

Arche PhoneCall Meeting

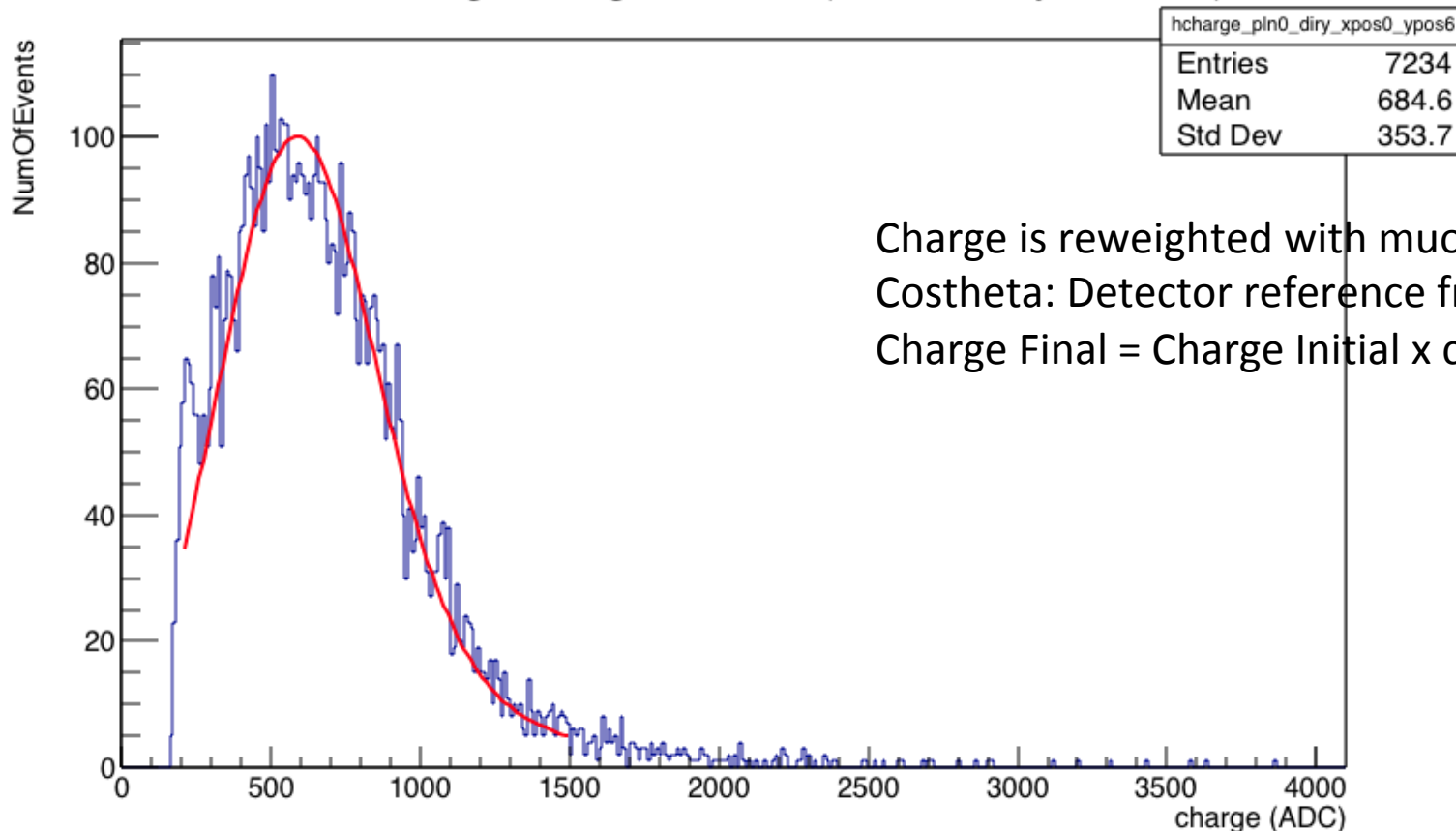
01/03/2019

Avgitas

Objective: 1) Map the MIP ADC Charge per Position
2) Put that in the Simulation

How: Create Charge Histograms for each Detector Plane Position
Fit with a LanGau Function (Landau o Gauss) – Corinne’s Program
(Landau 4 Energy Deposit + Gauss for Charge readout effects)

Plane 0 Charge Histogram for Y - (xchan = 0 , ychan = 6)

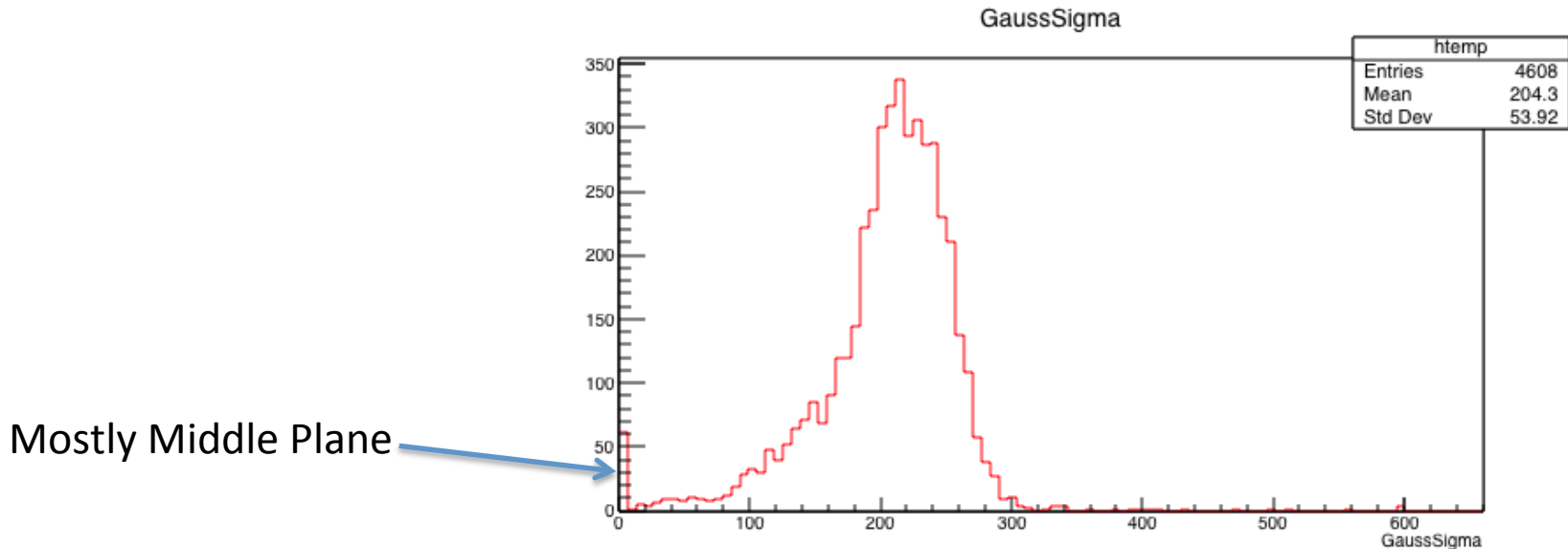
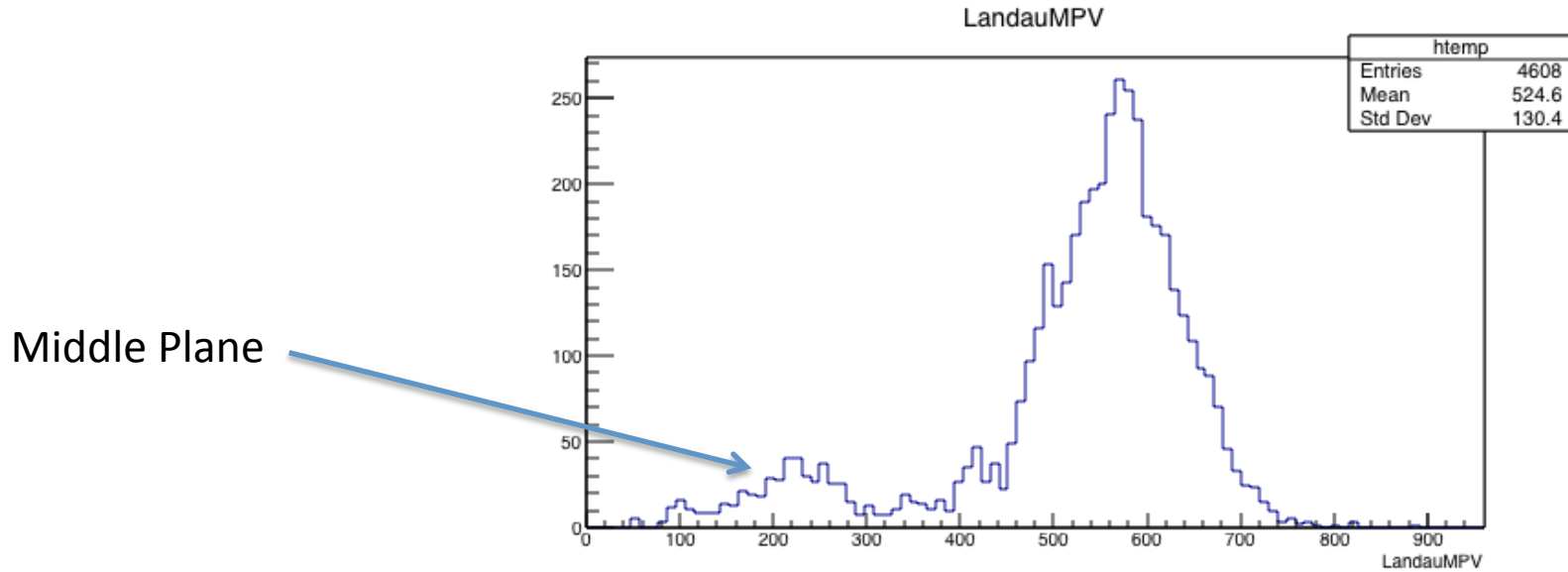


Charge is reweighted with muon trajectory.
Costheta: Detector reference frame
Charge Final = Charge Initial x costheta

The Basic Values of the LanGau Fitting Function:

MPV – Most Probable Value for Landau \sim MIP energy deposit

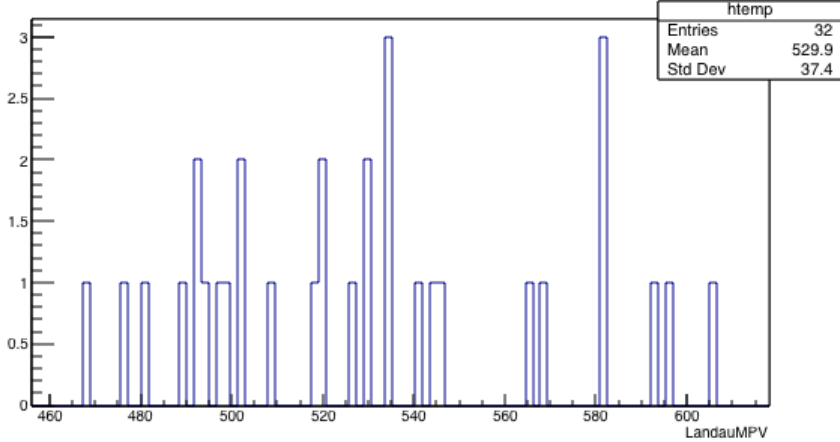
GaussSigma – « Jitter » per channel on the readout charge



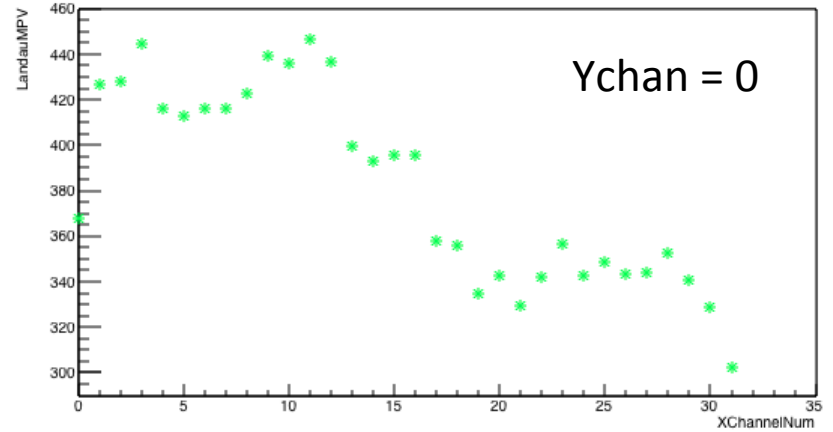
MPV evolution with distance

Readout y, Plane 0,

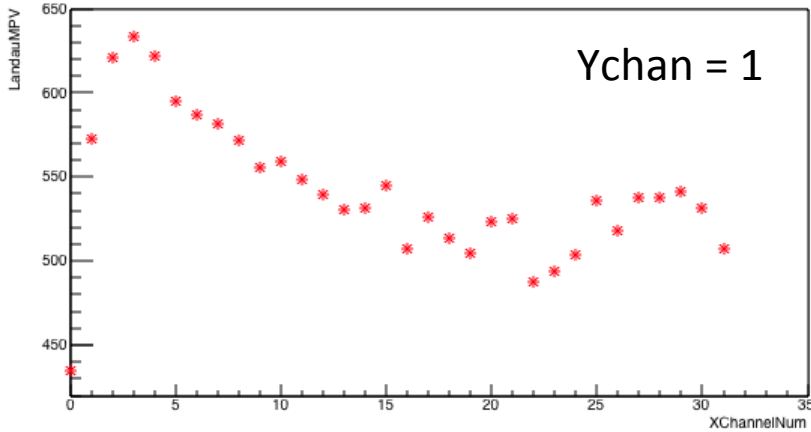
LandauMPV {(ReadoutDirection==0)&&(PlaneNumber==0)&&(XChannelNum==15)}



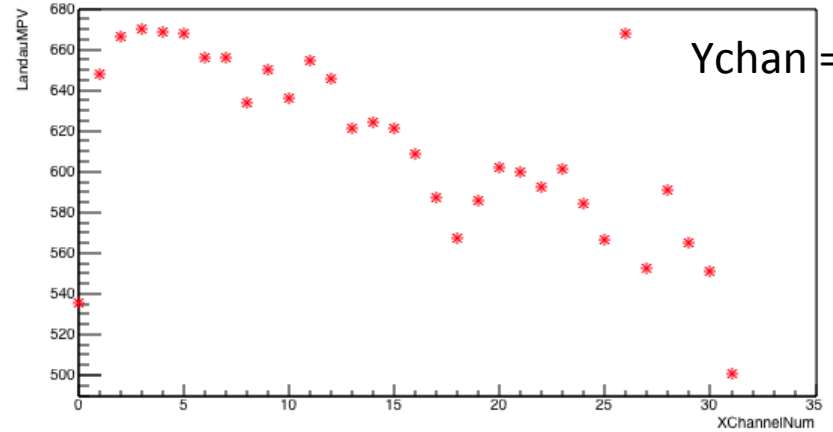
LandauMPV:XChannelNum {(ReadoutDirection==1)&&(PlaneNumber==0)&&(YChannelNum==0)}



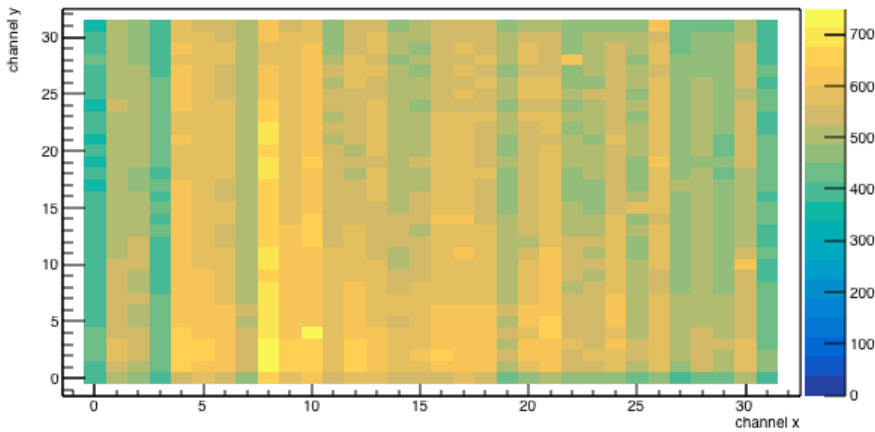
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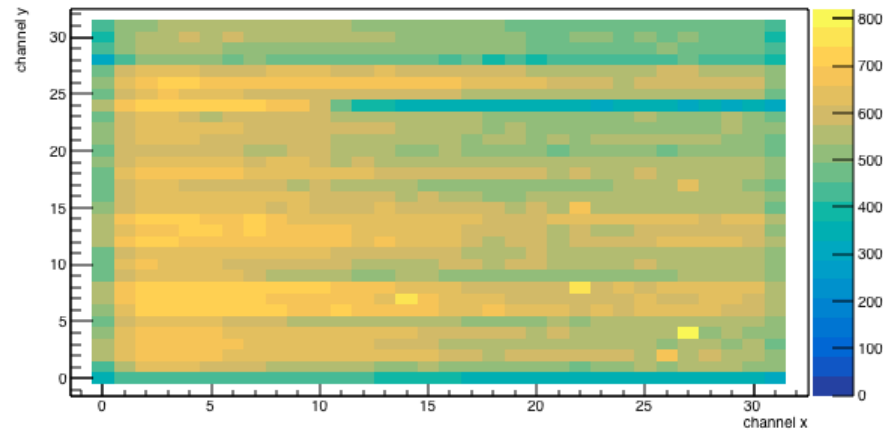
LandauMPV:XChannelNum {(ReadoutDirection==1)&&(PlaneNumber==0)&&(YChannelNum==2)}



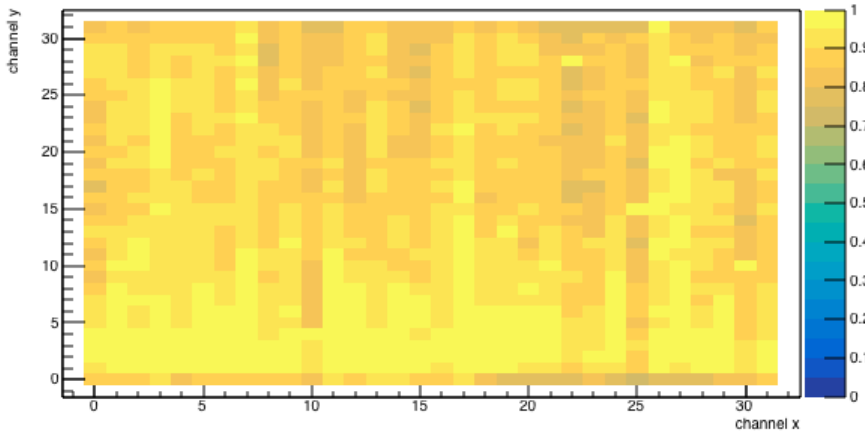
Charge Readout X PLN0



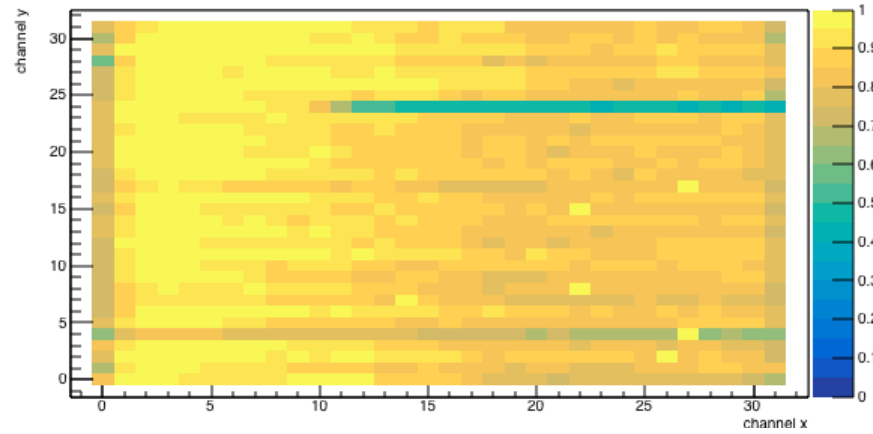
Charge Readout Y PLN0



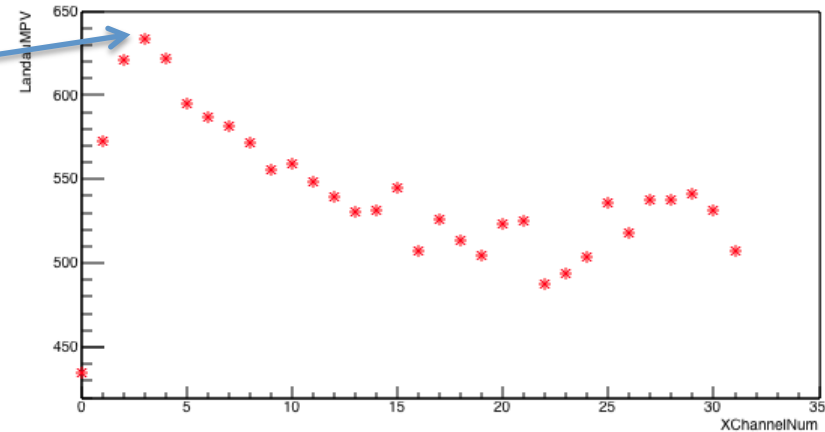
Normalized Charge Readout X PLN0



Normalized Charge Readout Y PLN0

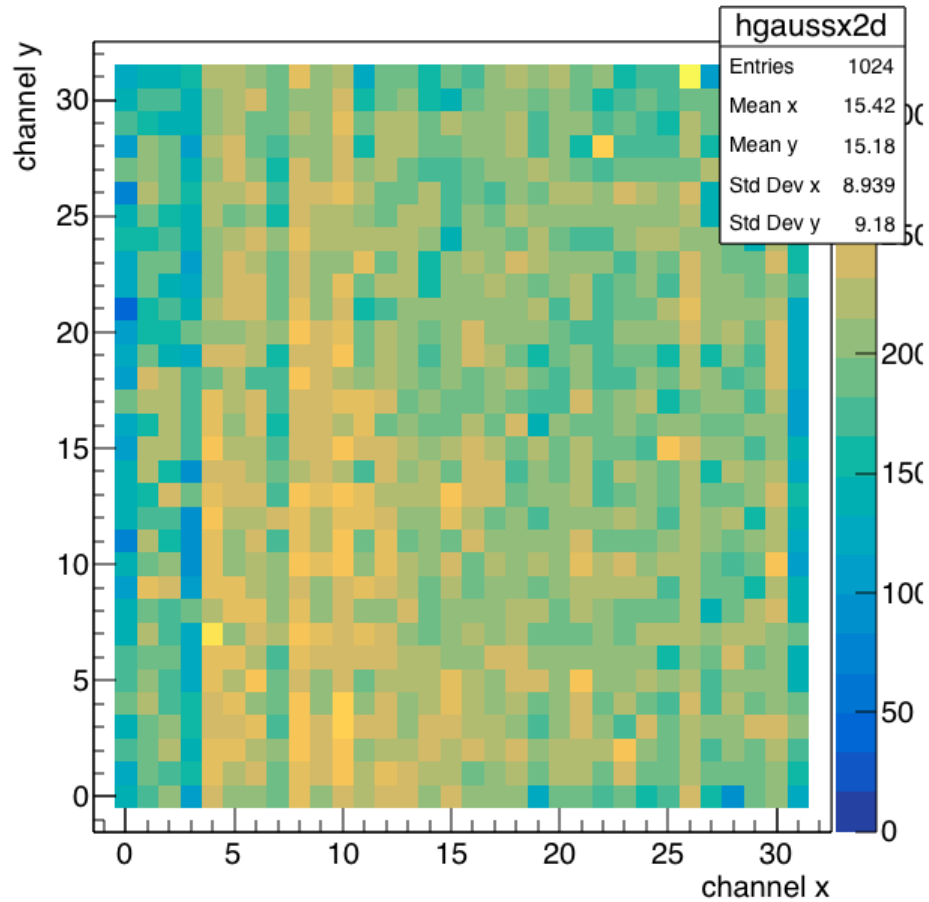


Normalized to the maximum value of the strip

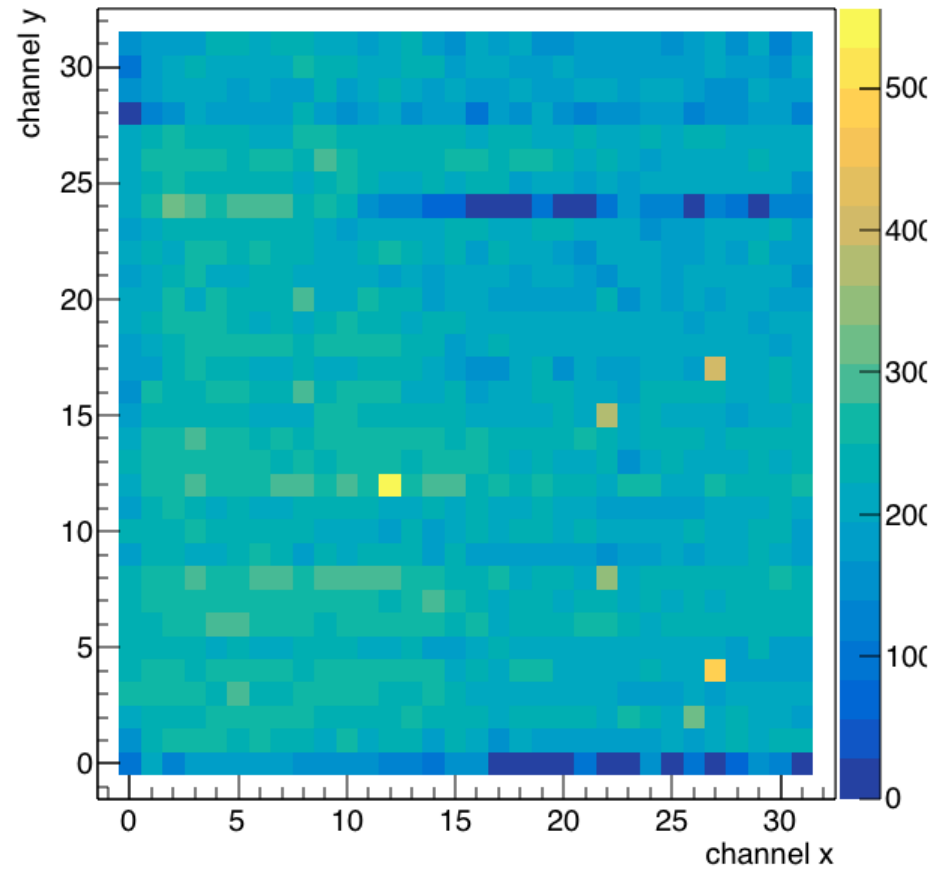


GaussSigma on Plane 0

Gauss Readout X PLN0



Gauss Readout Y PLN0

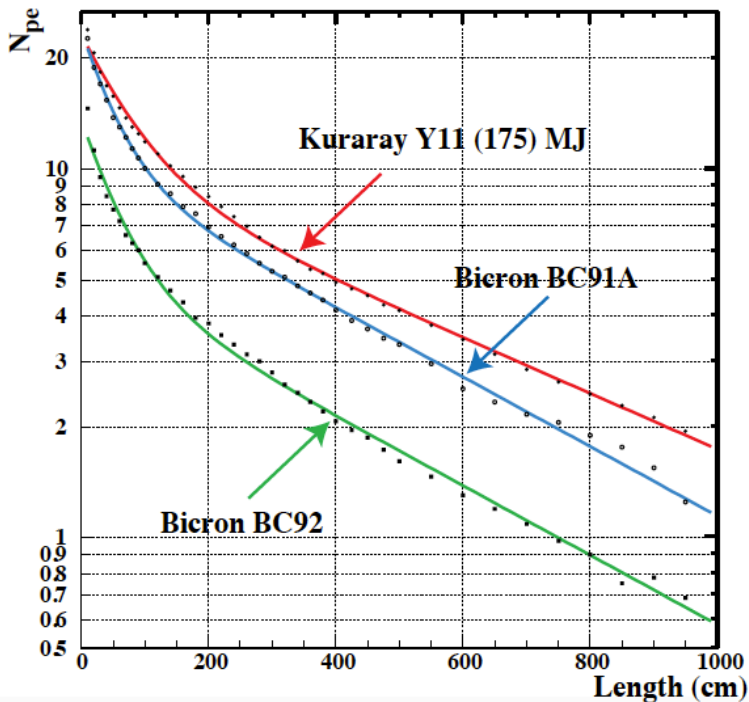


Currently Trying to Fit MPV vs Distance

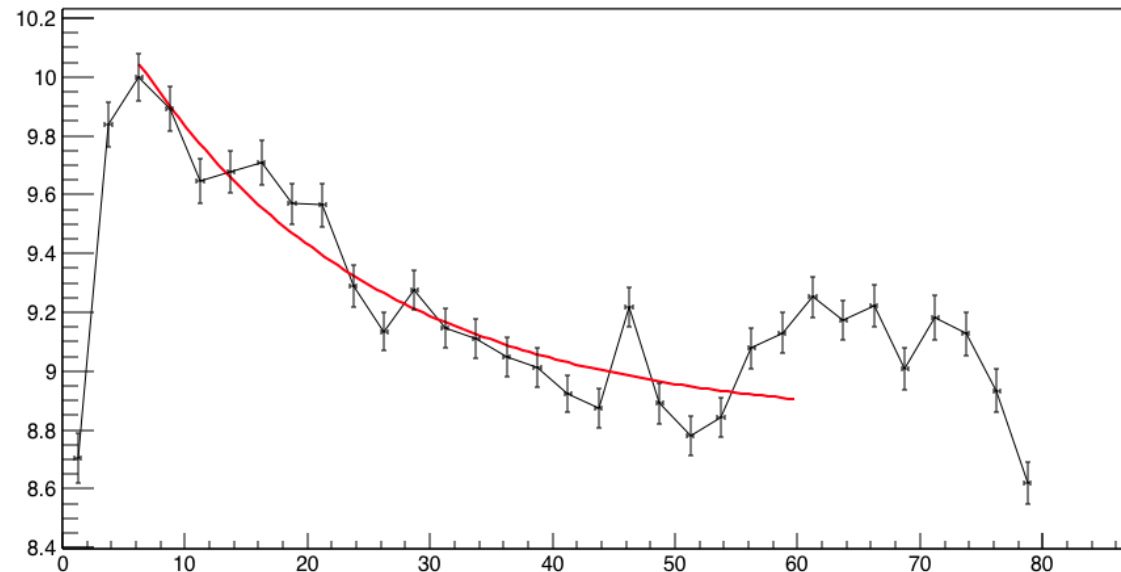
OPERA

Fitted parameters of the WLS fibres. The fitted distribution was: $e^{a_s - x/\lambda_s} + e^{a_l - x/\lambda_l}$.

Fibre type	a_s	λ_s (cm)	a_l	λ_l (cm)
Kur. Y11 (175)	2.59	79.0	2.29	573.2
BC91A	2.62	52.2	2.30	460.0
BC92	2.14	58.2	1.62	460.1



Some times works



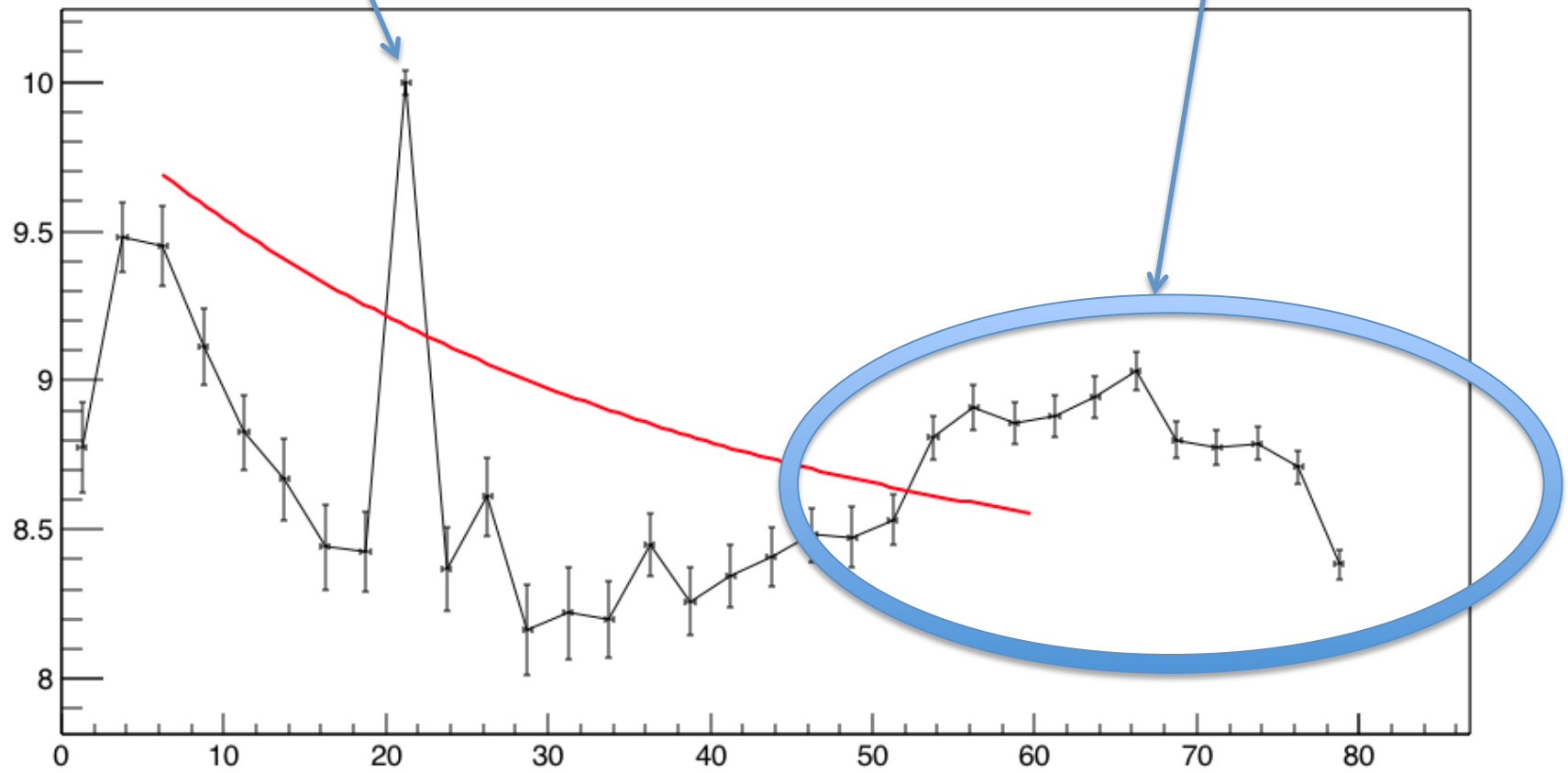
Many times it does not work

Outliers: Maybe due to Costruction?

- Optical Fiber mounting
- Inhomogenous Flur

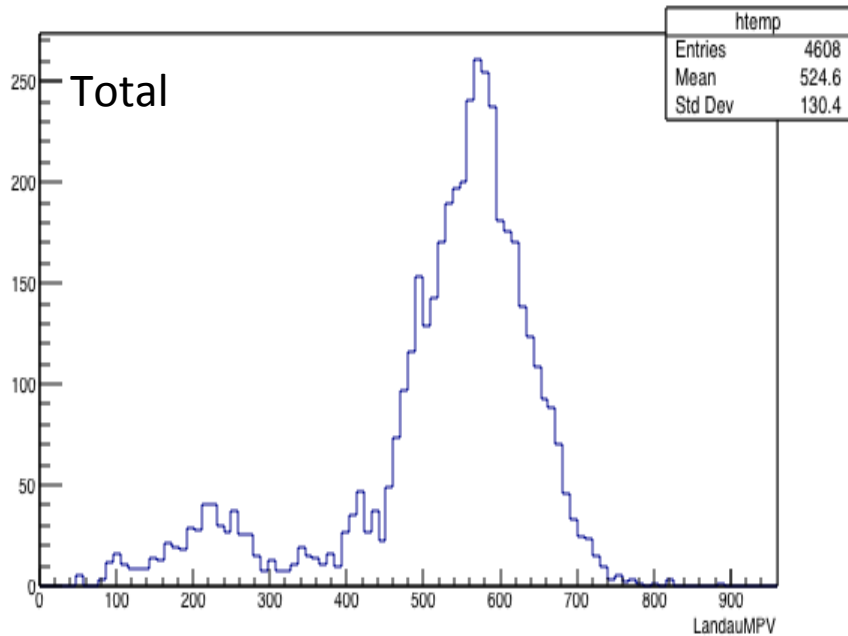
Bumps: Maybe higher energy muons (an effect that Corinne discussed)

Readout_1_Plane2_ReadoutChannel_21

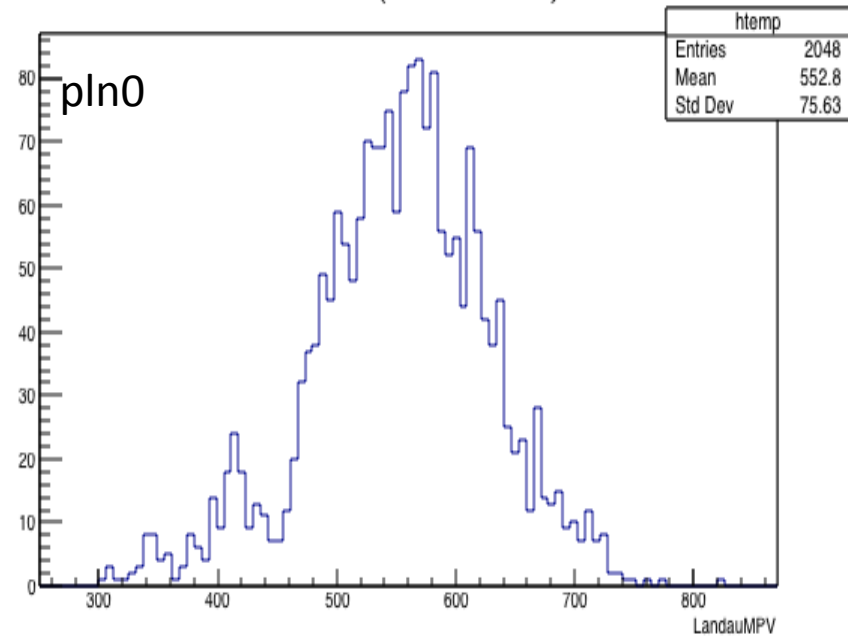


BACK UP SLIDES

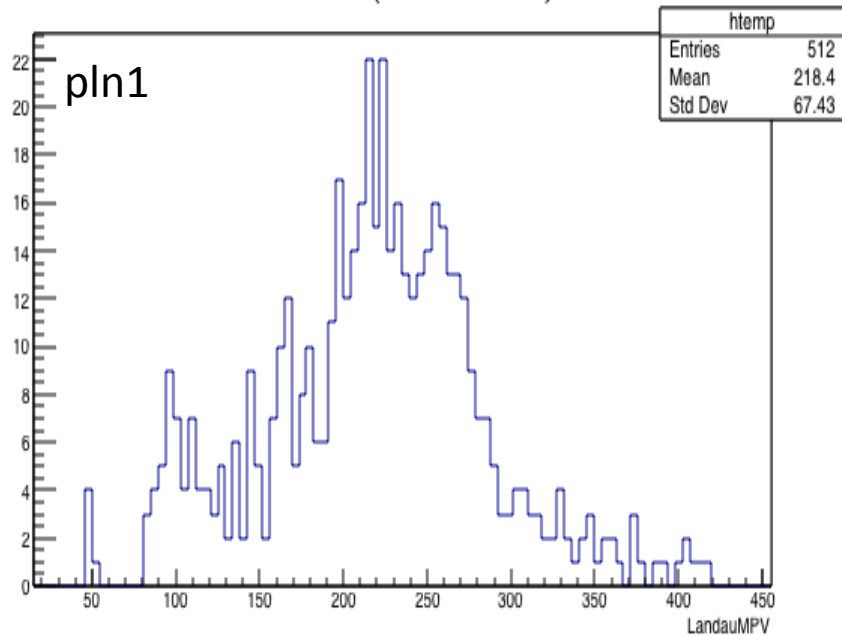
LandauMPV



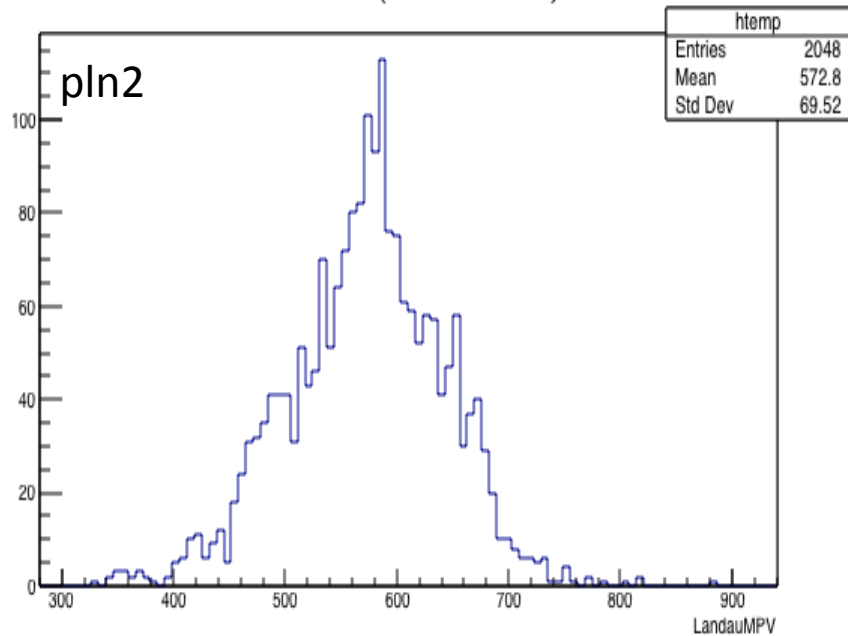
LandauMPV {PlaneNumber==0}



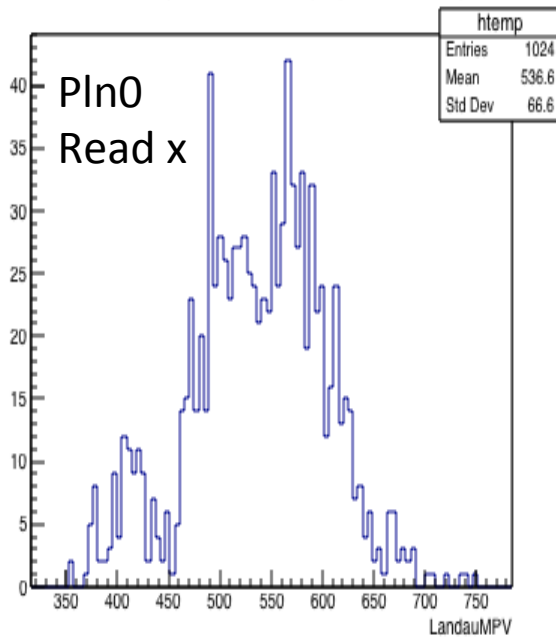
LandauMPV {PlaneNumber==1}



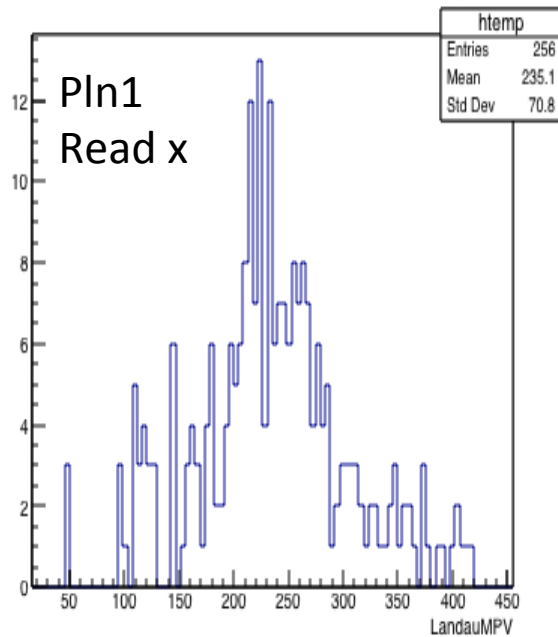
LandauMPV {PlaneNumber==2}



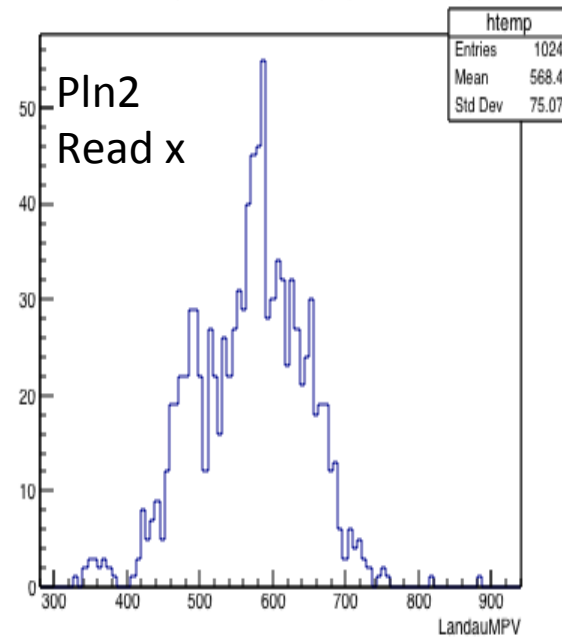
LandauMPV ((ReadoutDirection==0)&&(PlaneNumber==0))



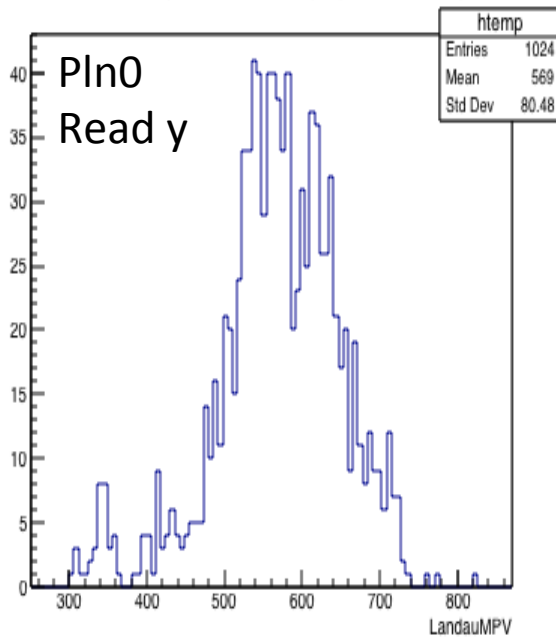
LandauMPV ((ReadoutDirection==0)&&(PlaneNumber==1))



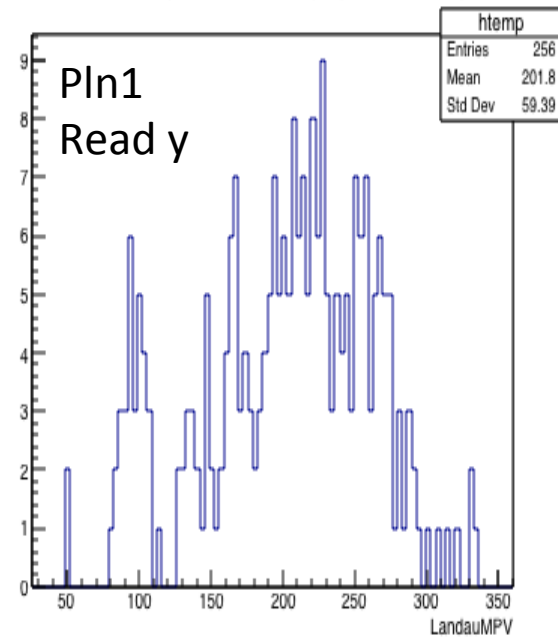
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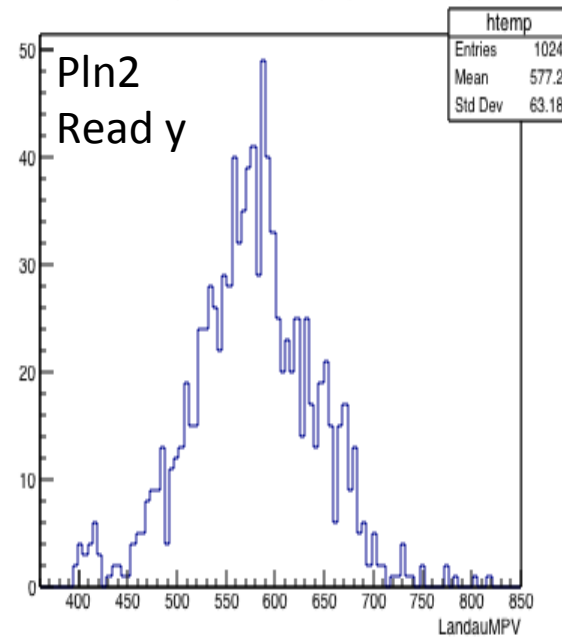
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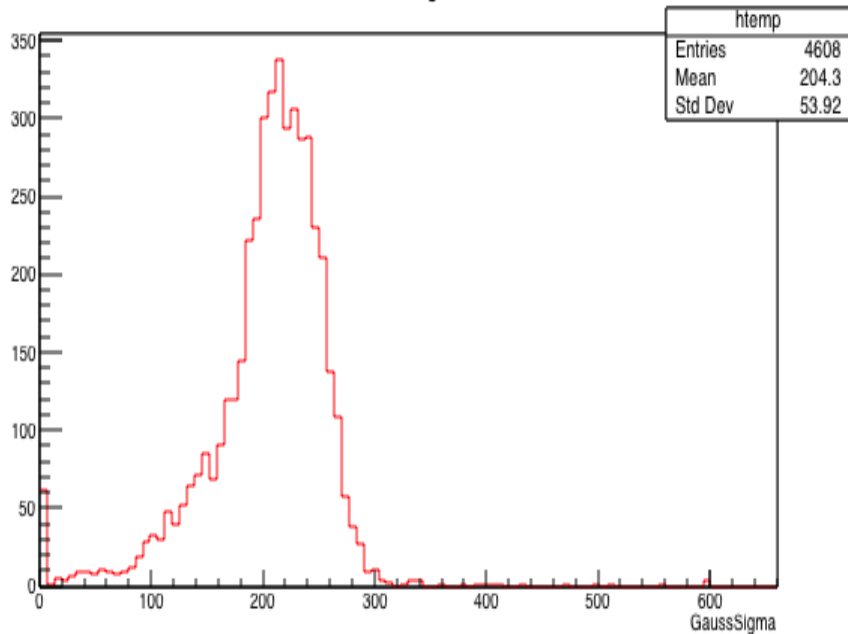
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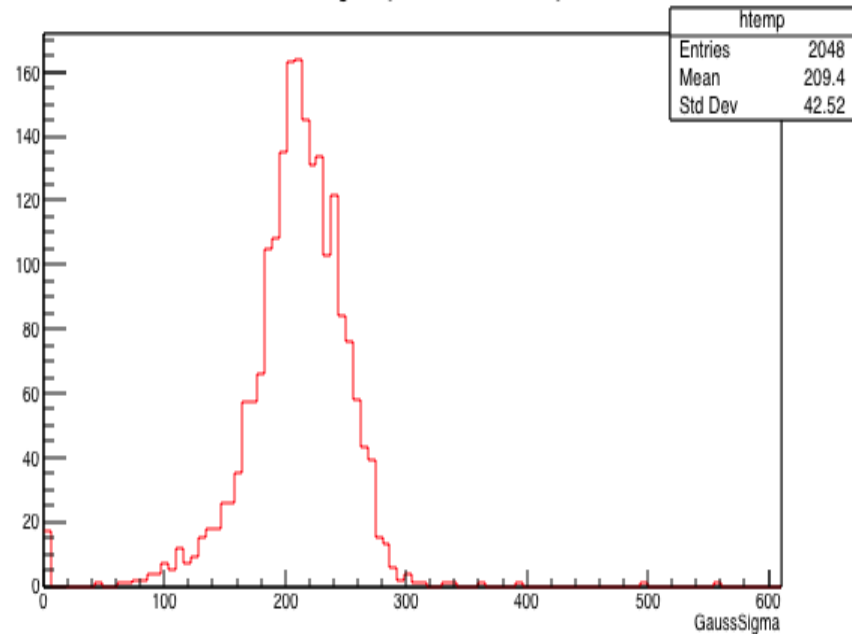
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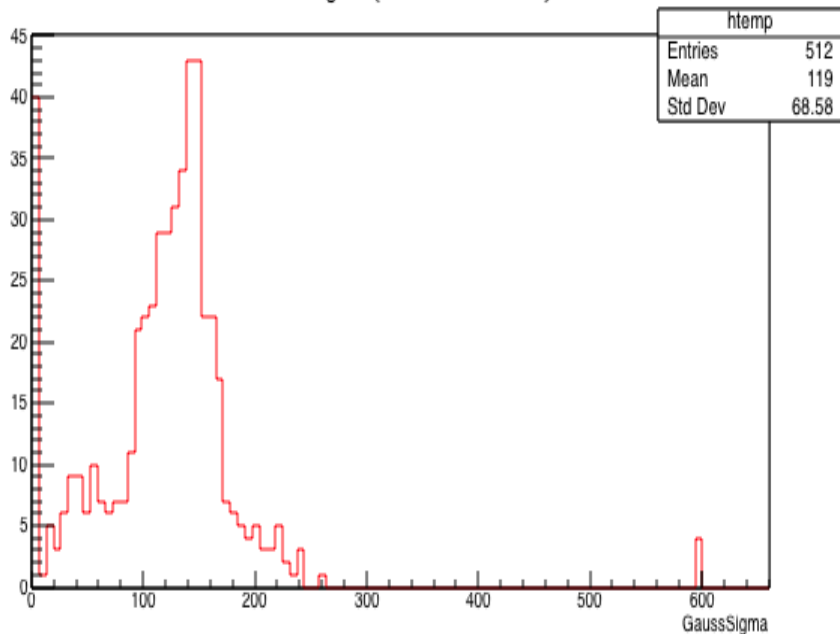
GaussSigma



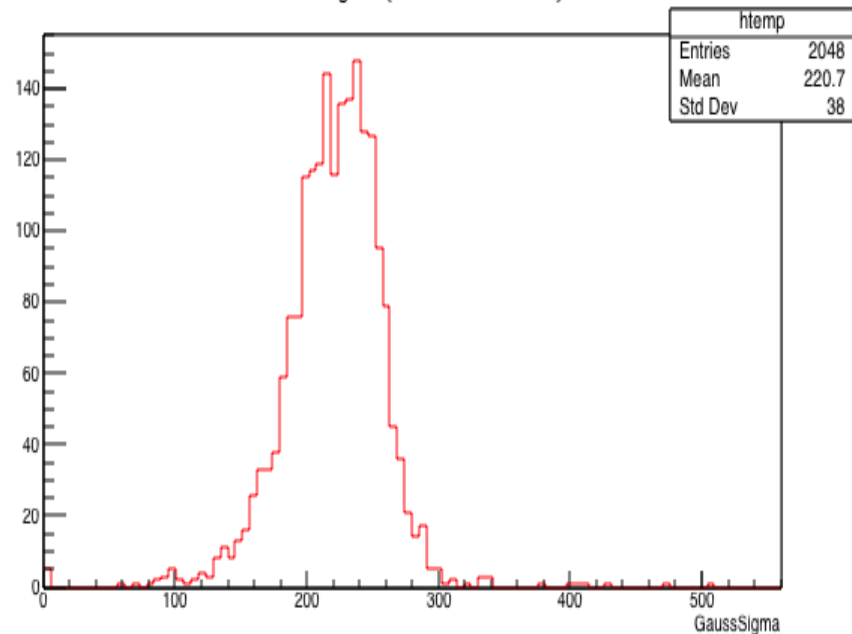
GaussSigma {PlaneNumber==0}



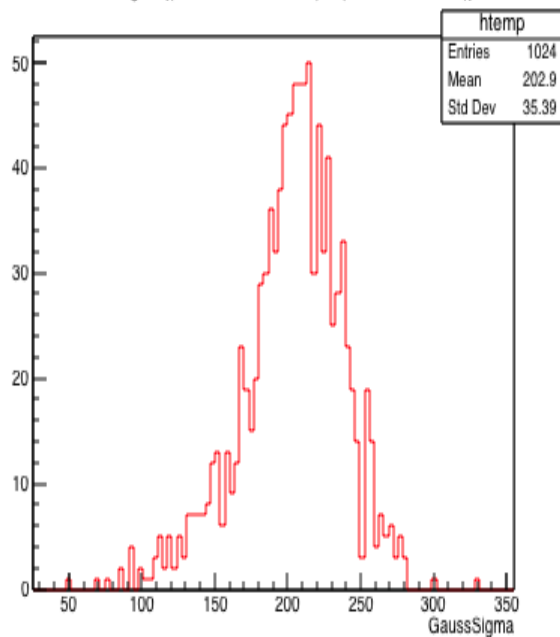
GaussSigma {PlaneNumber==1}



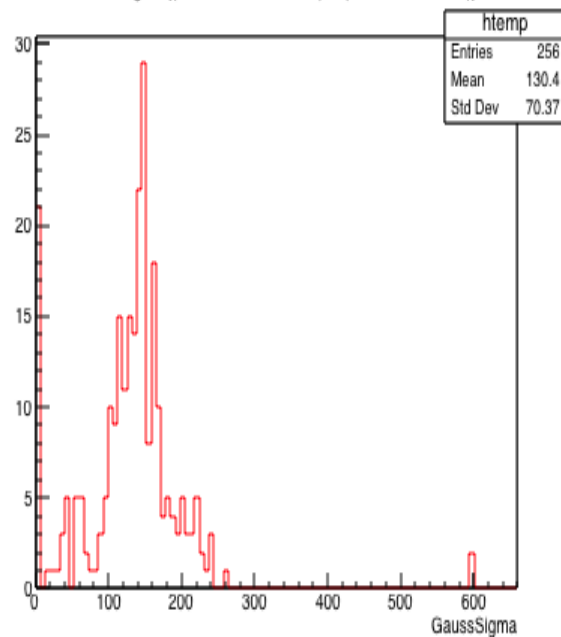
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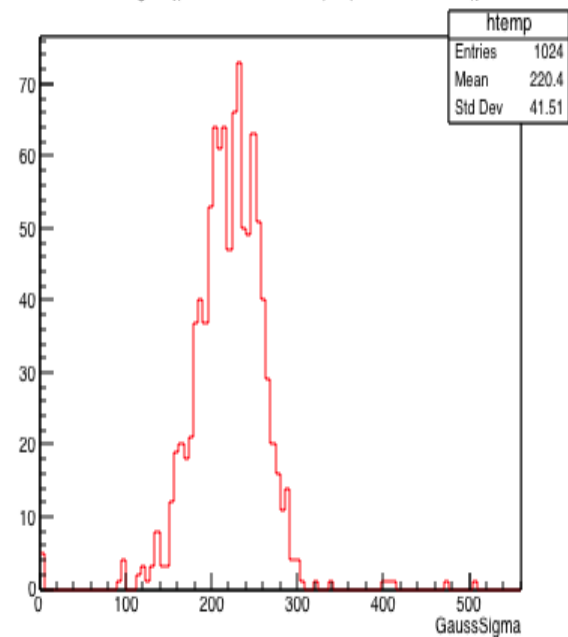
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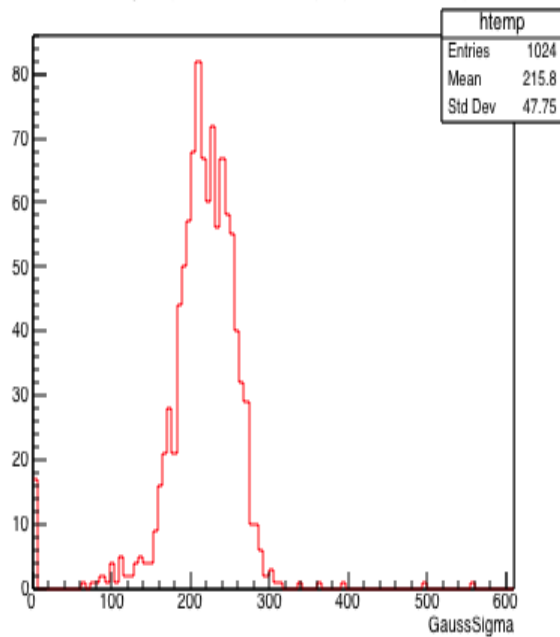
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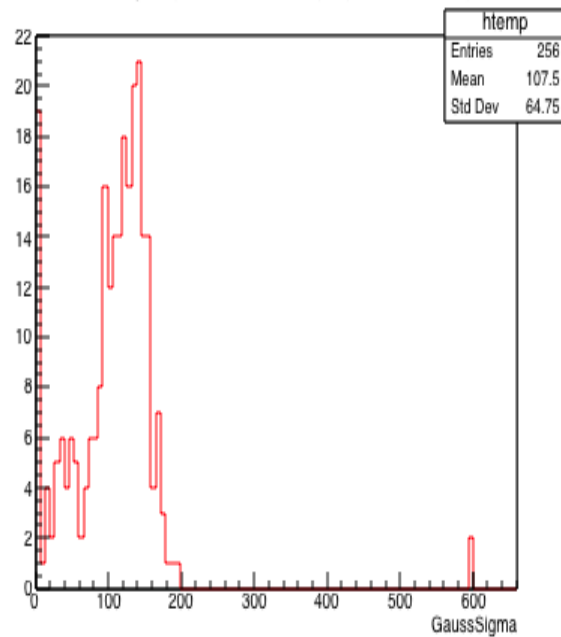
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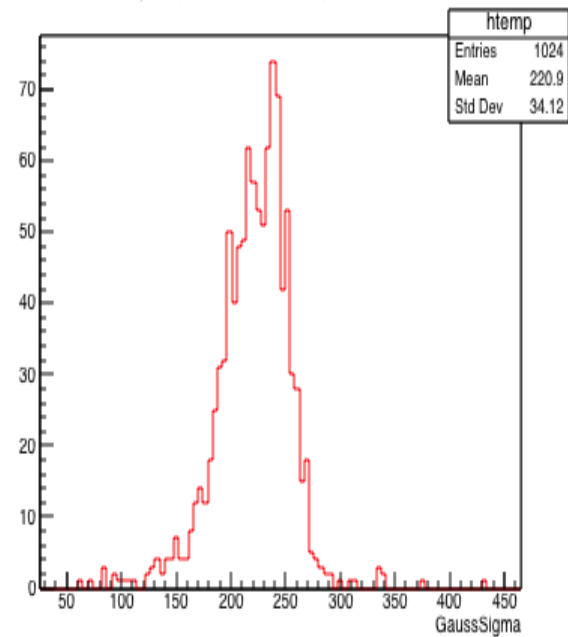
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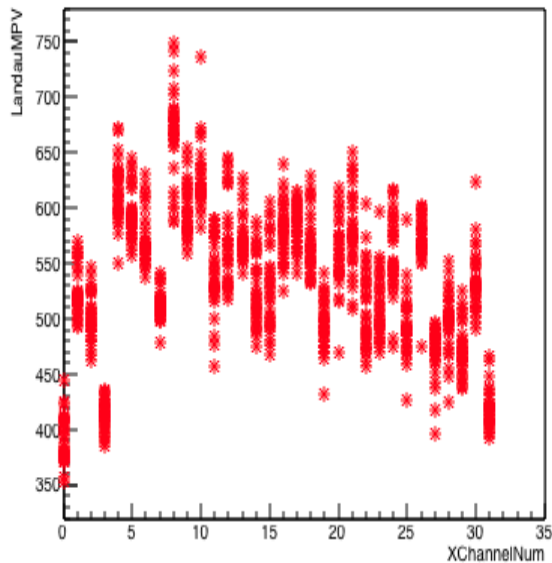
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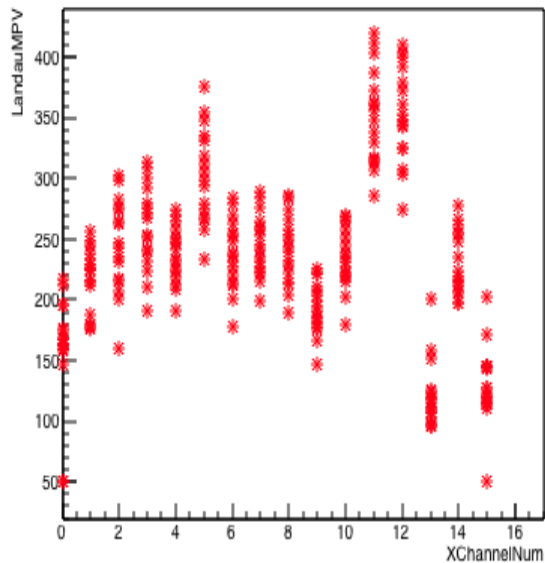
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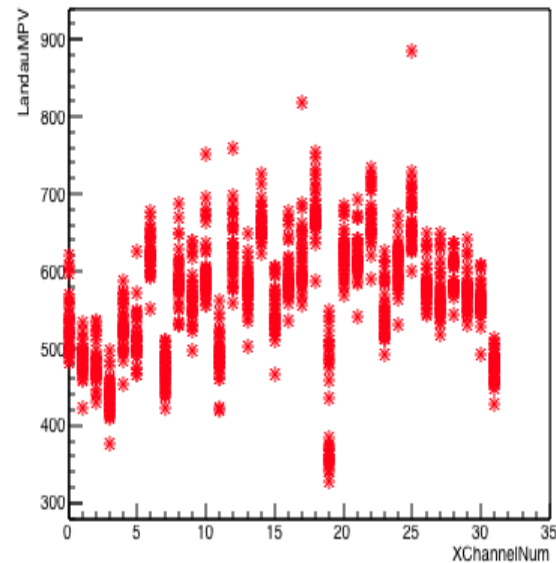
LandauMPV:XChannelNum ((ReadoutDirection==0)&&(PlaneNumber==0))



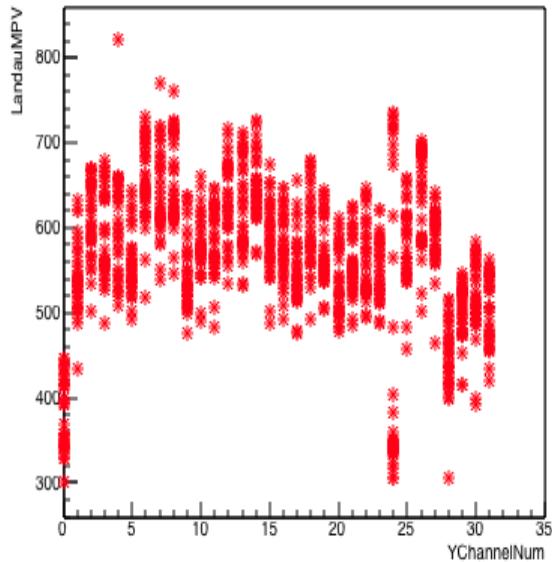
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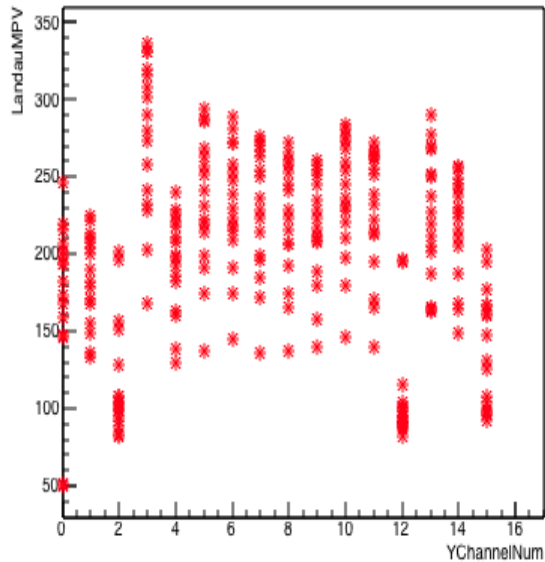
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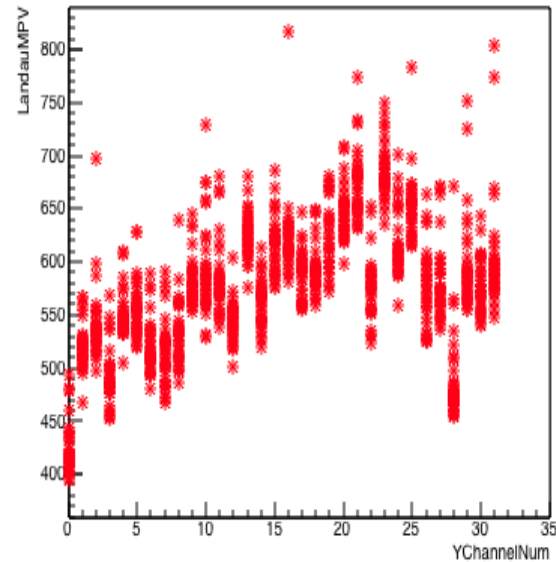
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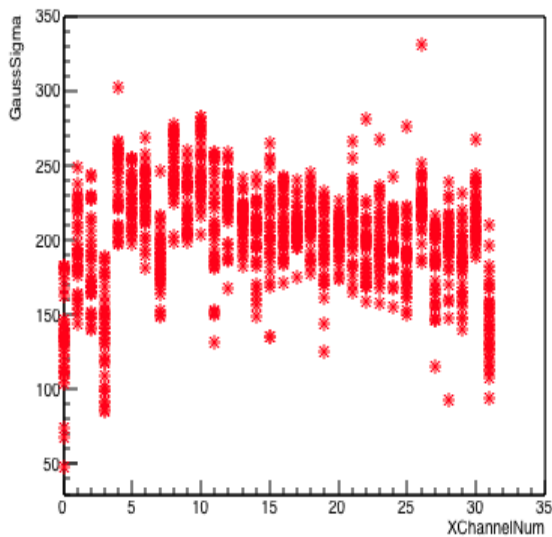
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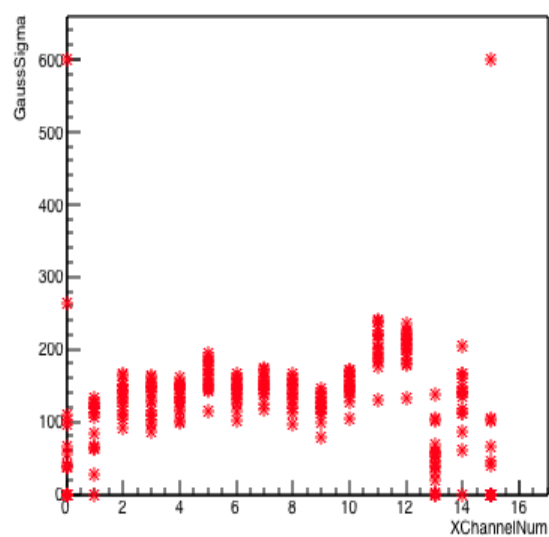
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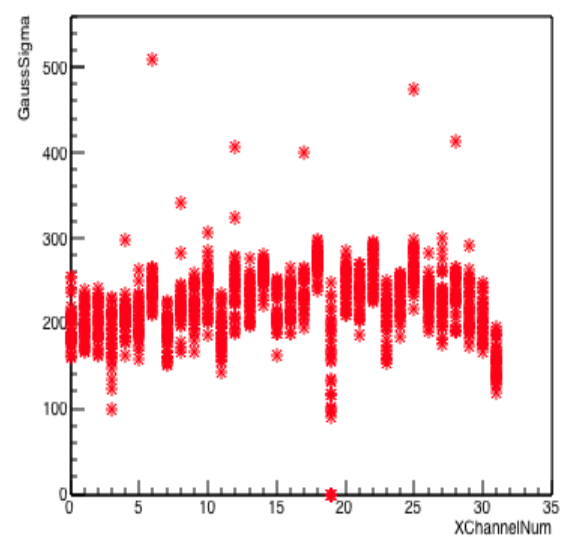
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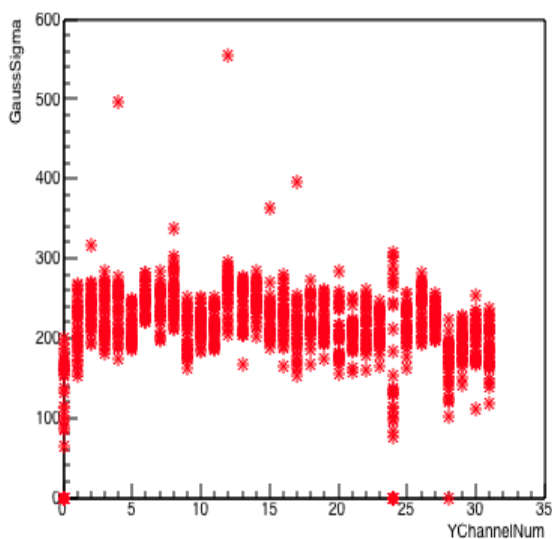
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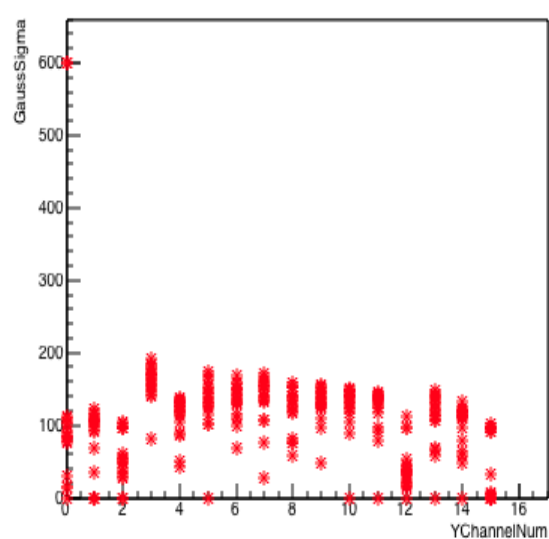
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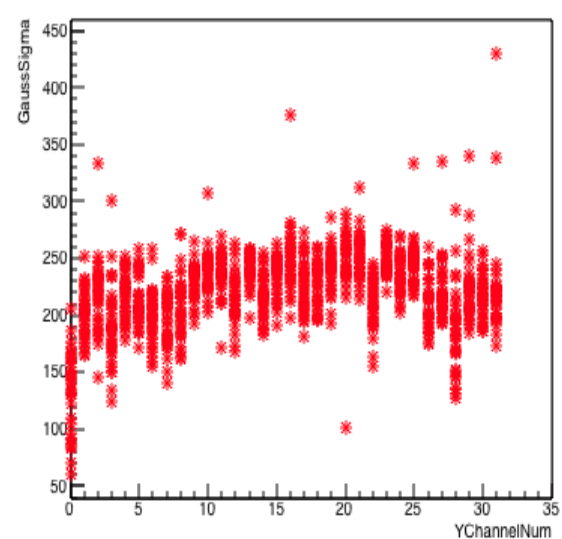
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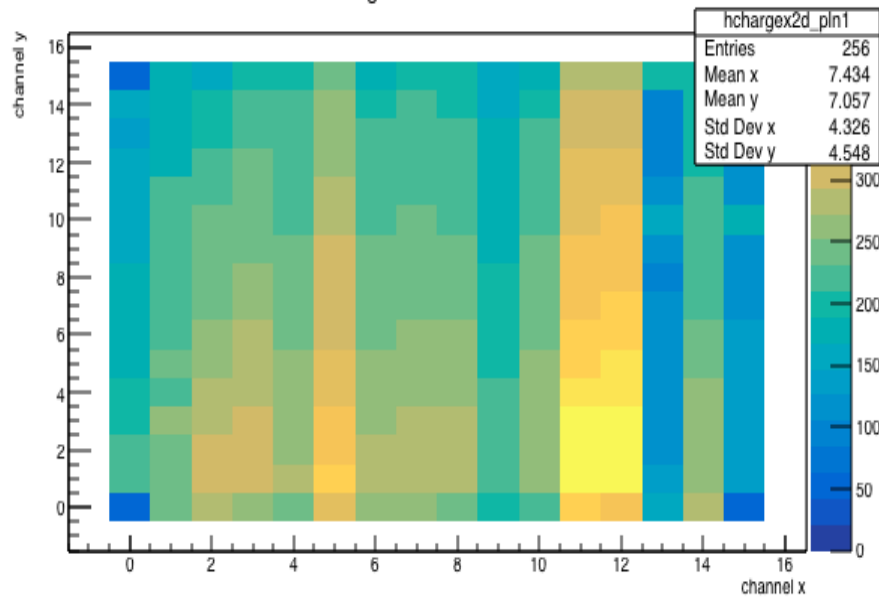
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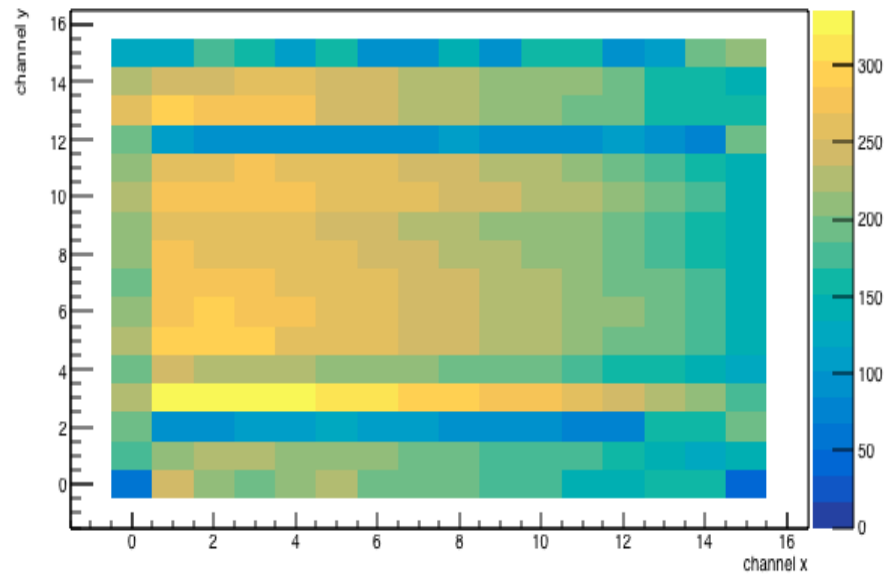
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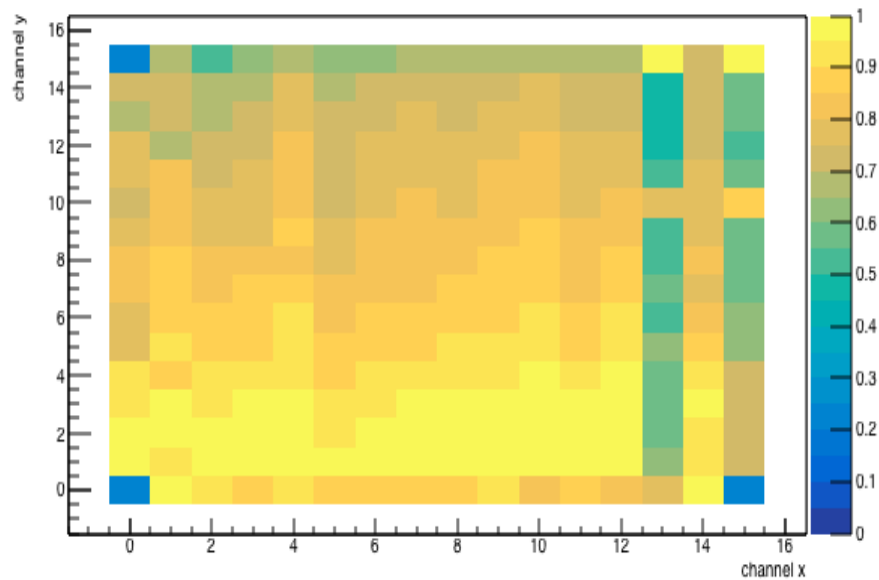
Charge Readout X PLN1



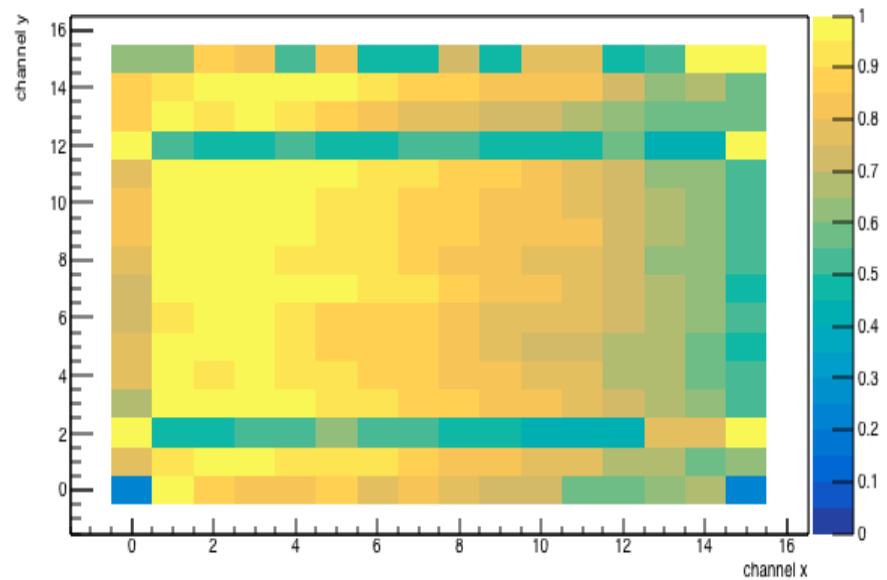
Charge Readout Y PLN1



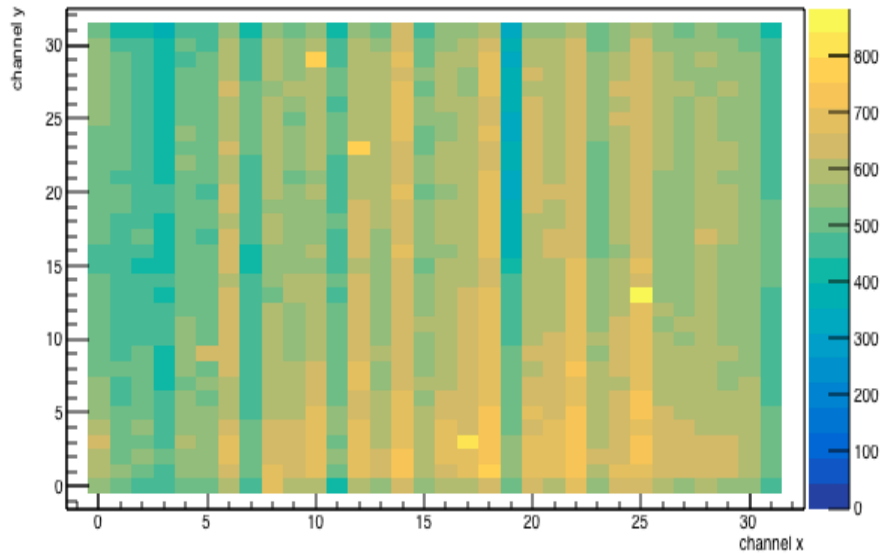
Normalized Charge Readout X PLN1



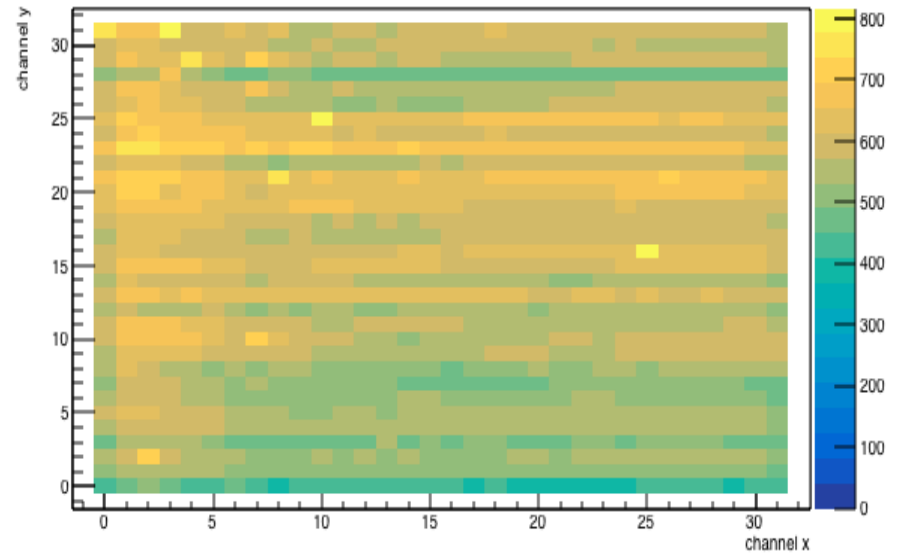
Normalized Charge Readout Y PLN1



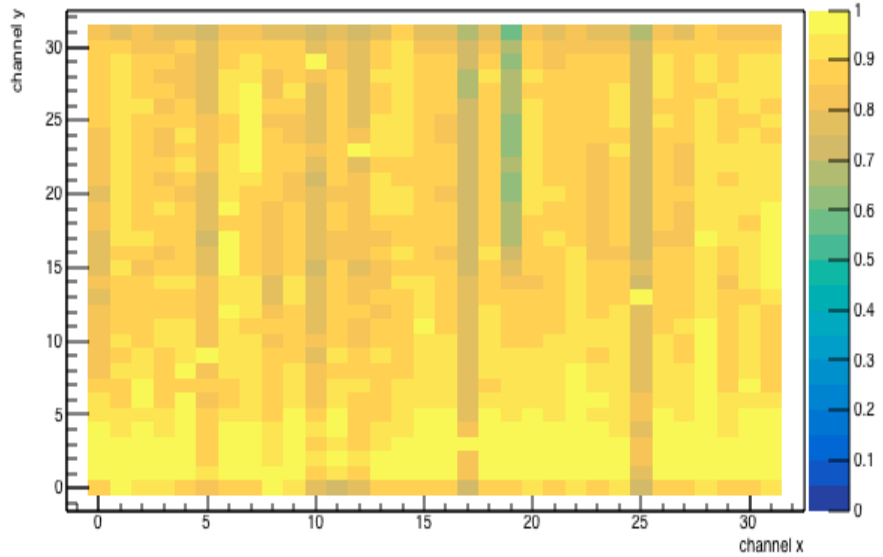
Charge Readout X PLN2



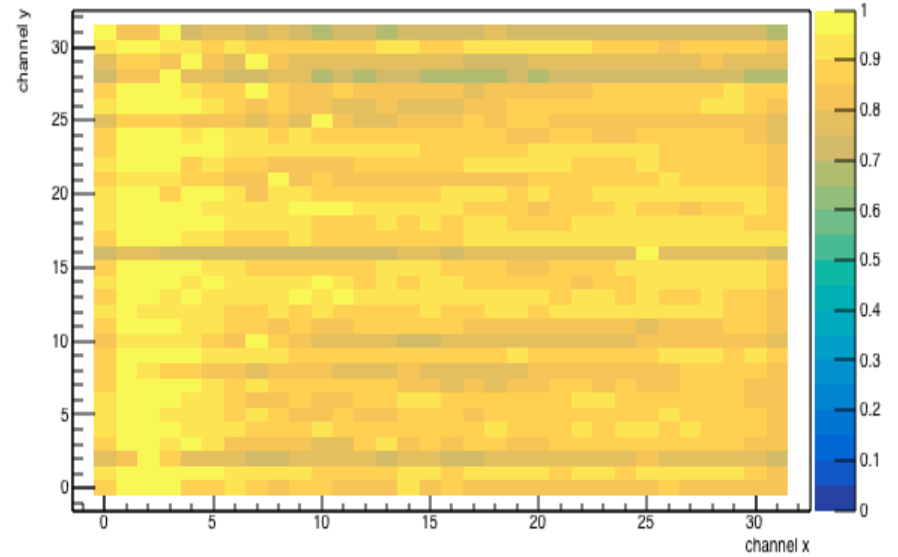
Charge Readout Y PLN2



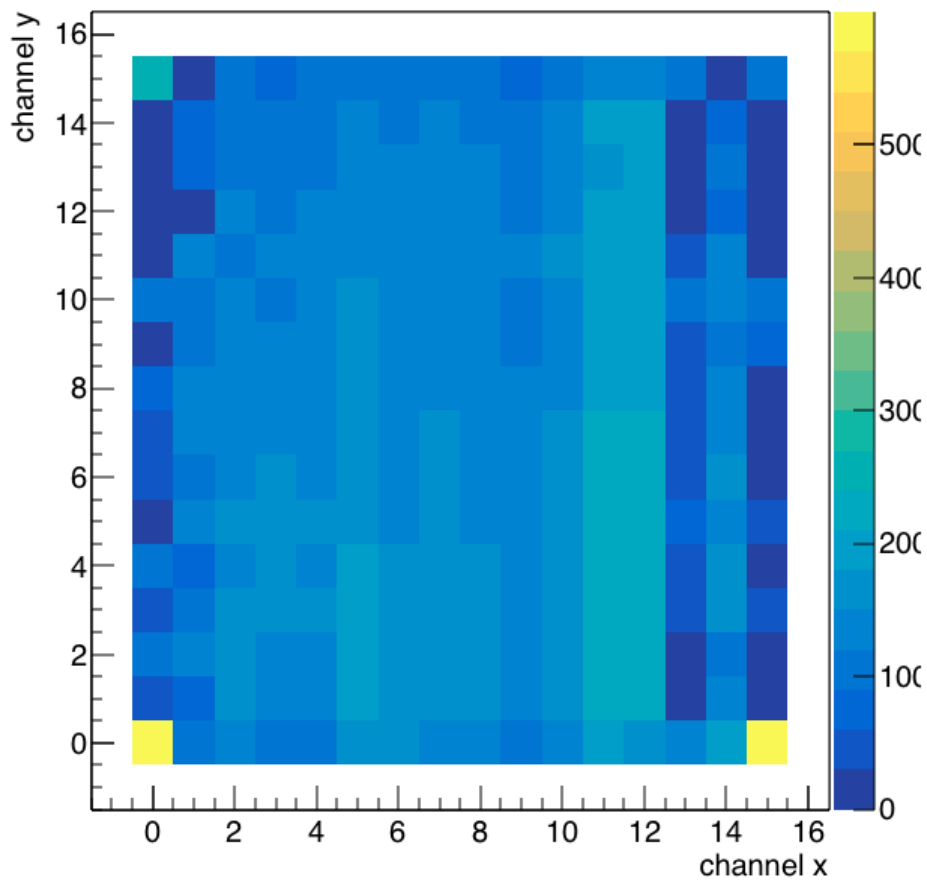
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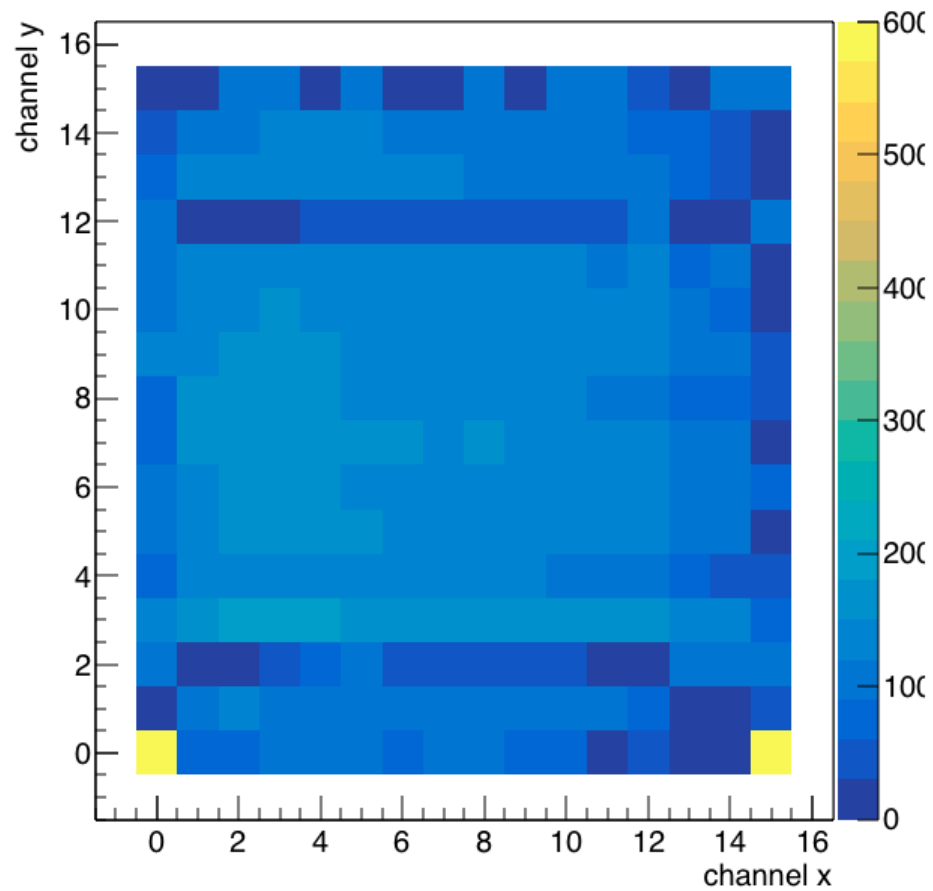
Normalized Charge Readout Y PLN2



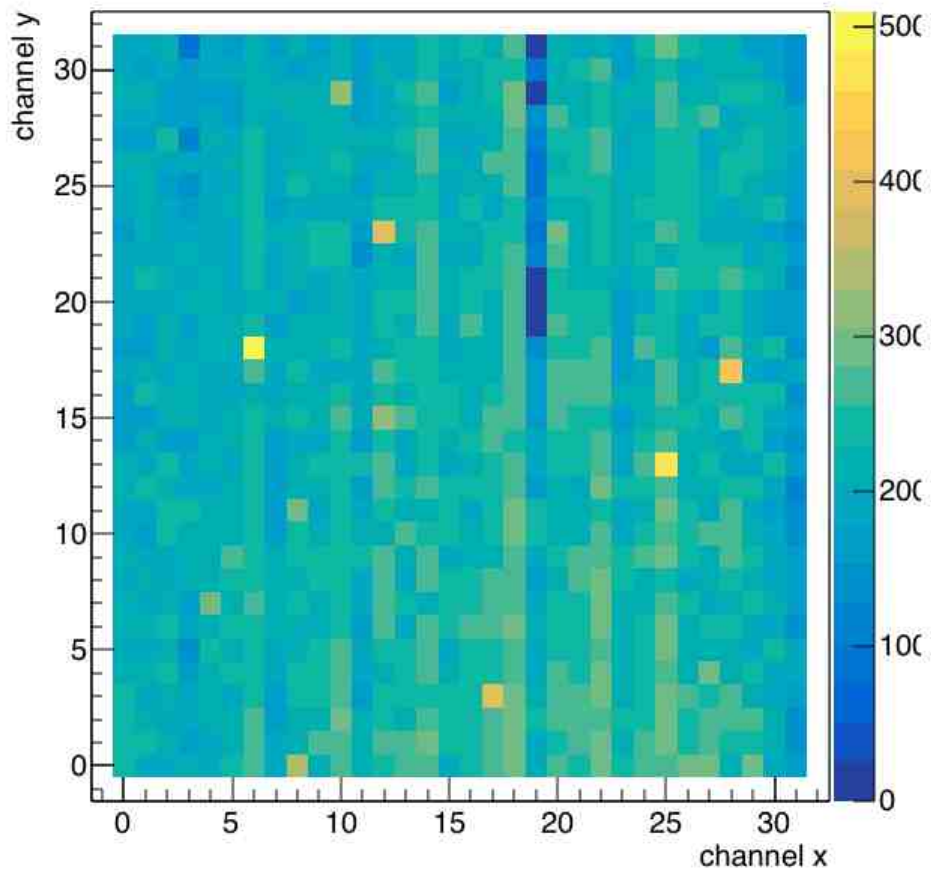
Gauss Readout X PLN1



Gauss Readout Y PLN1



Gauss Readout X PLN2



Gauss Readout Y PLN2

