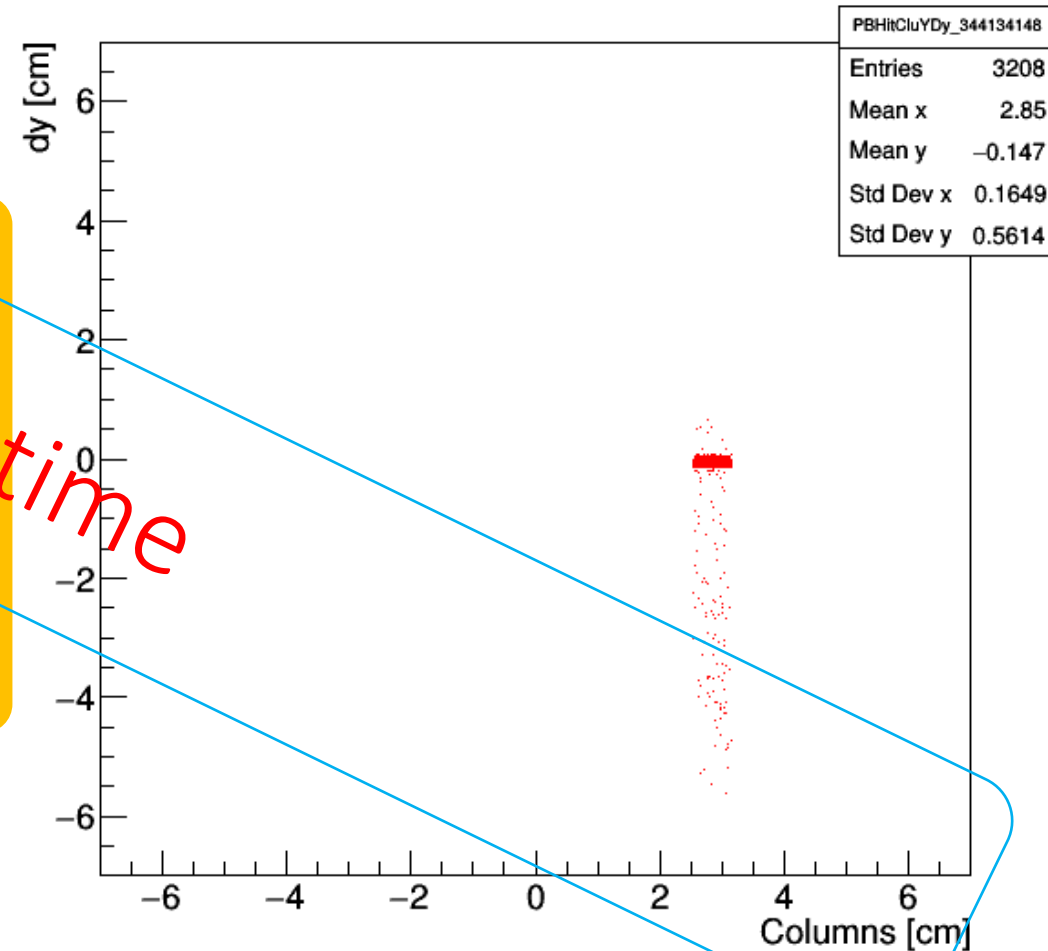
Position vs Residuals

FPix_BmO_D3_BLD11_PNL2_ROC(b)

Inactive rechit position (x) and the x residual FPix_BmO_D3_BLD11_PNL2_PLQ1



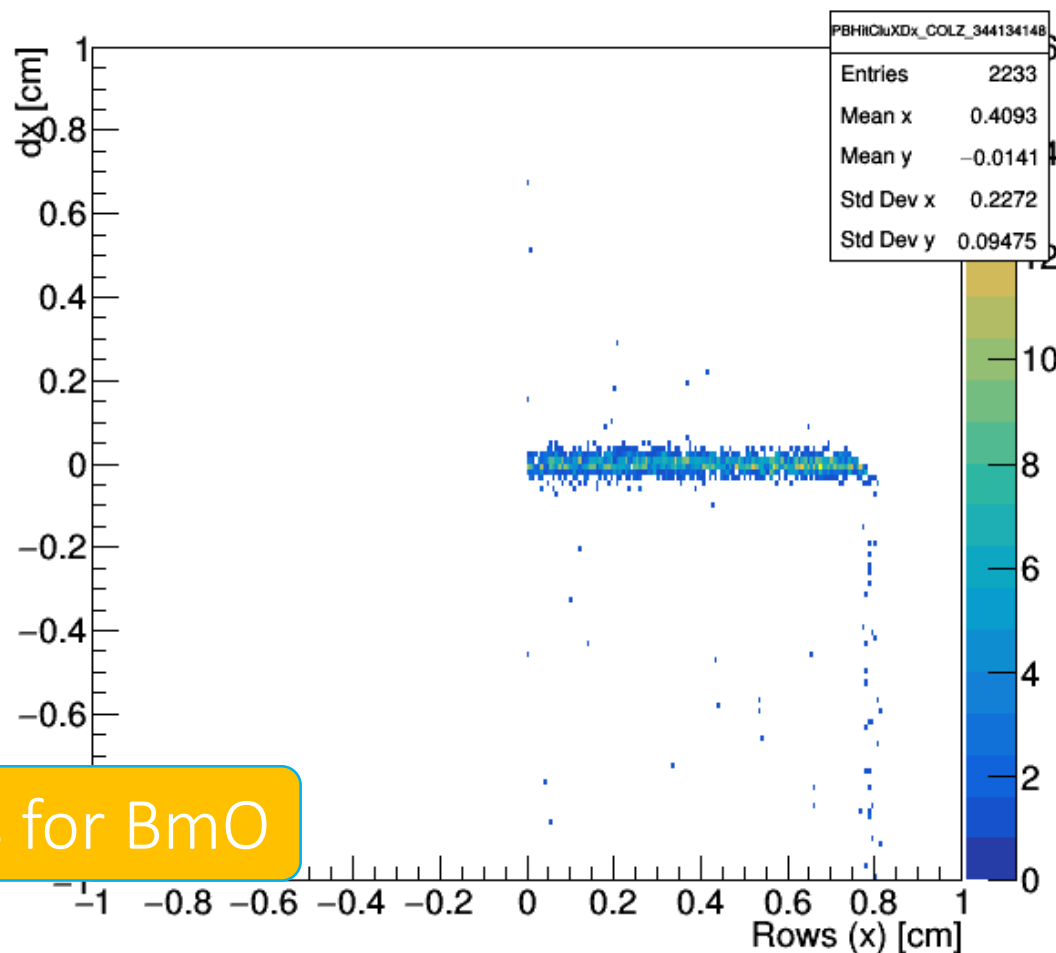
Inactive rechit position (y) and the y residual FPix_BmO_D3_BLD11_PNL2_PLQ1



Position vs Residuals

FPix_BmO_D3_BLD11_PNL2_ROC(b)

Inactive rechit position (x) and the x residual FPix_BmO_D3_BLD11_PNL2_PLQ1

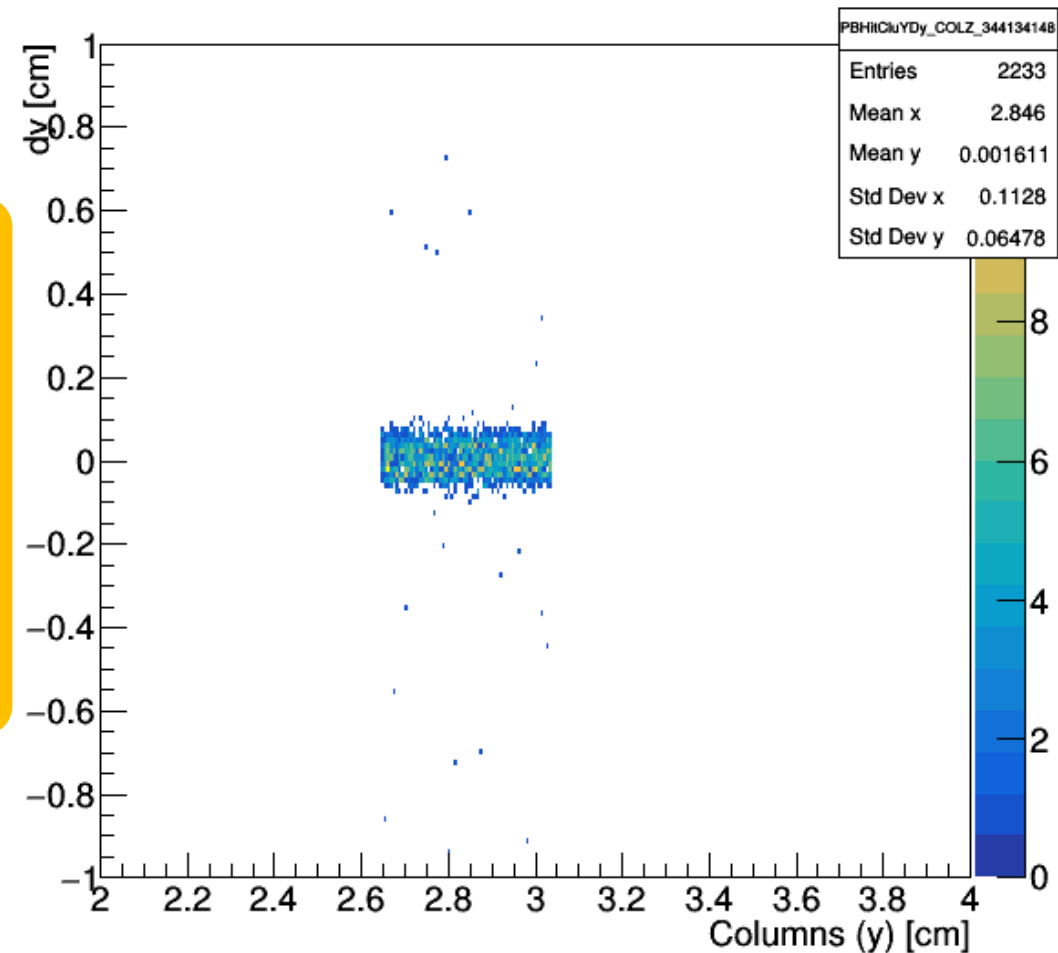


Azimuthal
direction

18 ns for BmO

Radial direction

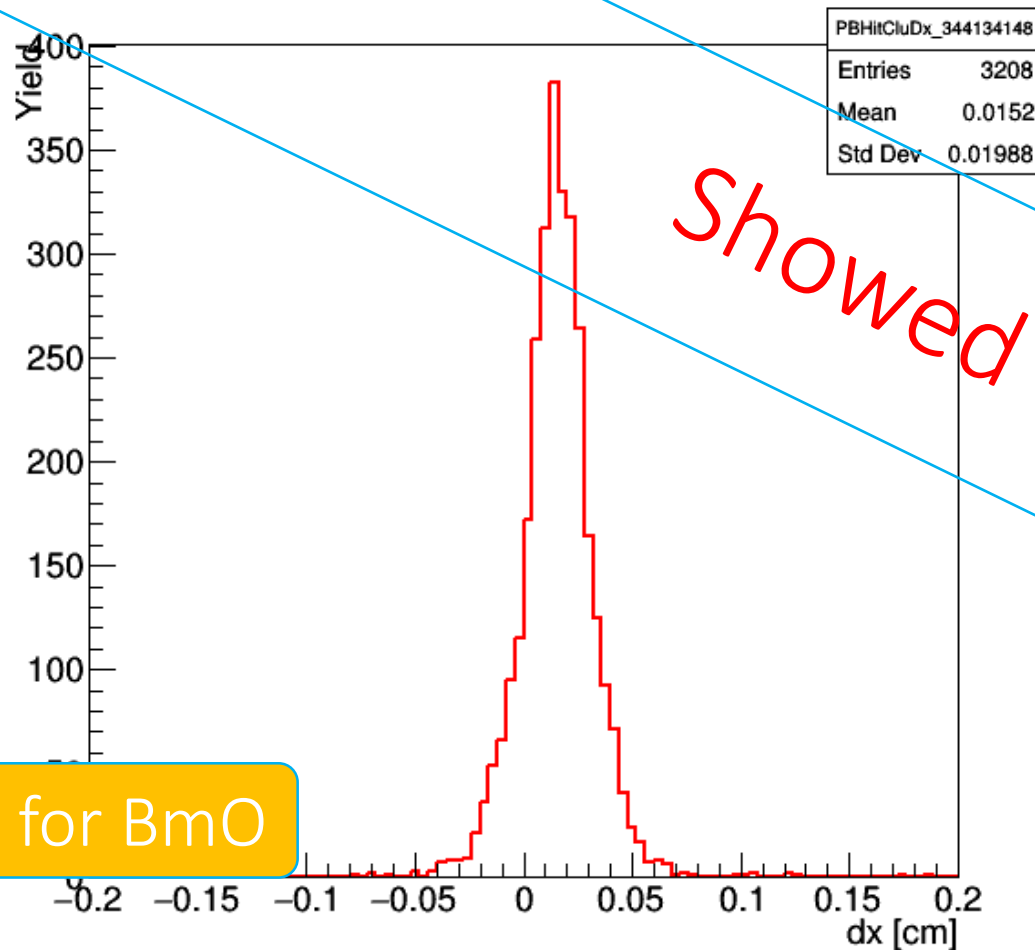
Inactive rechit position (y) and the y residual FPix_BmO_D3_BLD11_PNL2_PLQ1



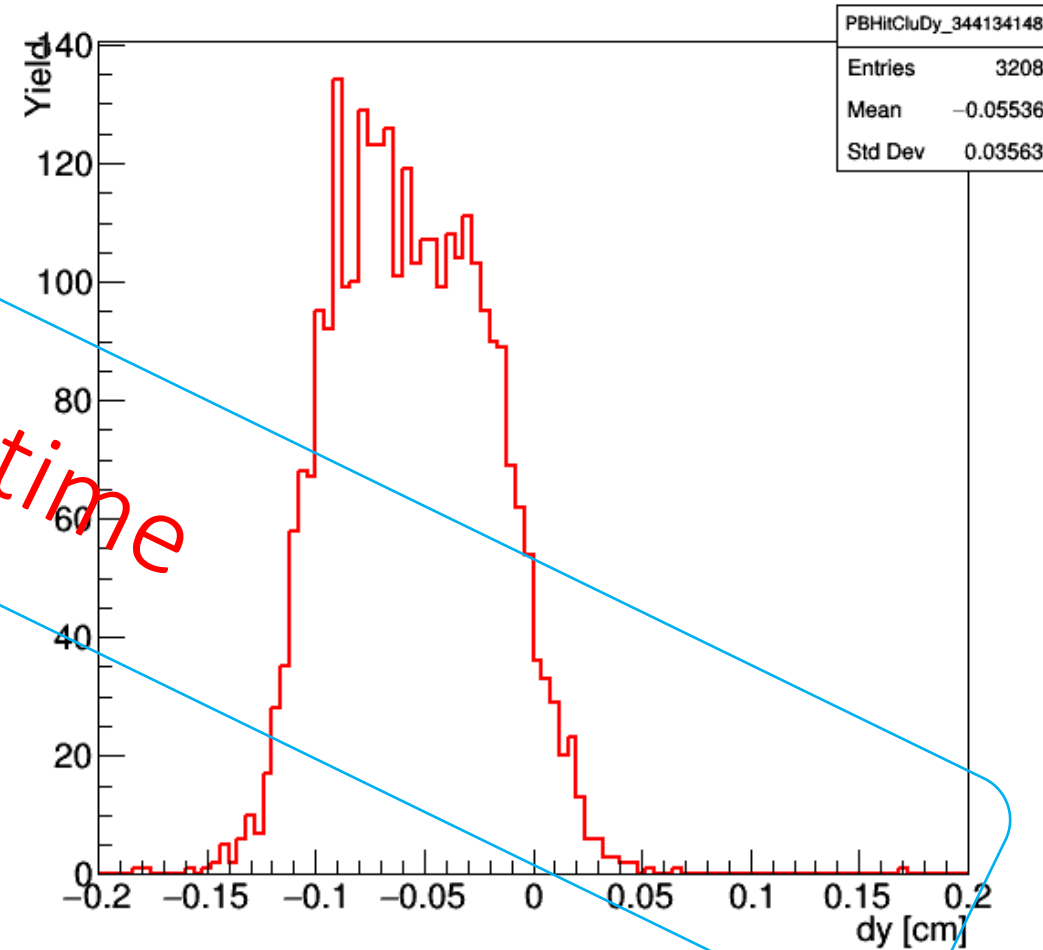
Residuals (Zoomed)

FPix_BmO_D3_BLD11_PNL2_ROC(b)

Rechit to nearest cluster distance in FPix_BmO_D3_BLD11_PNL2_PLQ1



Rechit to nearest cluster distance in FPix_BmO_D3_BLD11_PNL2_PLQ1

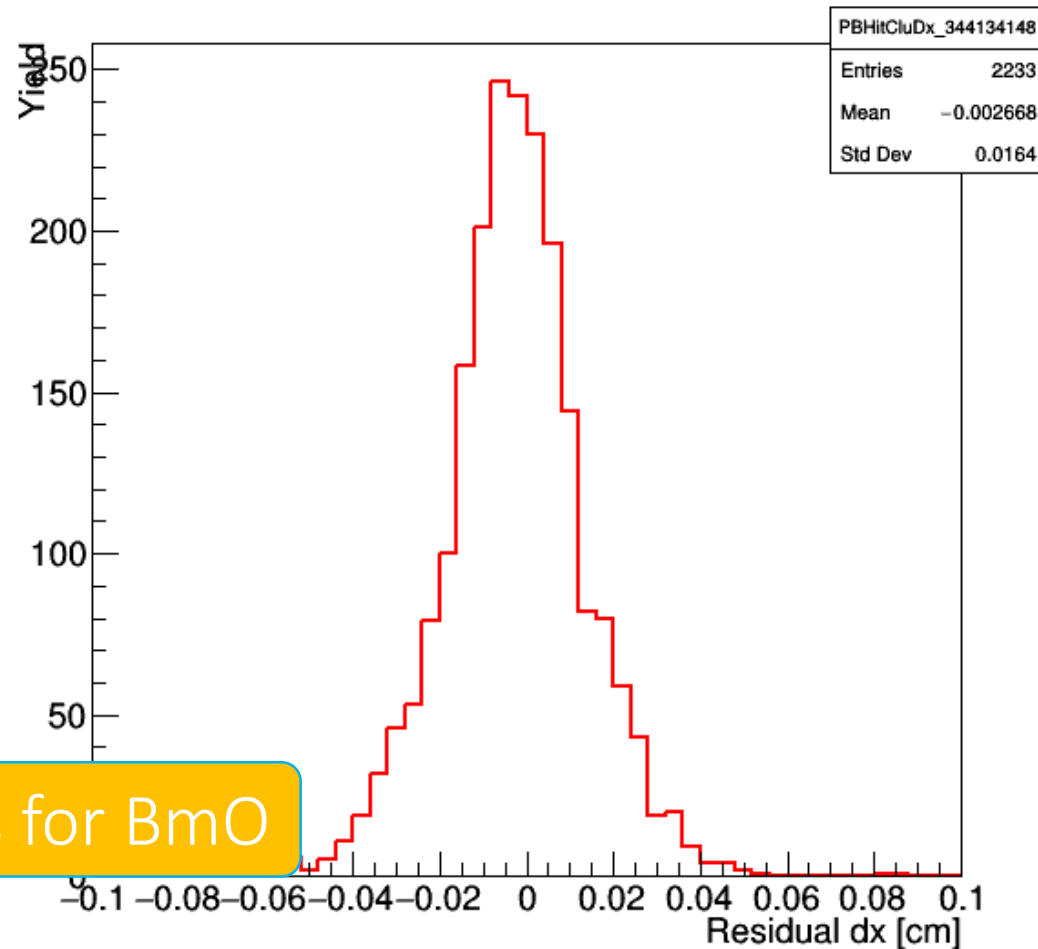


Showed last time

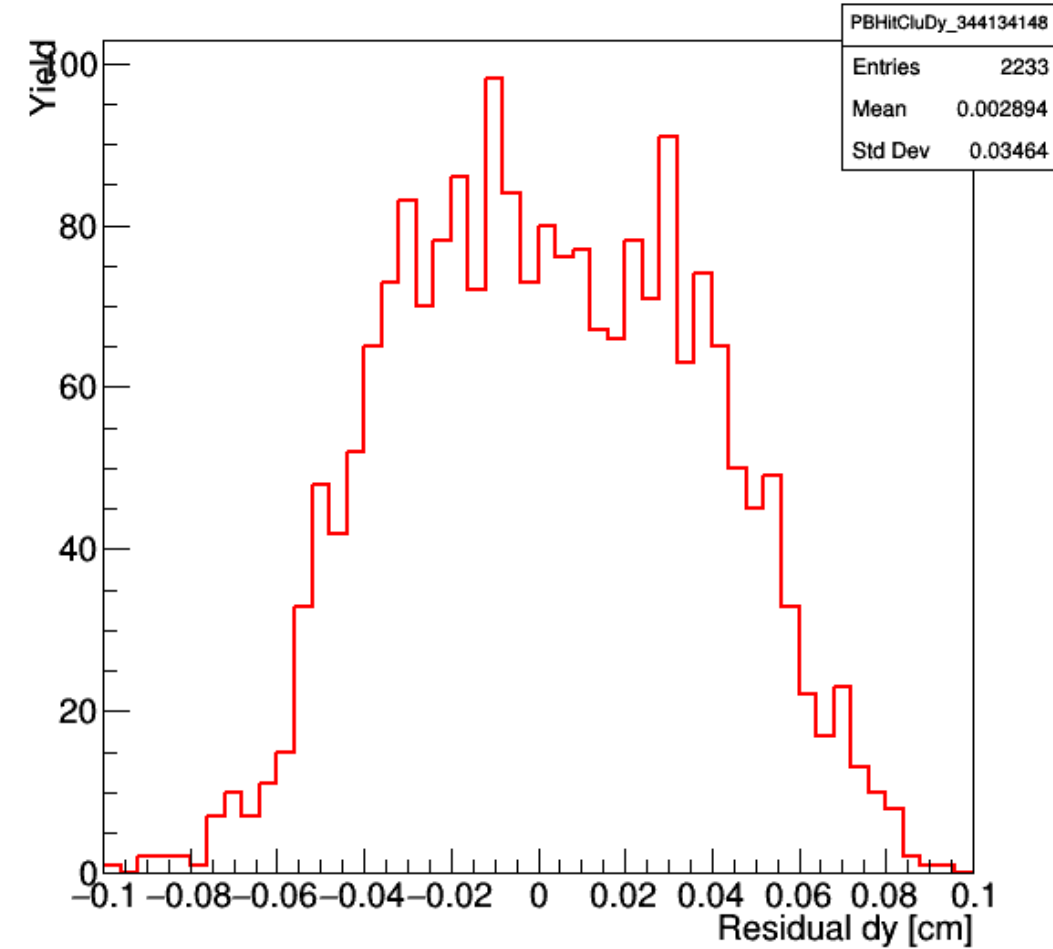
Residuals (Zoomed)

FPix_BmO_D3_BLD11_PNL2_ROC(b)

Rehit to nearest cluster distance in FPix_BmO_D3_BLD11_PNL2_PLQ1



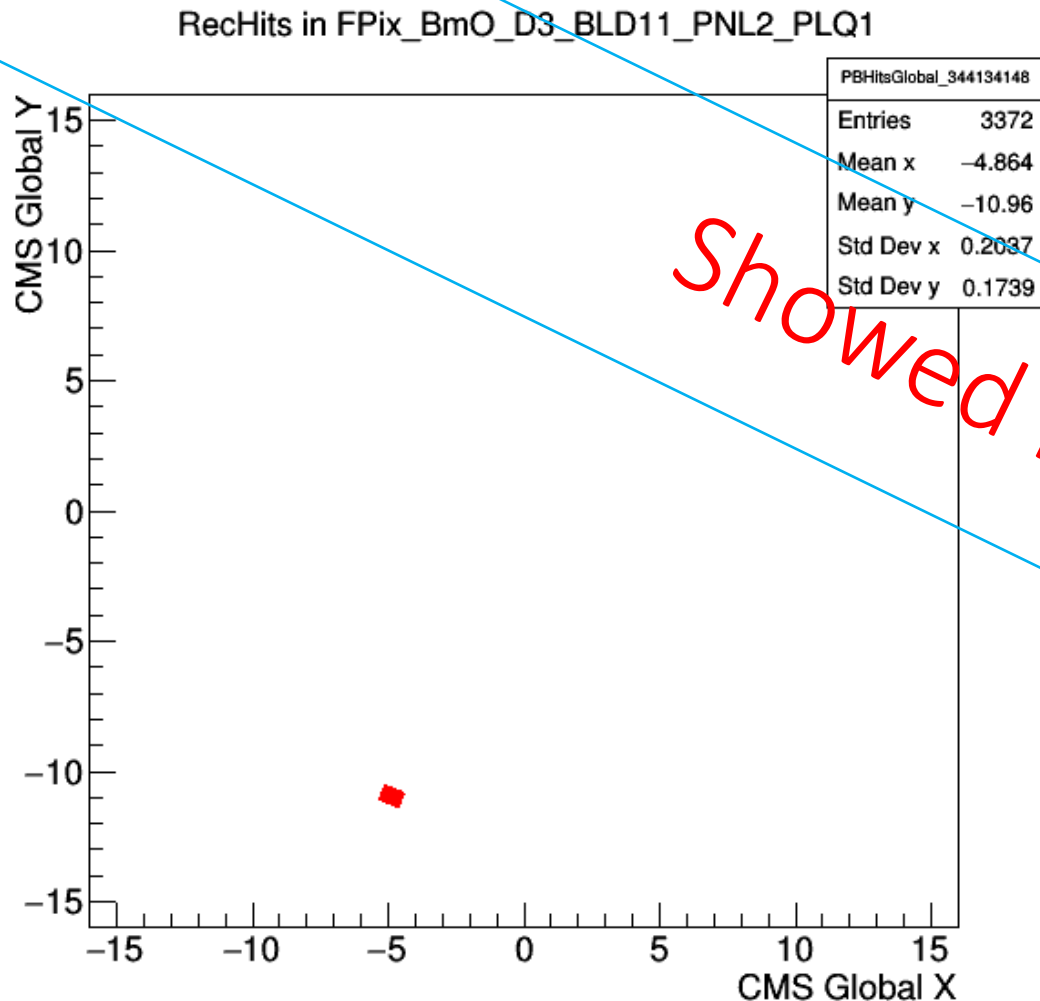
Rehit to nearest cluster distance in FPix_BmO_D3_BLD11_PNL2_PLQ1



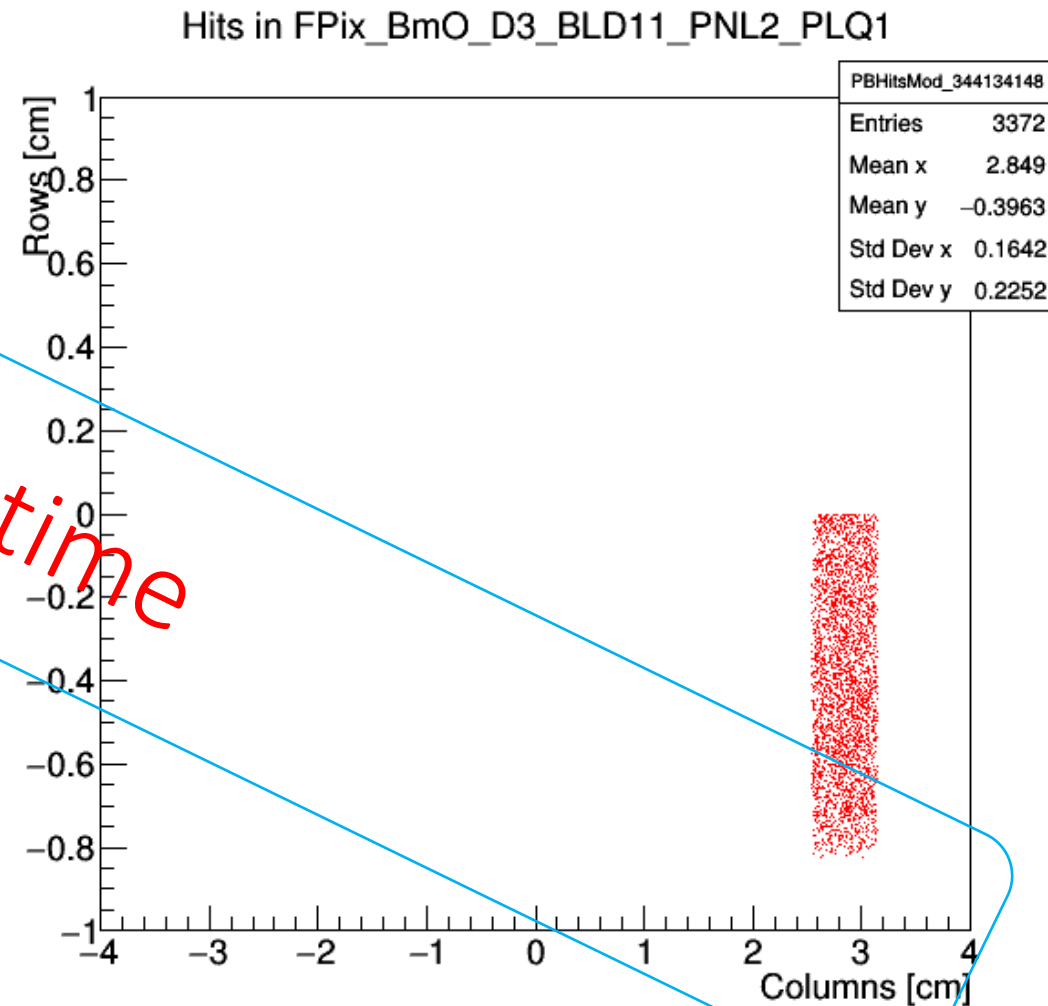
Position of the ROC

FPix_BmO_D3_BLD11_PNL2_ROC(d)

Global Position



Local Position

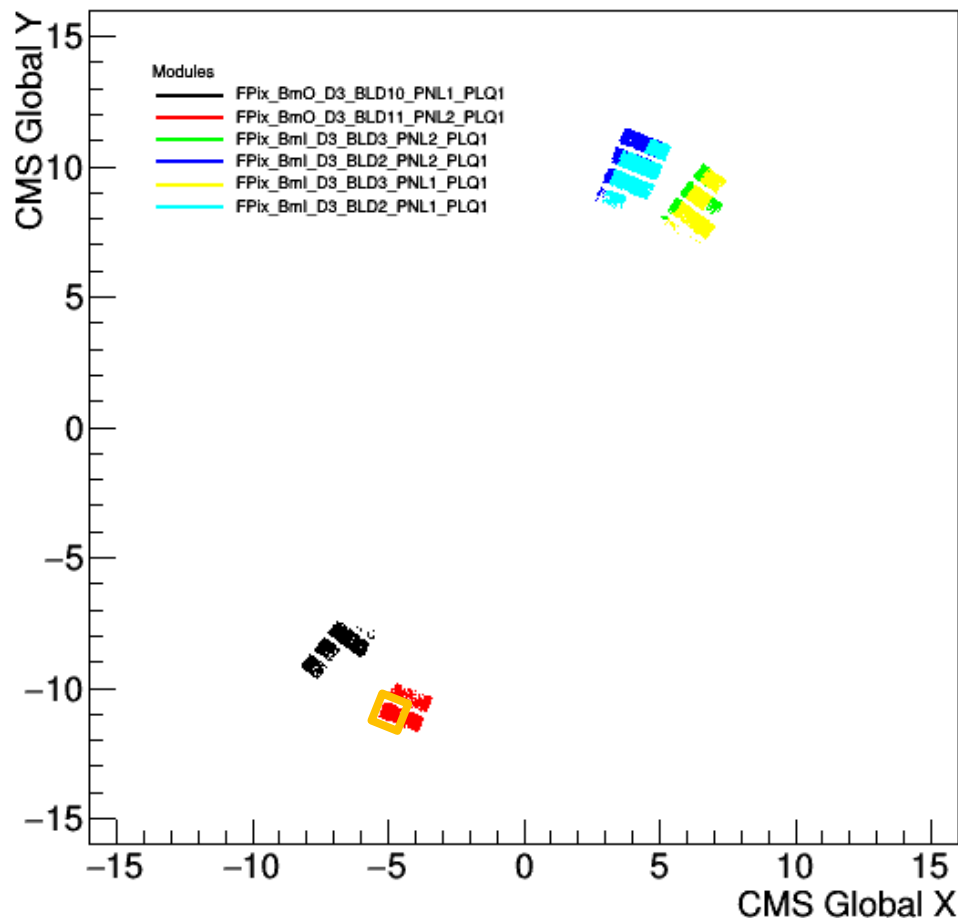


Shown last time

Position of the ROC

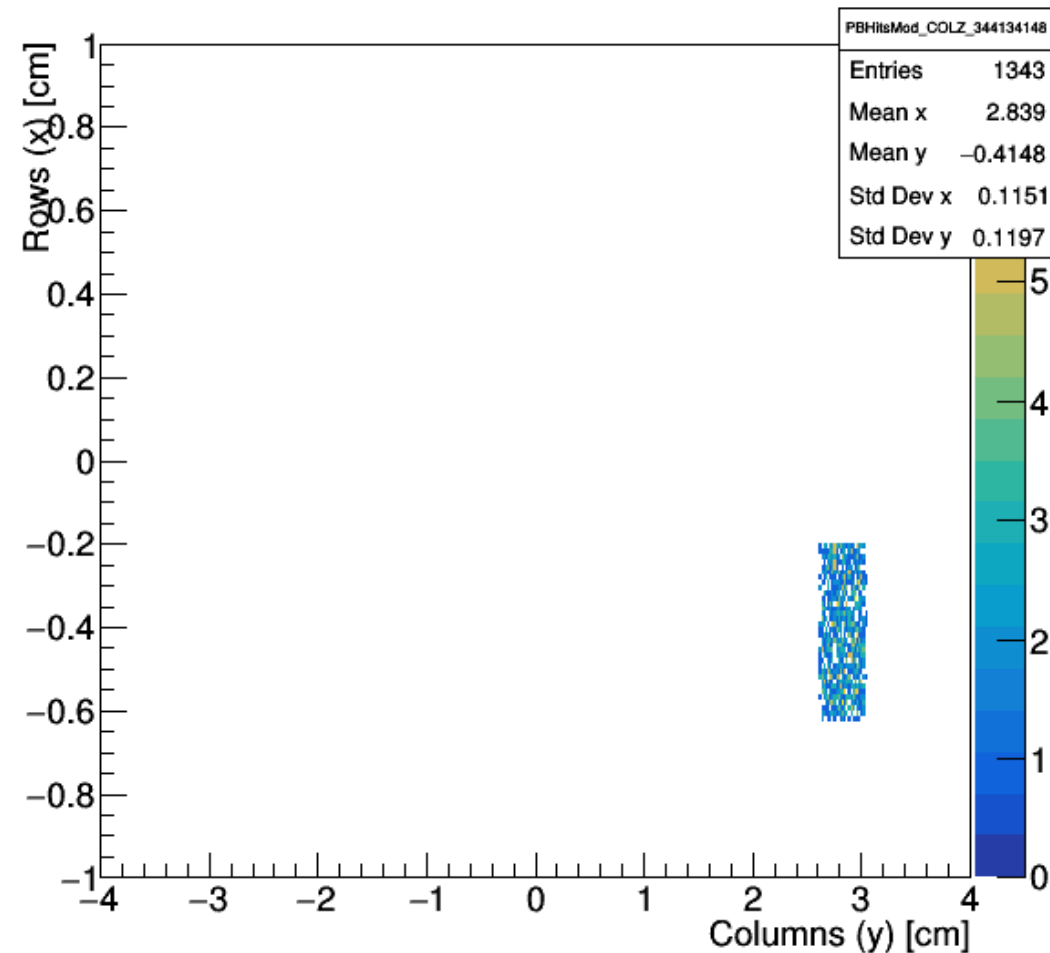
FPix_BmO_D3_BLD11_PNL2_ROC(d)

ReHits



Global Position

Hits in FPix_BmO_D3_BLD11_PNL2_PLQ1



Local Position

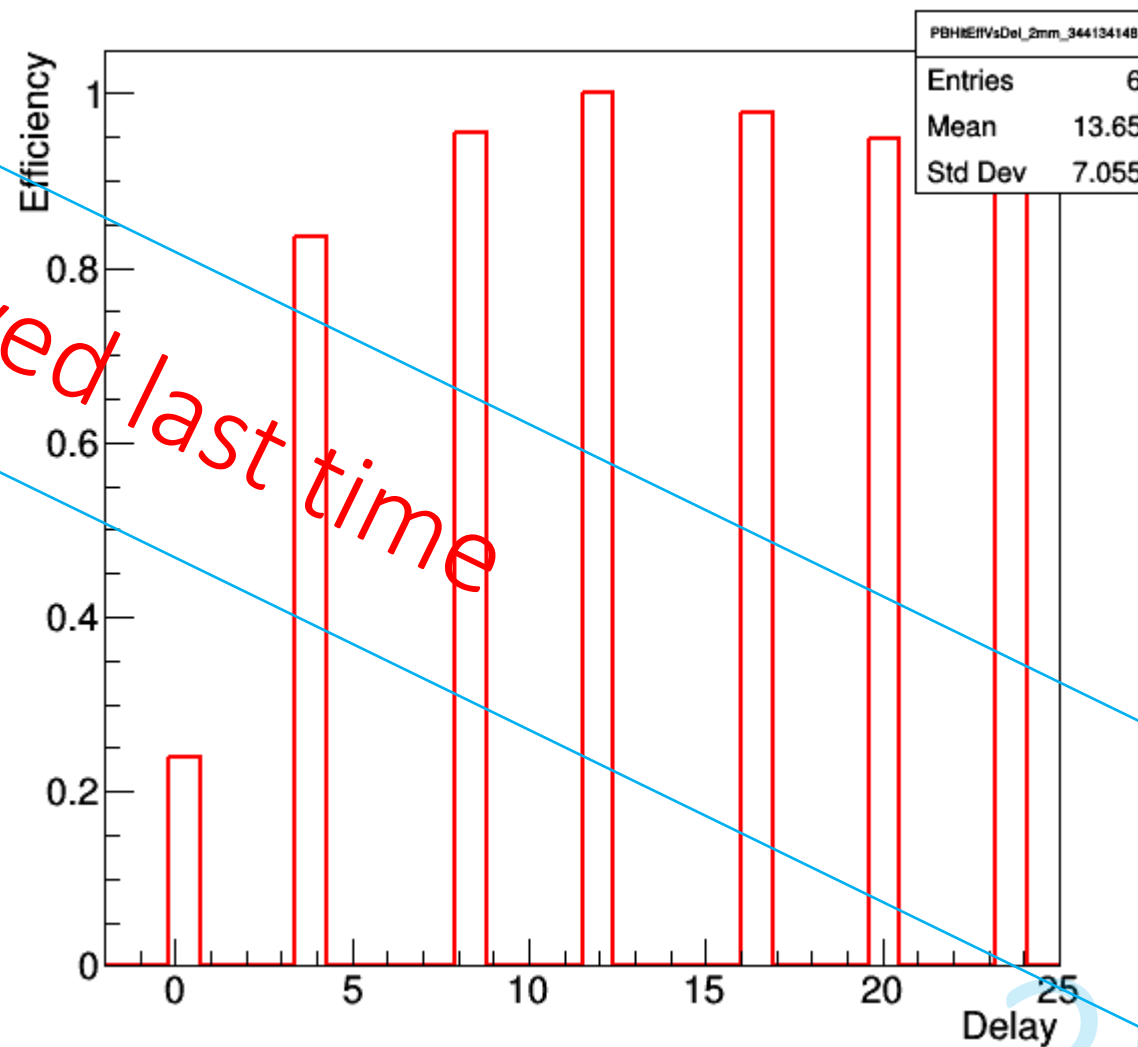
Efficiencies

FPix_BmO_D3_BLD11_PNL2_ROC(d)

$$\text{Efficiency} := \frac{\text{\#Found clusters}}{\text{\#expected clusters}}$$

In 2mm range

RecHit efficiency vs Delay in FPix_BmO_D3_BLD11_PNL2_PLQ1



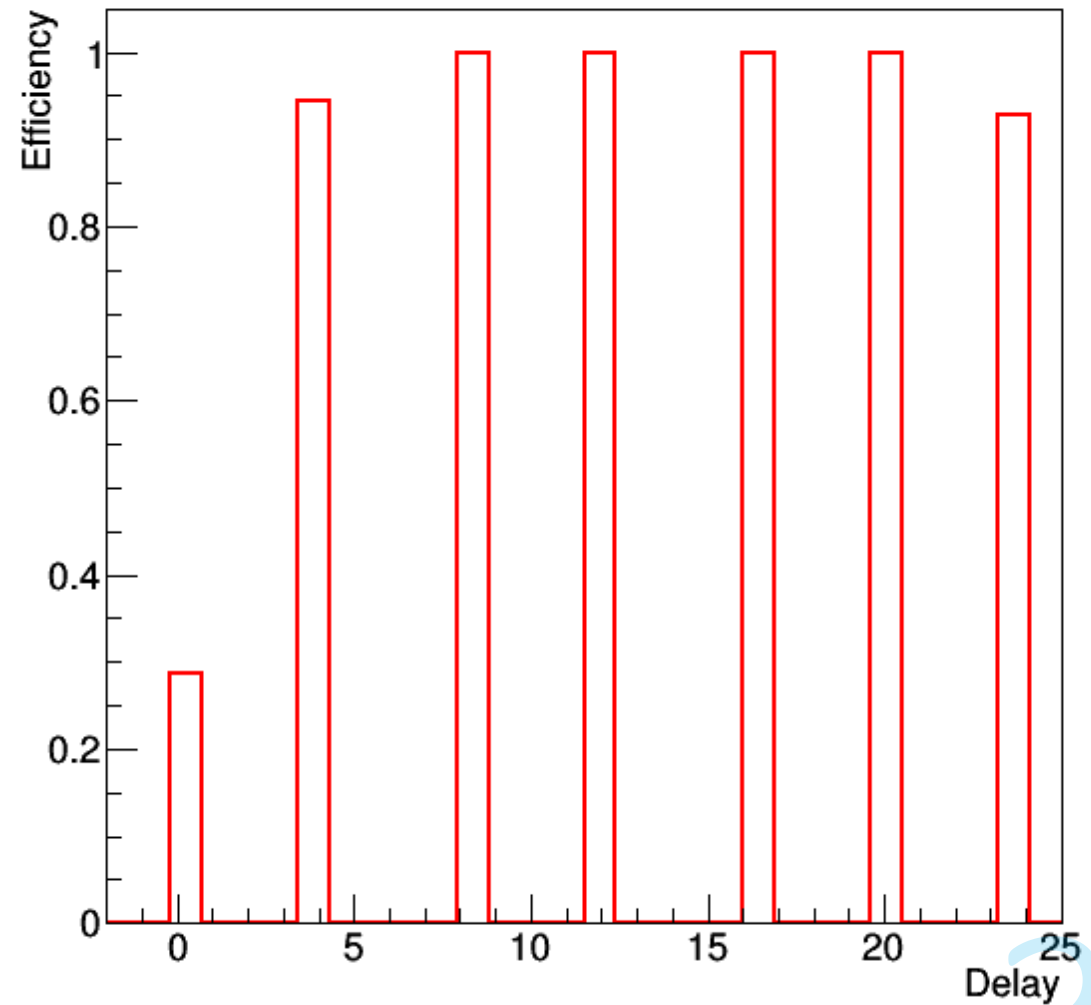
Efficiencies

$$\text{Efficiency} := \frac{\text{\#Found clusters}}{\text{\#expected clusters}}$$

In 2mm range

FPix_BmO_D3_BLD11_PNL2_ROC(d)

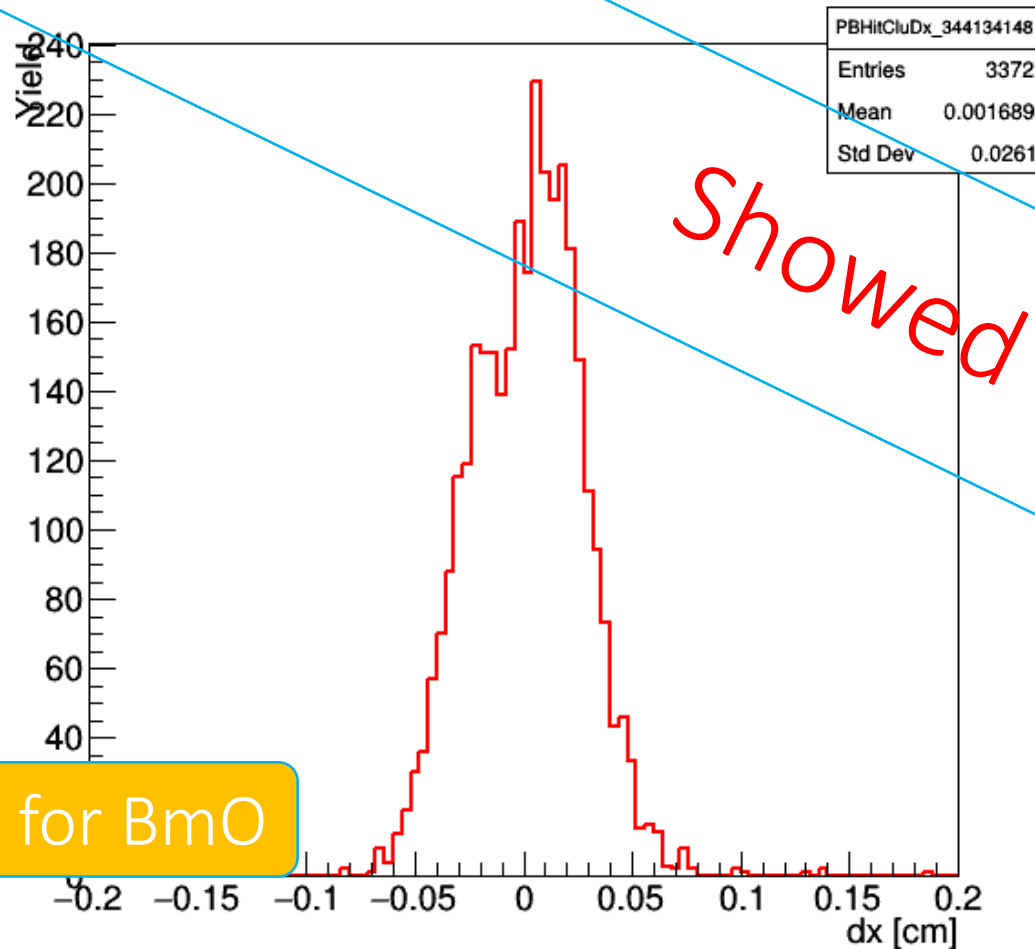
RecHit efficiency vs Delay in FPix_BmO_D3_BLD11_PNL2_PLQ1



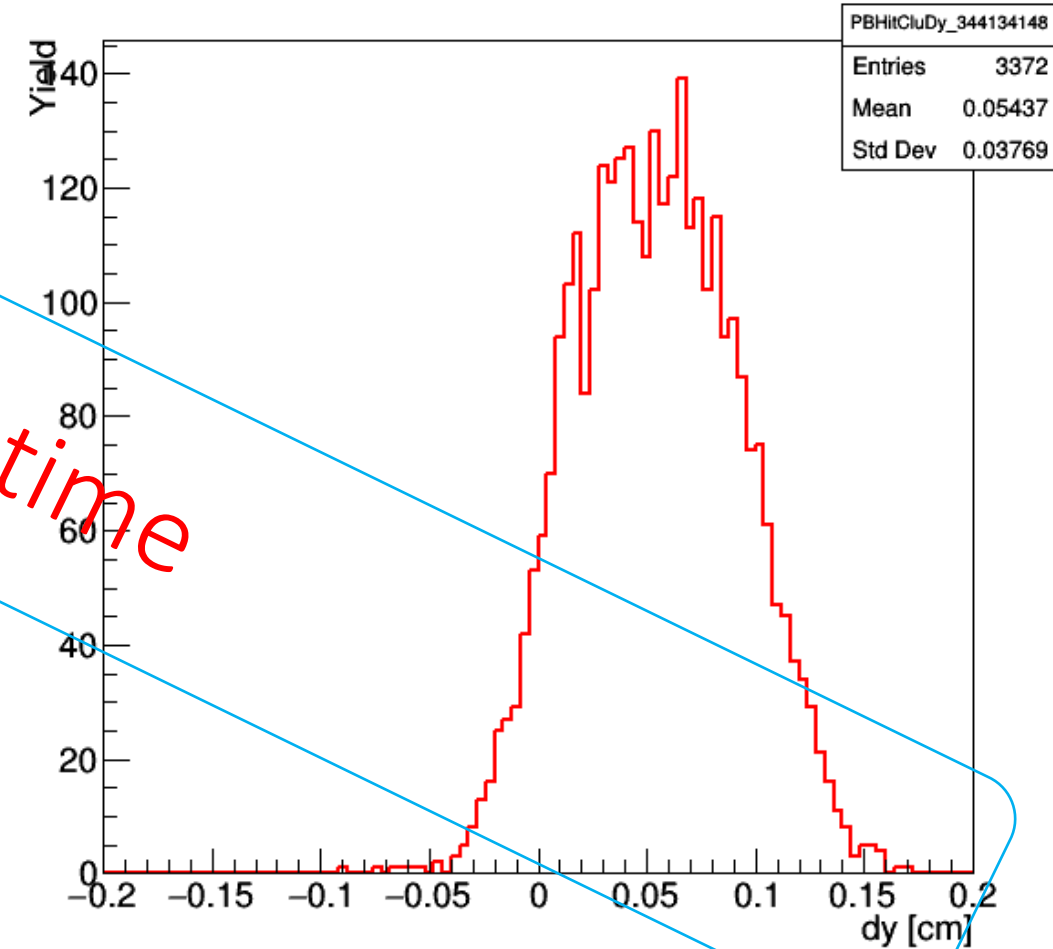
Residuals (Zoomed)

FPix_BmO_D3_BLD11_PNL2_ROC(d)

Rechit to nearest cluster distance in FPix_BmO_D3_BLD11_PNL2_PLQ1



Rechit to nearest cluster distance in FPix_BmO_D3_BLD11_PNL2_PLQ1

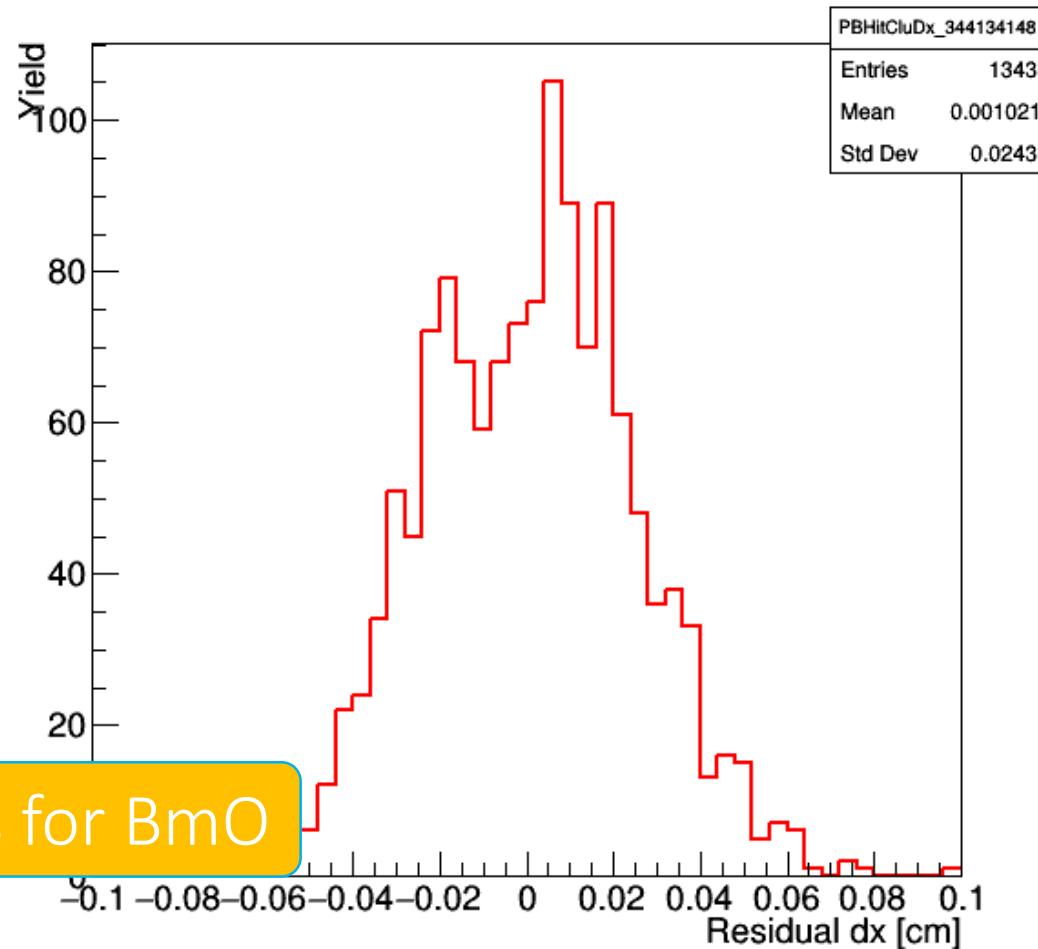


Showed last time

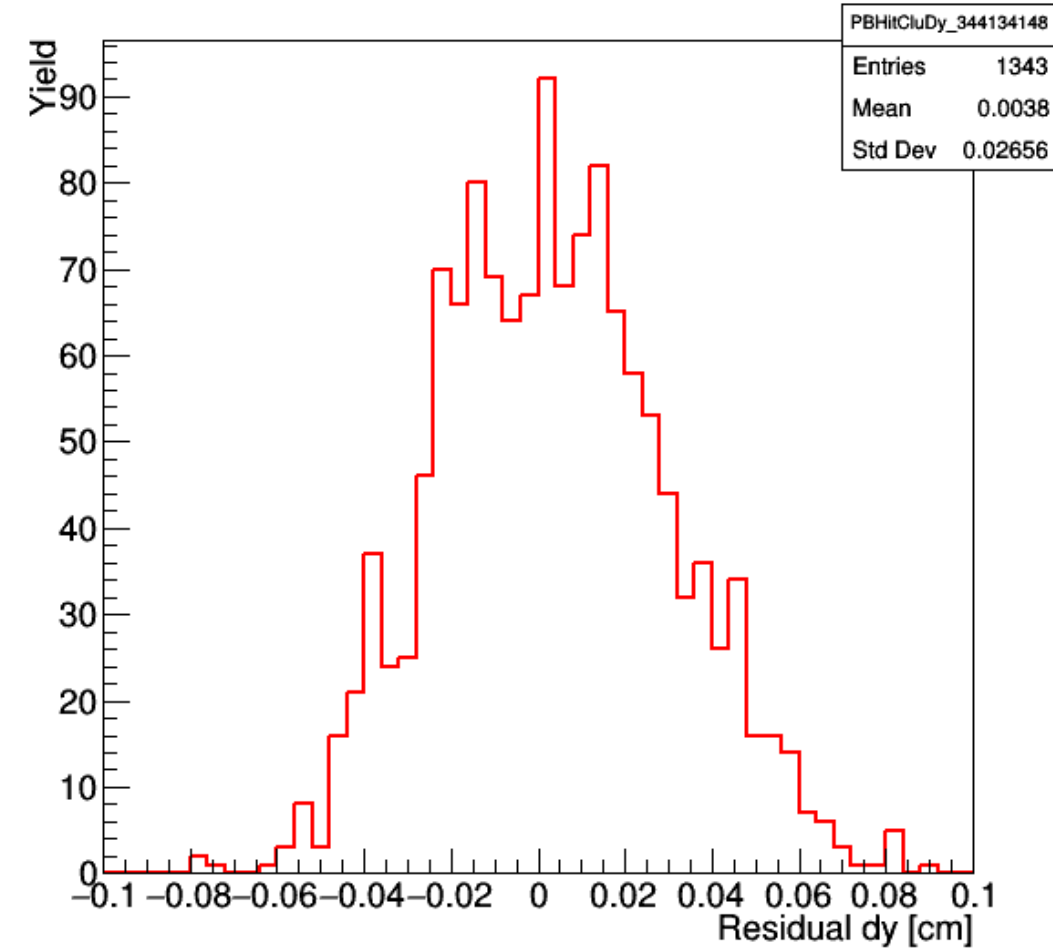
Residuals (Zoomed)

FPix_BmO_D3_BLD11_PNL2_ROC(d)

Rehit to nearest cluster distance in FPix_BmO_D3_BLD11_PNL2_PLQ1



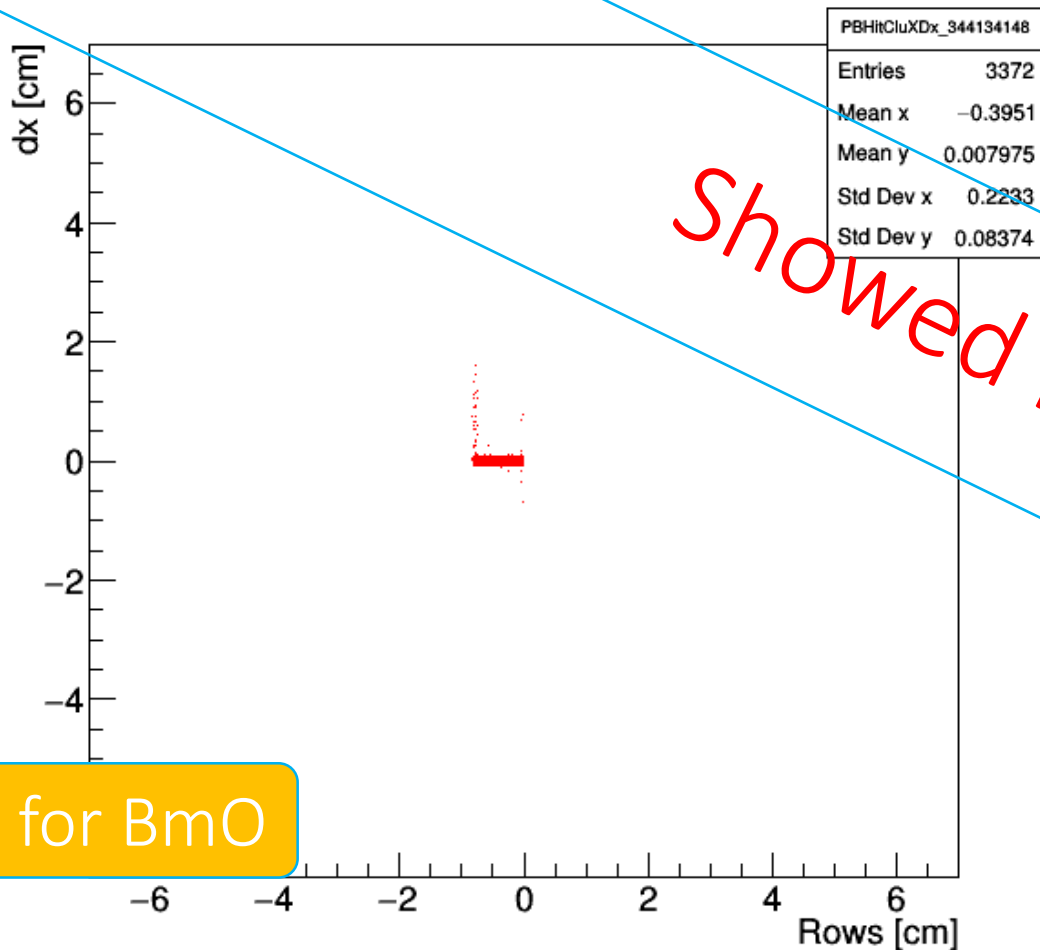
Rehit to nearest cluster distance in FPix_BmO_D3_BLD11_PNL2_PLQ1



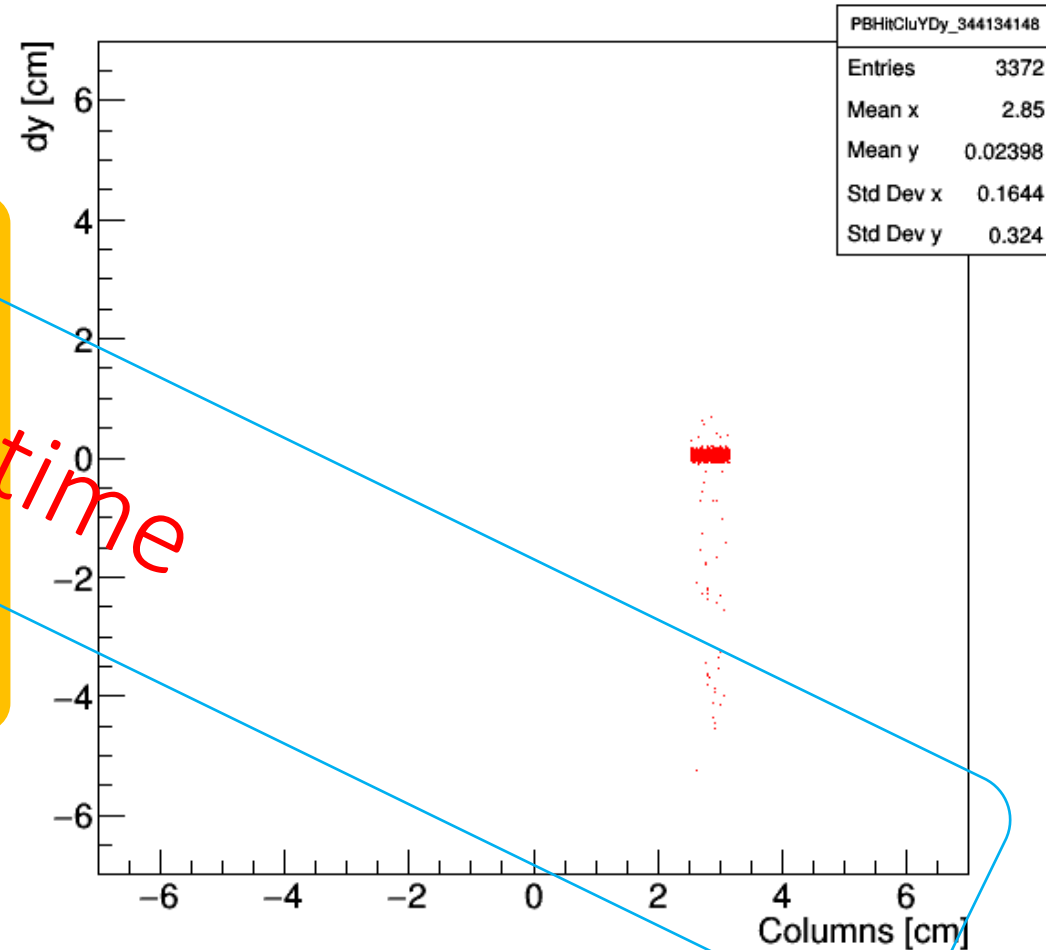
Position vs Residuals

FPix_BmO_D3_BLD11_PNL2_ROC(d)

Inactive rechit position (x) and the x residual FPix_BmO_D3_BLD11_PNL2_PLQ1



Inactive rechit position (y) and the y residual FPix_BmO_D3_BLD11_PNL2_PLQ1

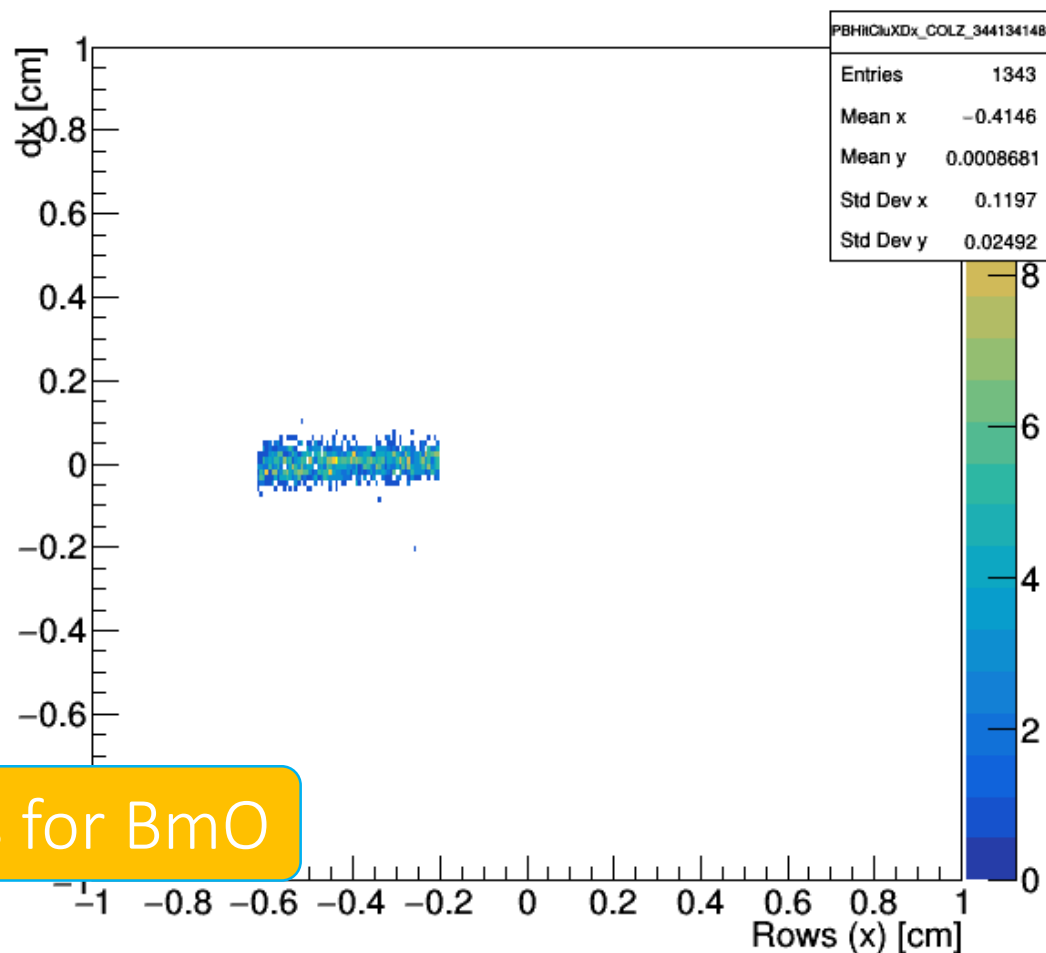


Showed last time

Position vs Residuals

FPix_BmO_D3_BLD11_PNL2_ROC(d)

Inactive rechit position (x) and the x residual FPix_BmO_D3_BLD11_PNL2_PLQ1

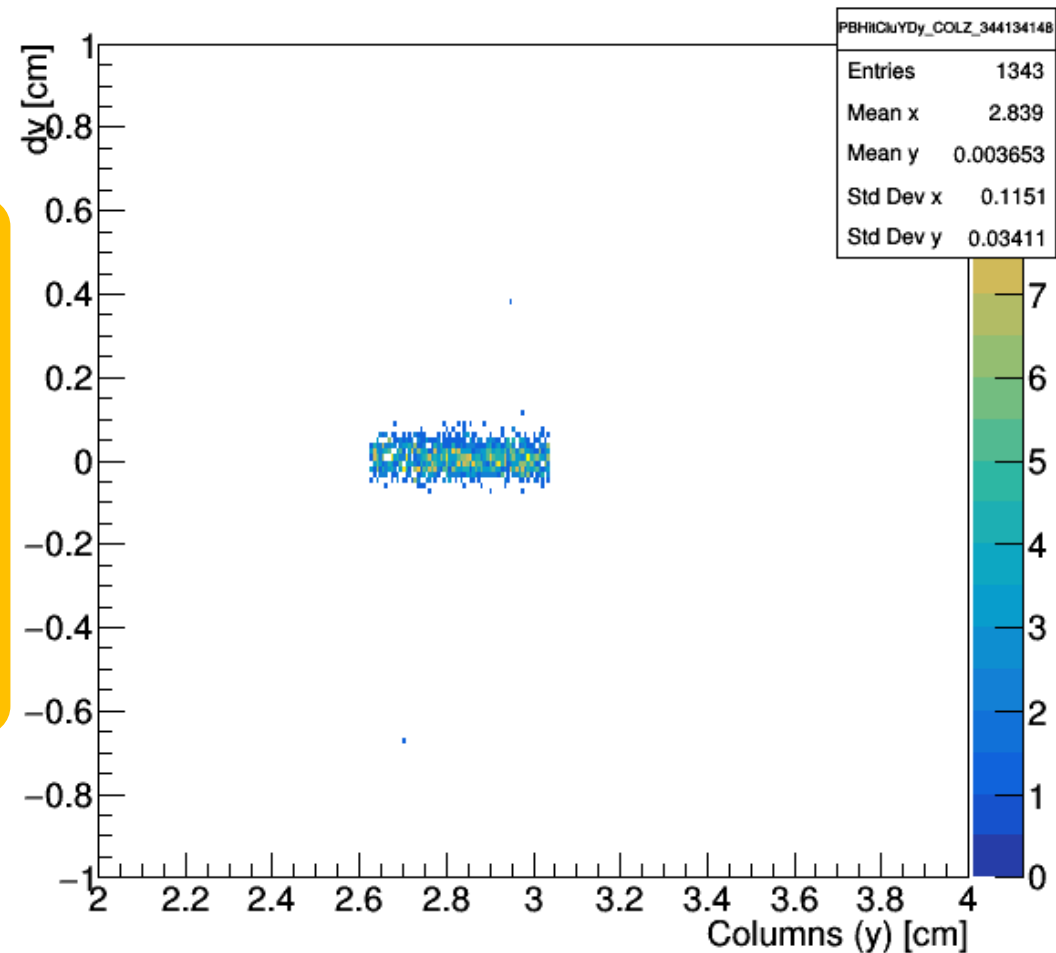


Azimuthal
direction

18 ns for BmO

Radial direction

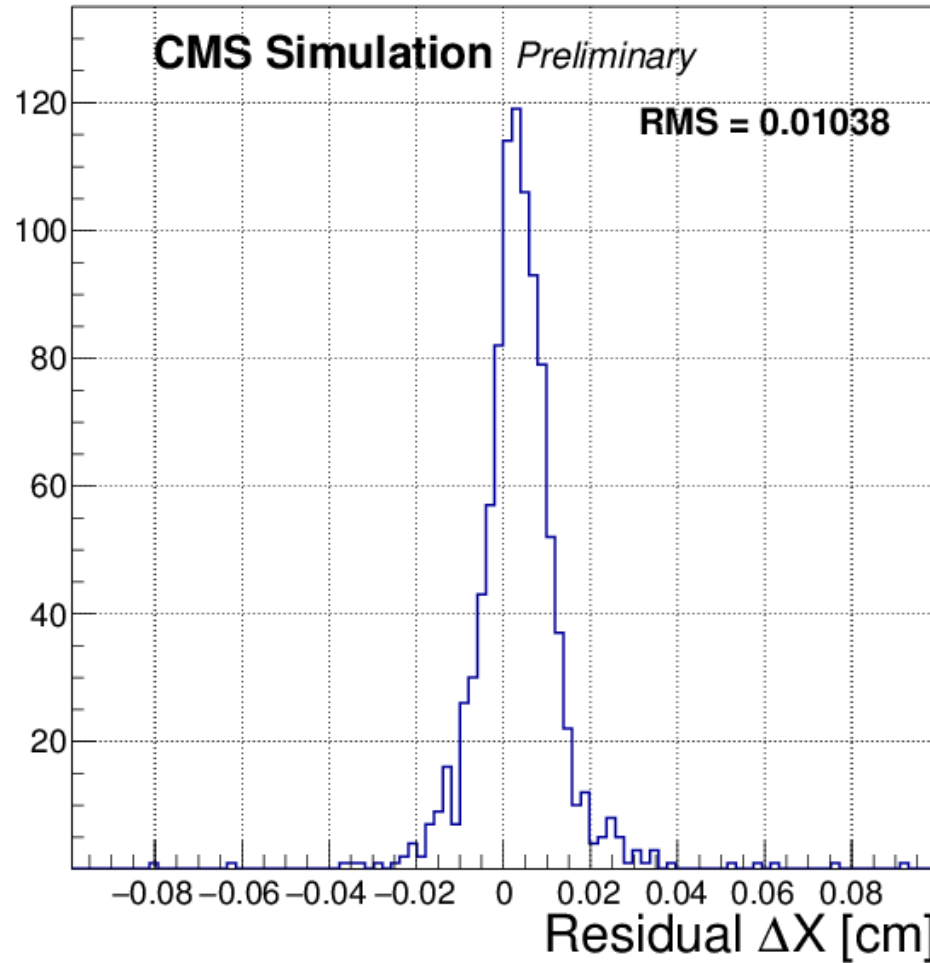
Inactive rechit position (y) and the y residual FPix_BmO_D3_BLD11_PNL2_PLQ1



Residuals (Zoomed)

Monte Carlo Simulation

Track hit residual on pixel pilot blade (azimuthal direction)



Track hit residual on pixel pilot blade (radial direction)

