XL Panda Collaboration Meeting, 4-9th March 2012

Status of the data analysis

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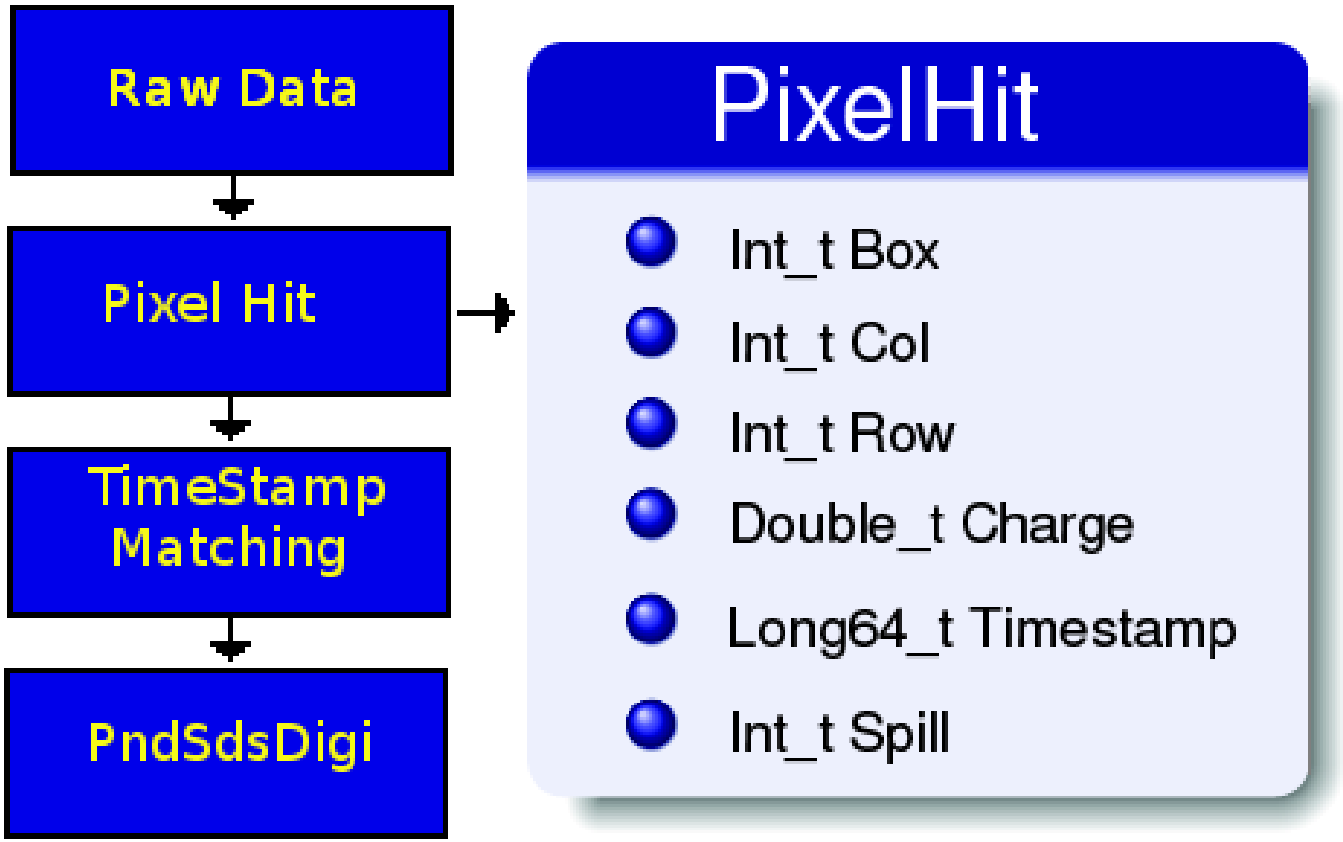
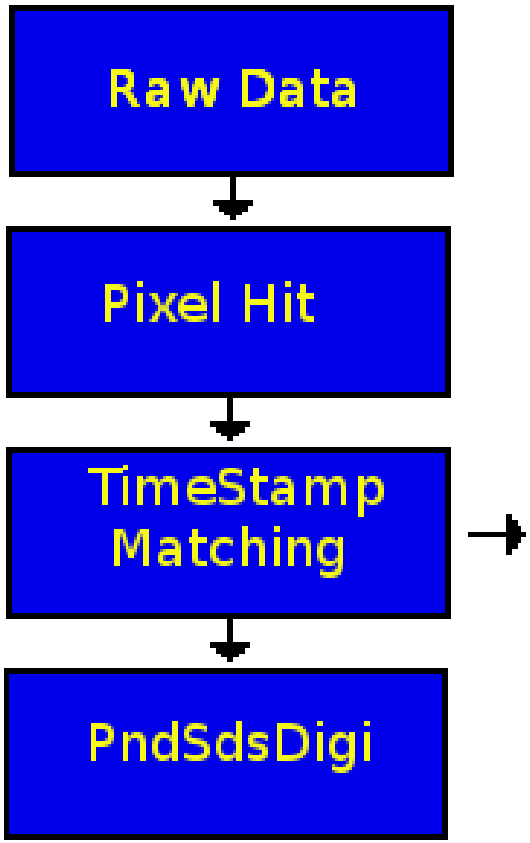
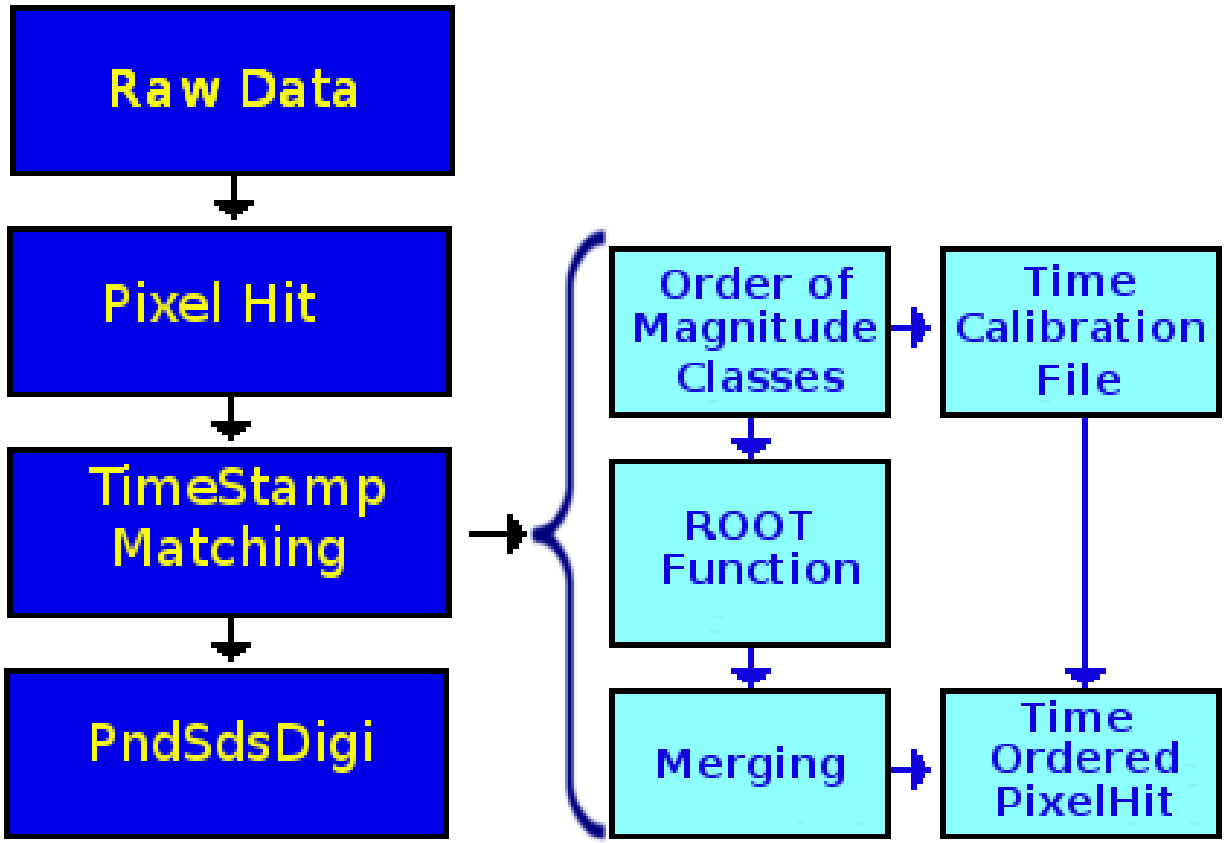
Overview

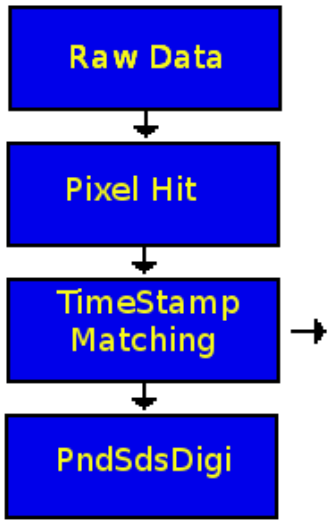
- Analisys Framework
- Threshold Comparison
- Alignment Results

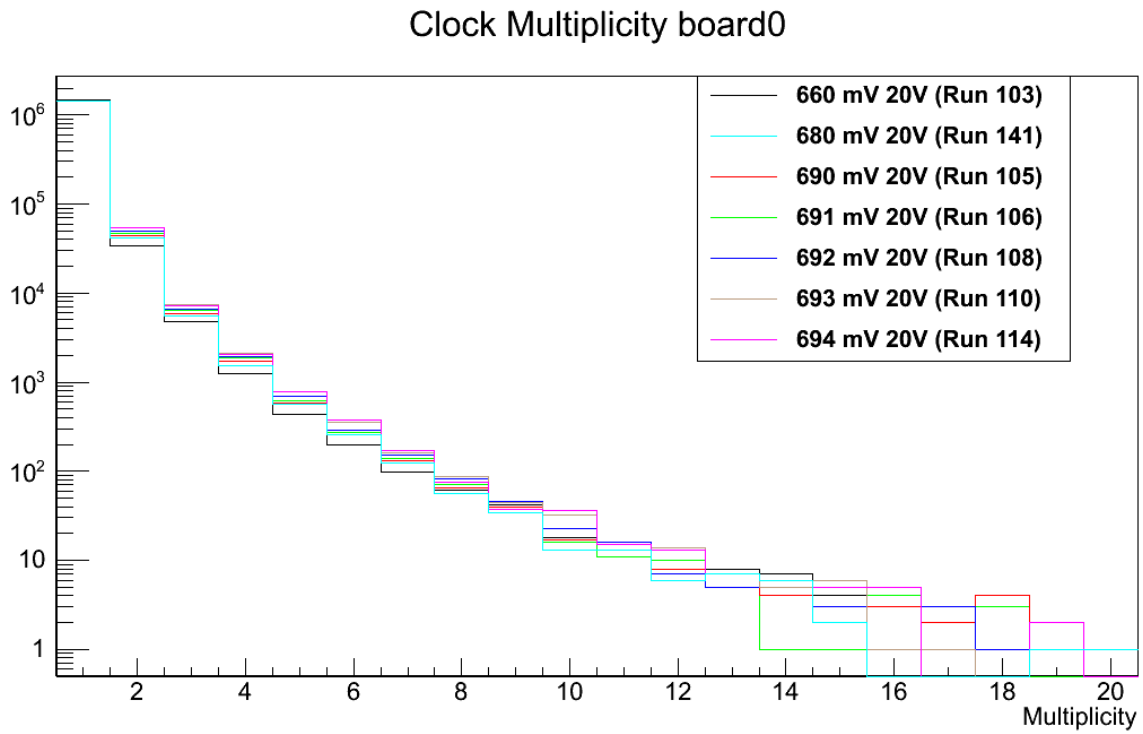

Raw Data
Pixel Hit
TimeStamp Matching
PndSdsDigi
PixelHit
Int_t Box
Int_t Col
Int_t Row
Double_t Charge
Long64_t Timestamp
Int_t Spill



Row	data0.fTi
0	167300227
1	167300226
2	167299186
3	167299986
4	167298360
5	167298360
6	167301046
7	167301045
8	167298095
9	167298359
10	167298359
11	167298894
12	167298359
13	167298359
14	167298359
15	167297481

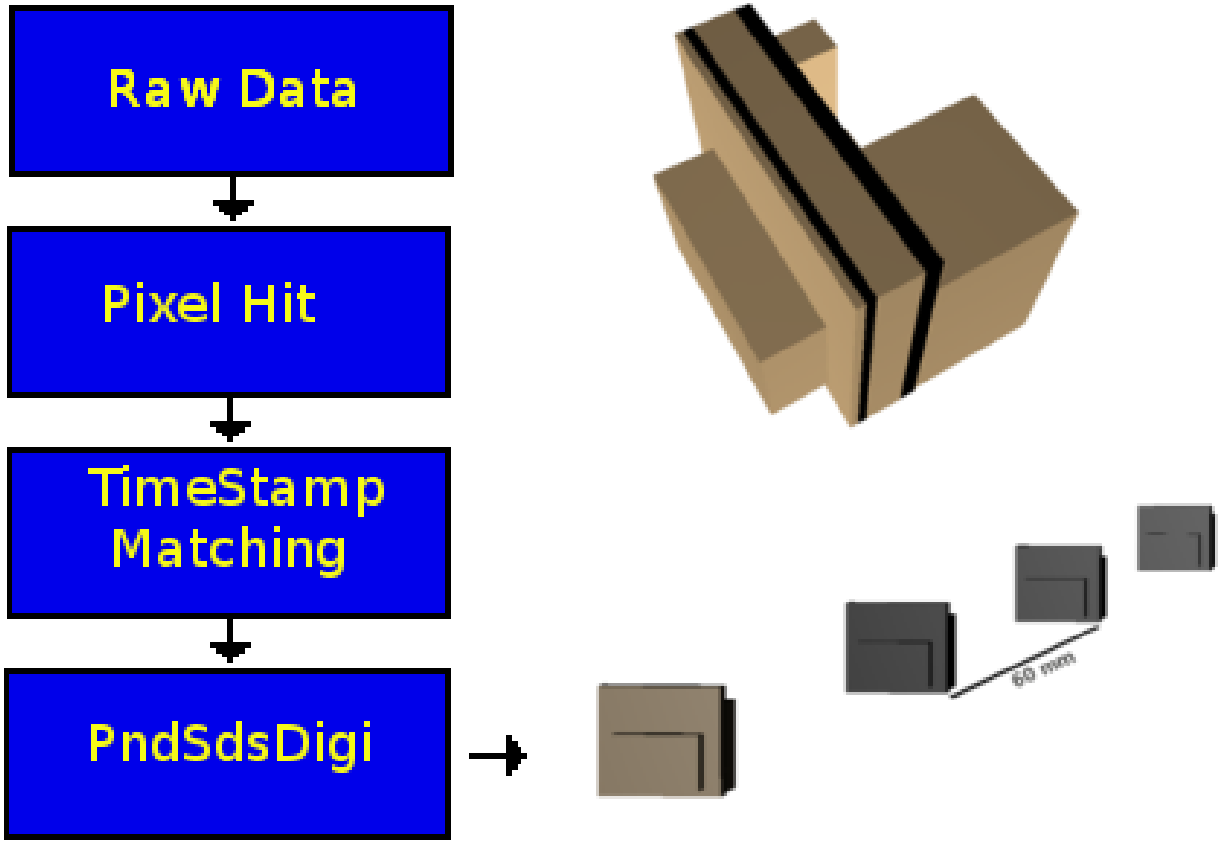

Raw Data
Pixel Hit
TimeStamp Matching
PndSdsDigi
Order of Magnitude Classes
Time Calibration File
ROOT Function
Merging
Time Ordered PixelHit



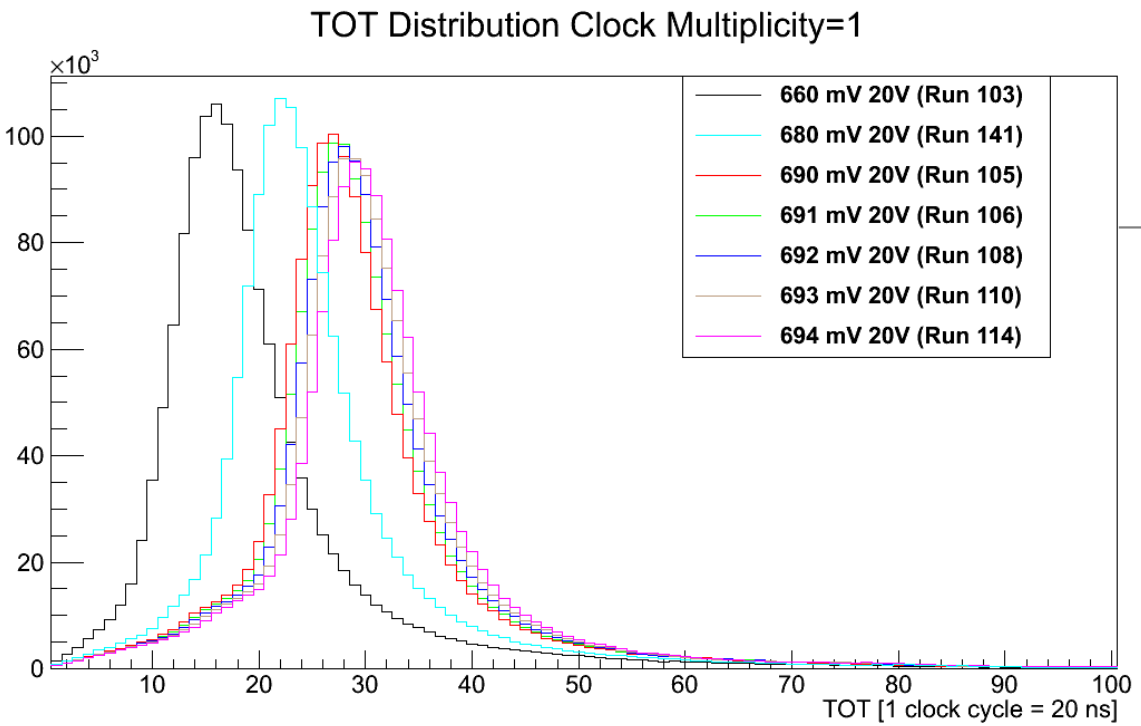


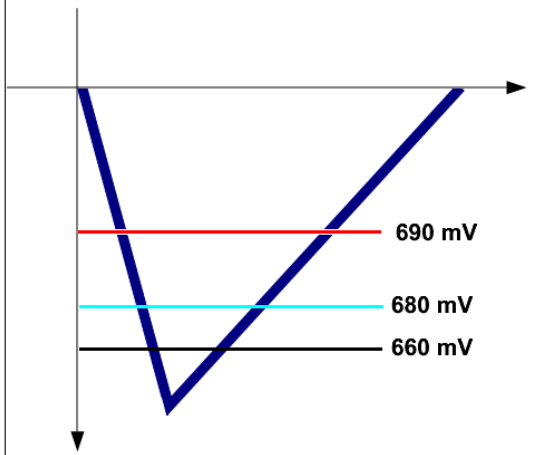
$$\text{Track Efficiency} = \frac{\#\,Tracks}{Hit\_Board3} \sim 20\%$$

Track Efficiency with strip $\sim 0.2\%$

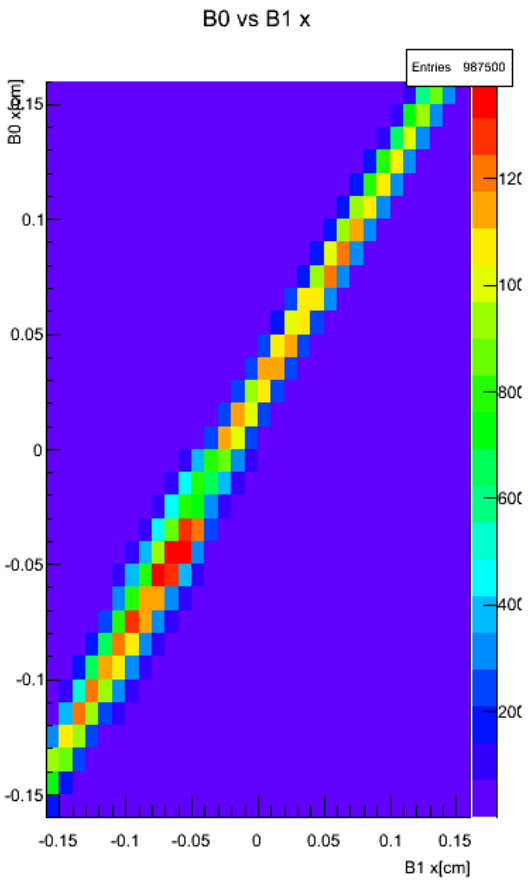

Raw Data
Pixel Hit
TimeStamp Matching
PndSdsDigi
60 mm

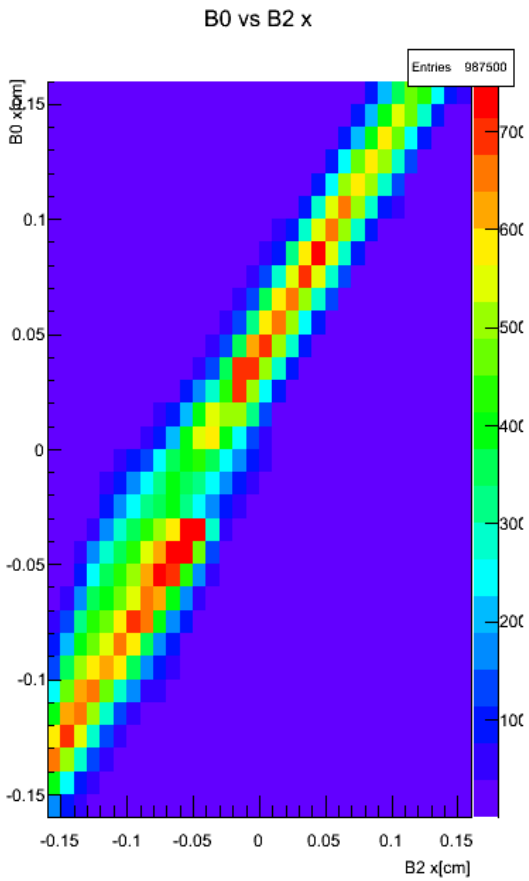
Threshold Comparison

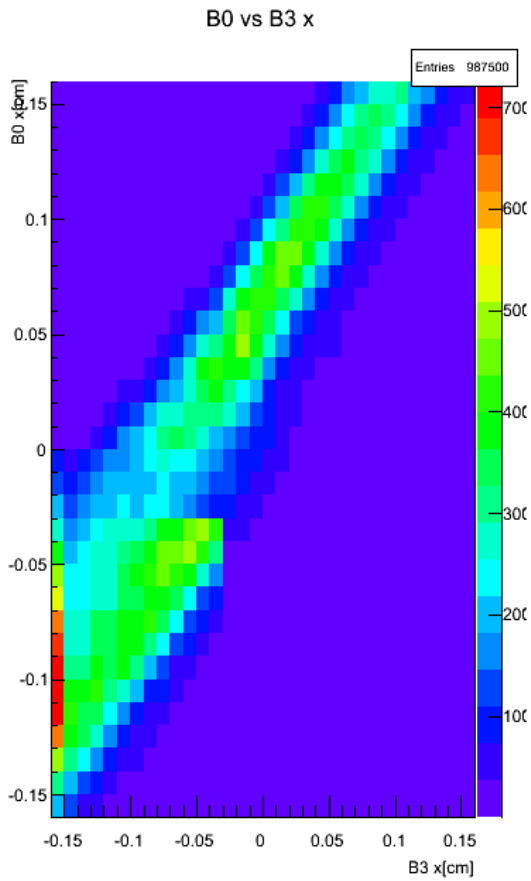




Coordinate Correlation

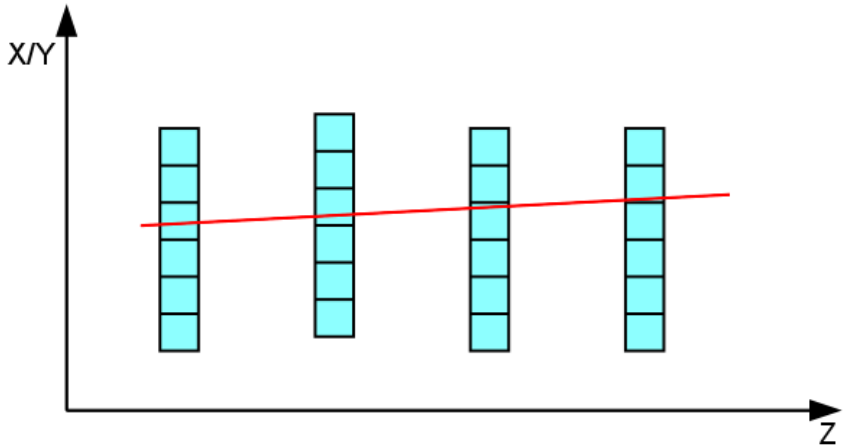






Montecarlo Results

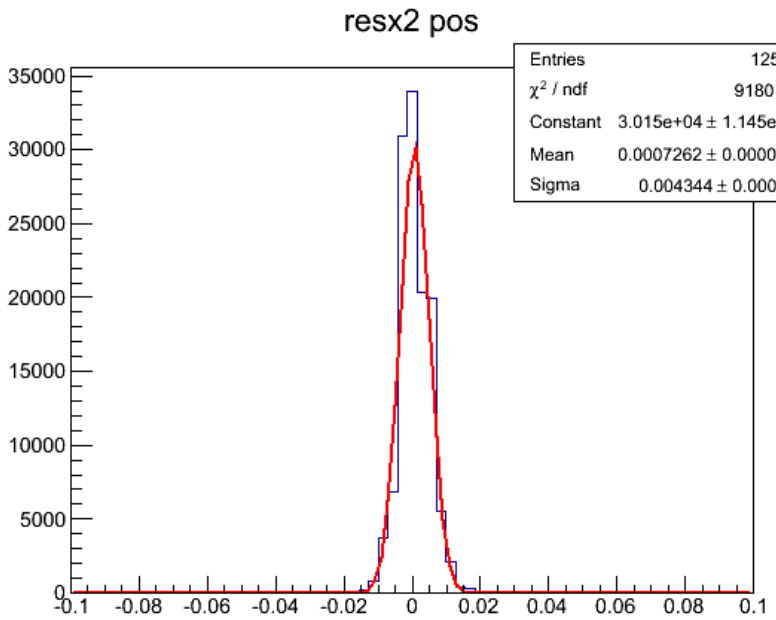
COMPONENTS	THICKNESS [cm]	MATERIAL
PixelPassive	0.0525	Si
PixelActive	0.0100	Si
Chip	0.0300	Si
Board Plane	0.1090	Cu+FR4
Capacitor Big	0.2018	Fused Si+Cu
Capacitor Small	0.0958	Fused Si+Cu

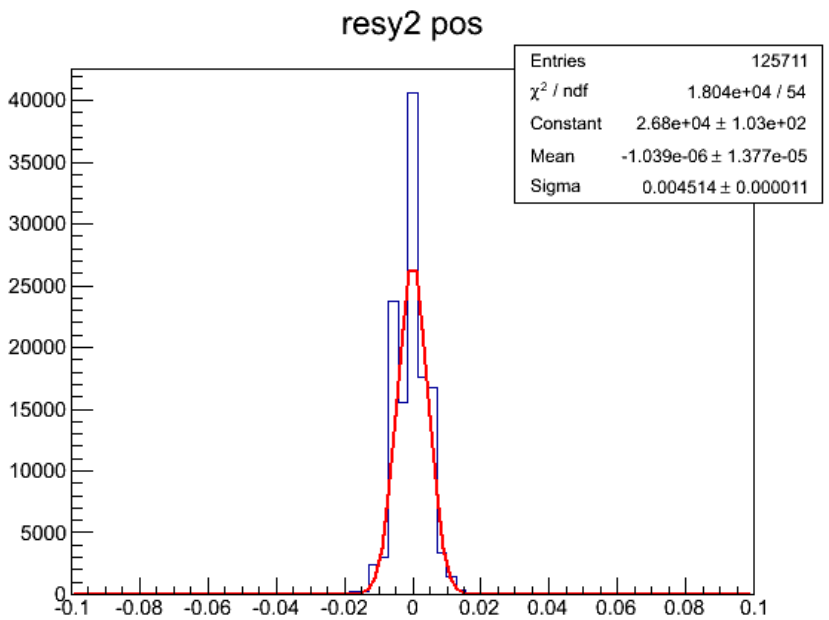


REGION	BOARD	σ_x [μm]	σ_y [μm]	σ_{xTRACK} [μm]	σ_{yTRACK} [μm]
ALL	0	58.8	65.9	23.4	25.4
	1	33.7	37.2		
	2	38	40		
	3	63.8	68.3		
X>0	0	50.4	61.8	21.7	24.3
	1	32.1	36.8		
	2	36.8	38.7		
	3	59.2	63.4		
X<0	0	66.8	70	24.4	26.7
	1	35.4	38		
	2	37.9	41		
	3	62.9	73.7		

$$\sigma_{track} = \frac{\sqrt[4]{\sigma_0 * \sigma_1 * \sigma_2 * \sigma_3}}{\sqrt{4}}$$

Allignment Results





$$\sigma_{track} = \frac{\sqrt[4]{\sigma_0 * \sigma_1 * \sigma_2 * \sigma_3}}{\sqrt{4}} \rightarrow \qquad \sigma_x \simeq 28.68 \qquad \sigma_y \simeq 29.19$$

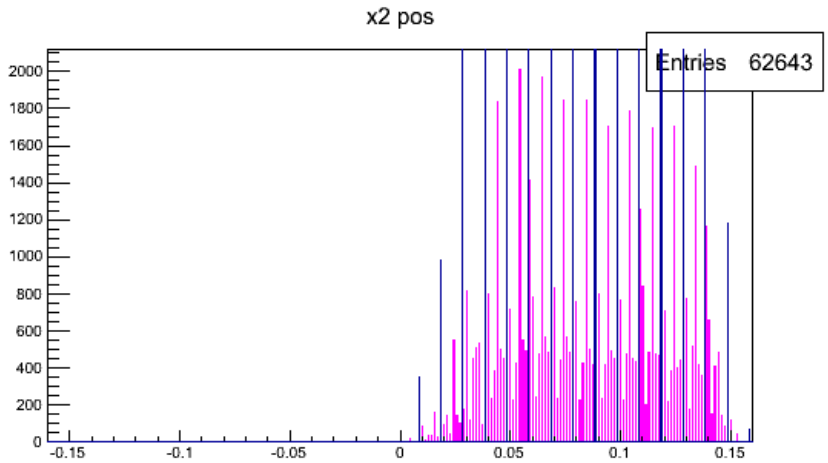
Outlook

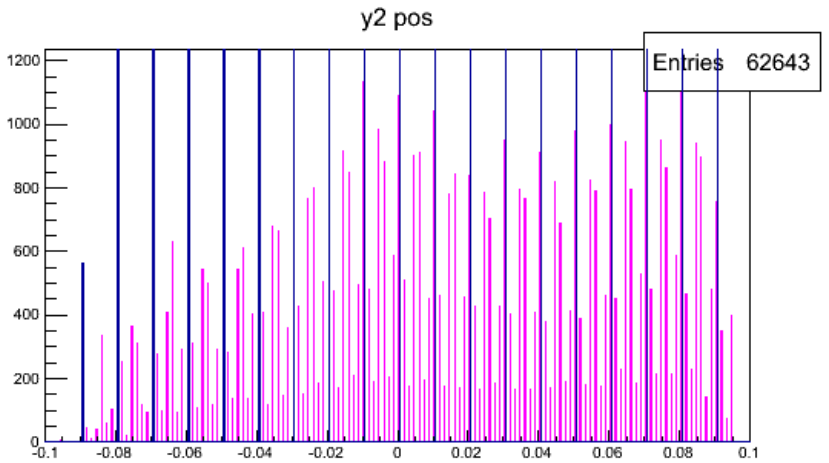
- Understand behaviour of cluster size
- Include large columns
- Efficiency study as a function of sensor HV

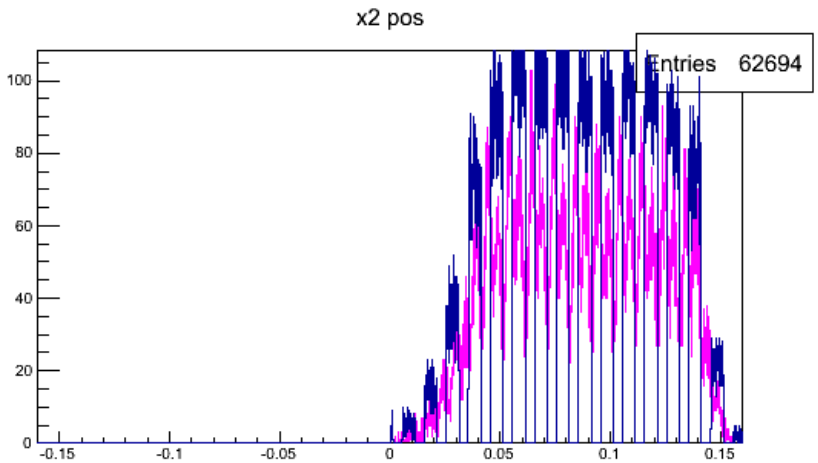
Thanks for the attention!

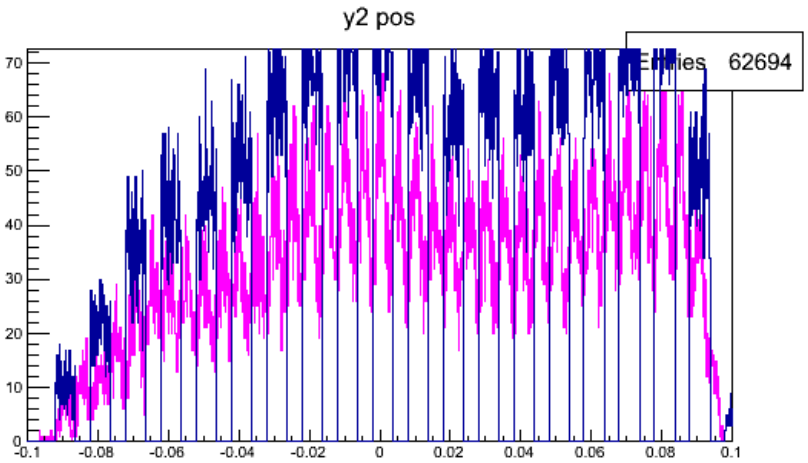
Backup Slides

Discrete behaviour









Discrete behaviour