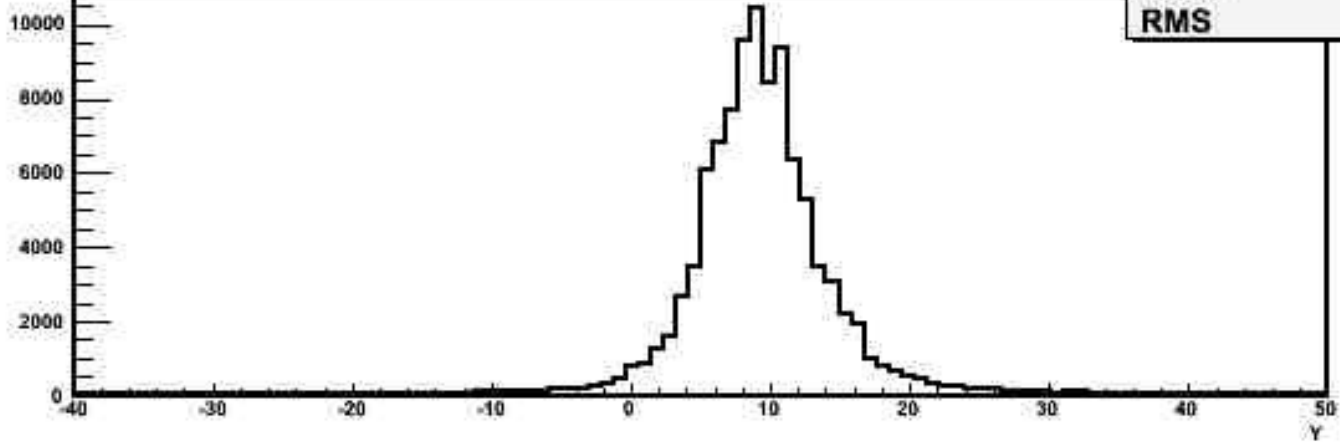


Low ADC Counts Signals

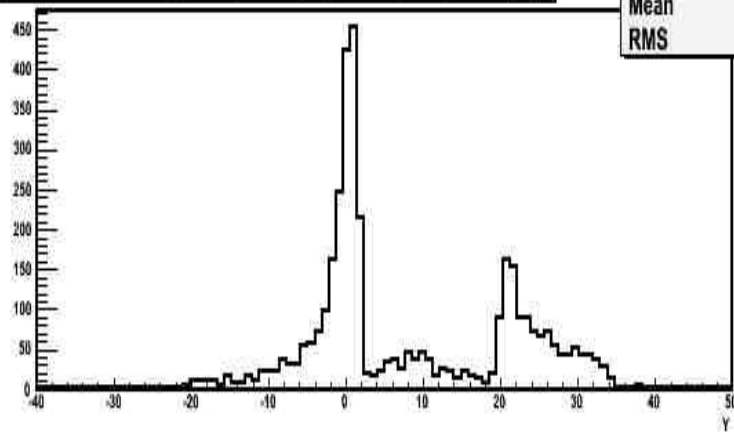
Cosenza Group

adc25 y[0]

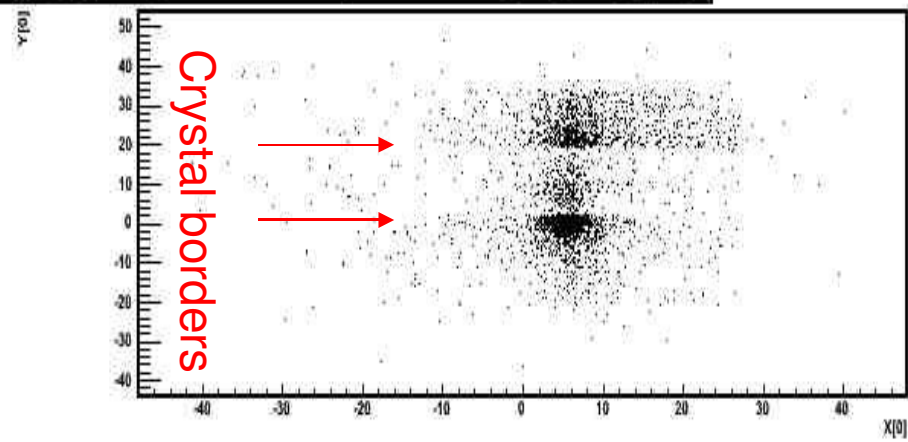


PbWO_4 , e^- (0°): Vertical position of the particles for tracker

adc25 y[0], (CHARGEADCN1-PED_MEAN_ADCN1[25])<3.*PED_RMS_ADCN1[25]



Y[0]:X[0] (N_X>0&&N_Y>0&&CHADCN1==25&&(CHARGEADCN1-PED_MEAN_ADCN1[25])<20.)

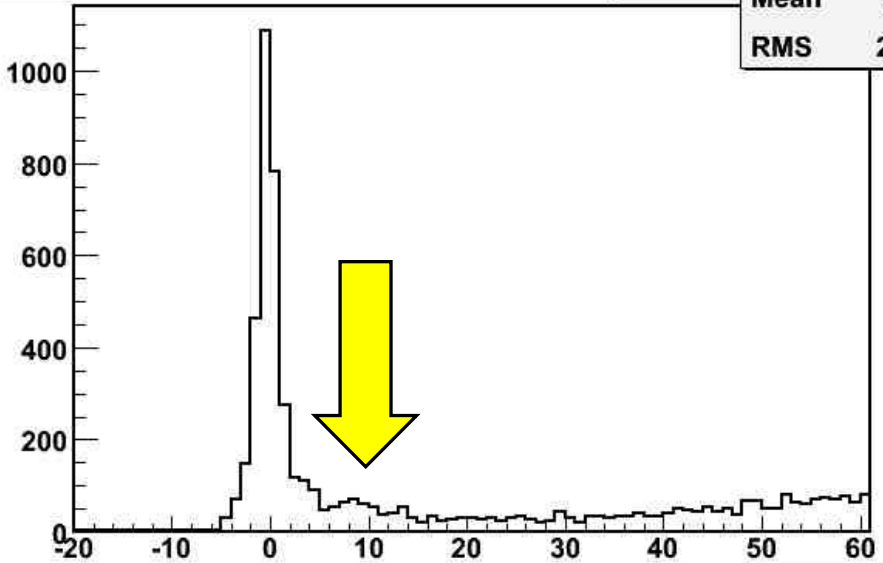


PbWO_4 , e^- (0°): Vertical position of the particles for tracker
(low counting)

To reduce the pedestal we try to exclude the events outside the crystal and the events on the borders

run 402 0 deg ch25-ped

Entries	22521
Mean	15.81
RMS	21.47



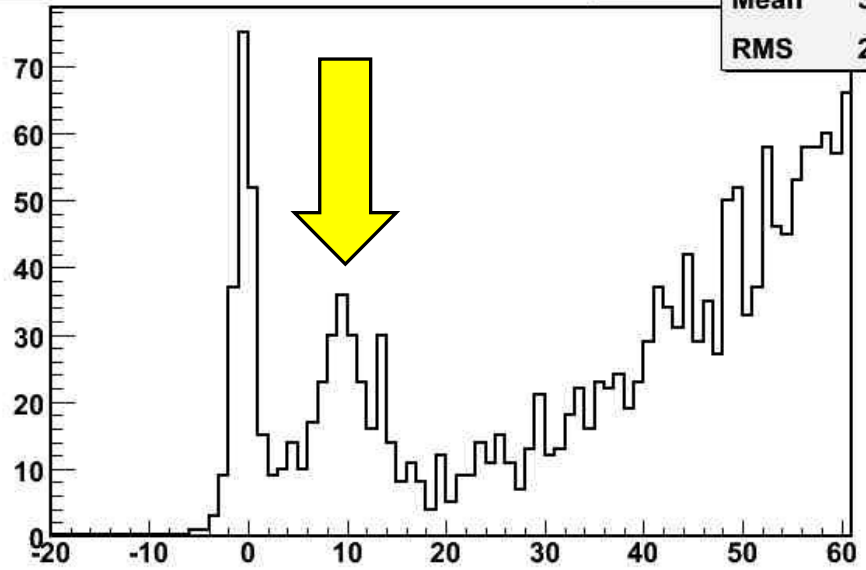
crystal and the events on the borders

PbWO4
Tail of the distribution
Ch.25 (PMT right)

PbWO4
Tail of the distribution
with $3 < Y < 19$

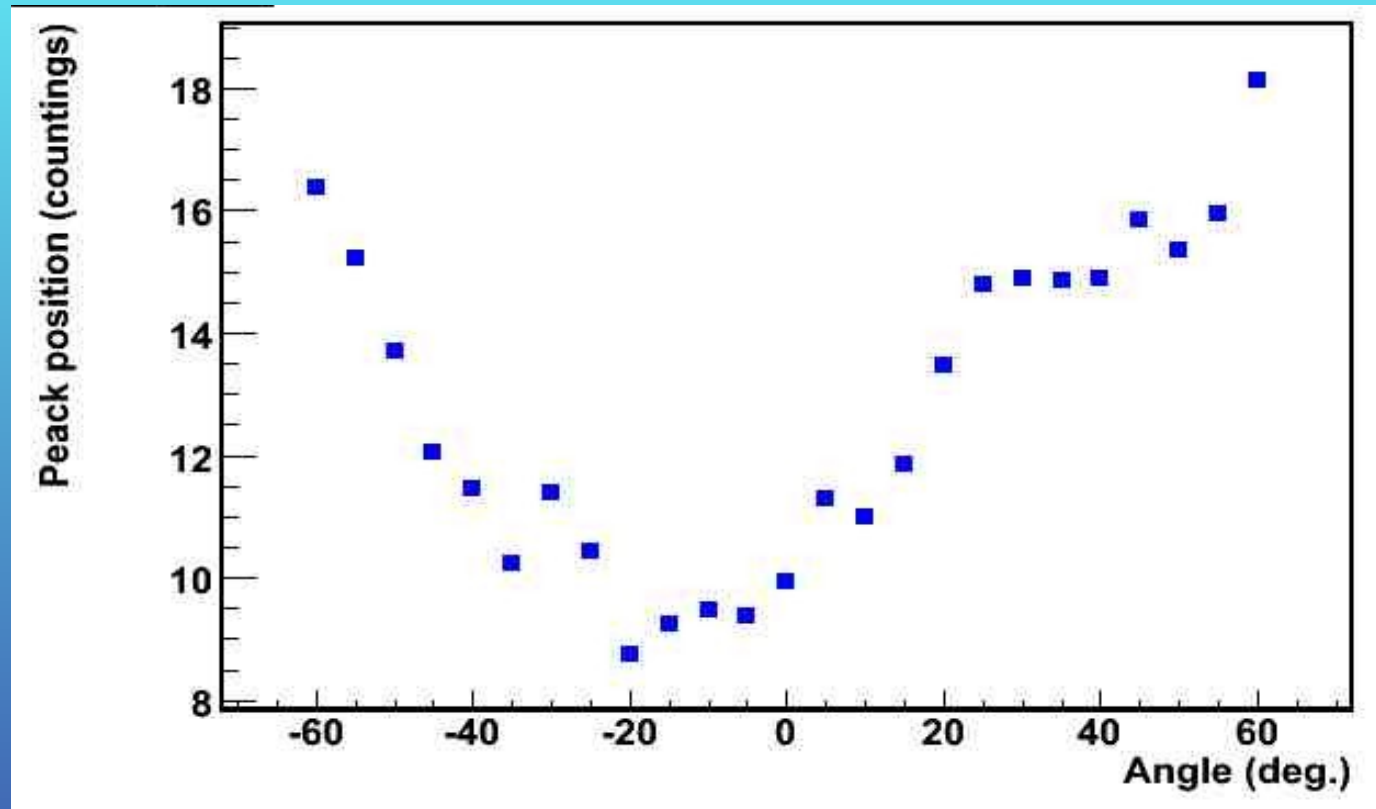
run 402 0 deg ch25-ped

Entries	16863
Mean	35.28
RMS	20.66



We can see a secondary peak near the pedestal

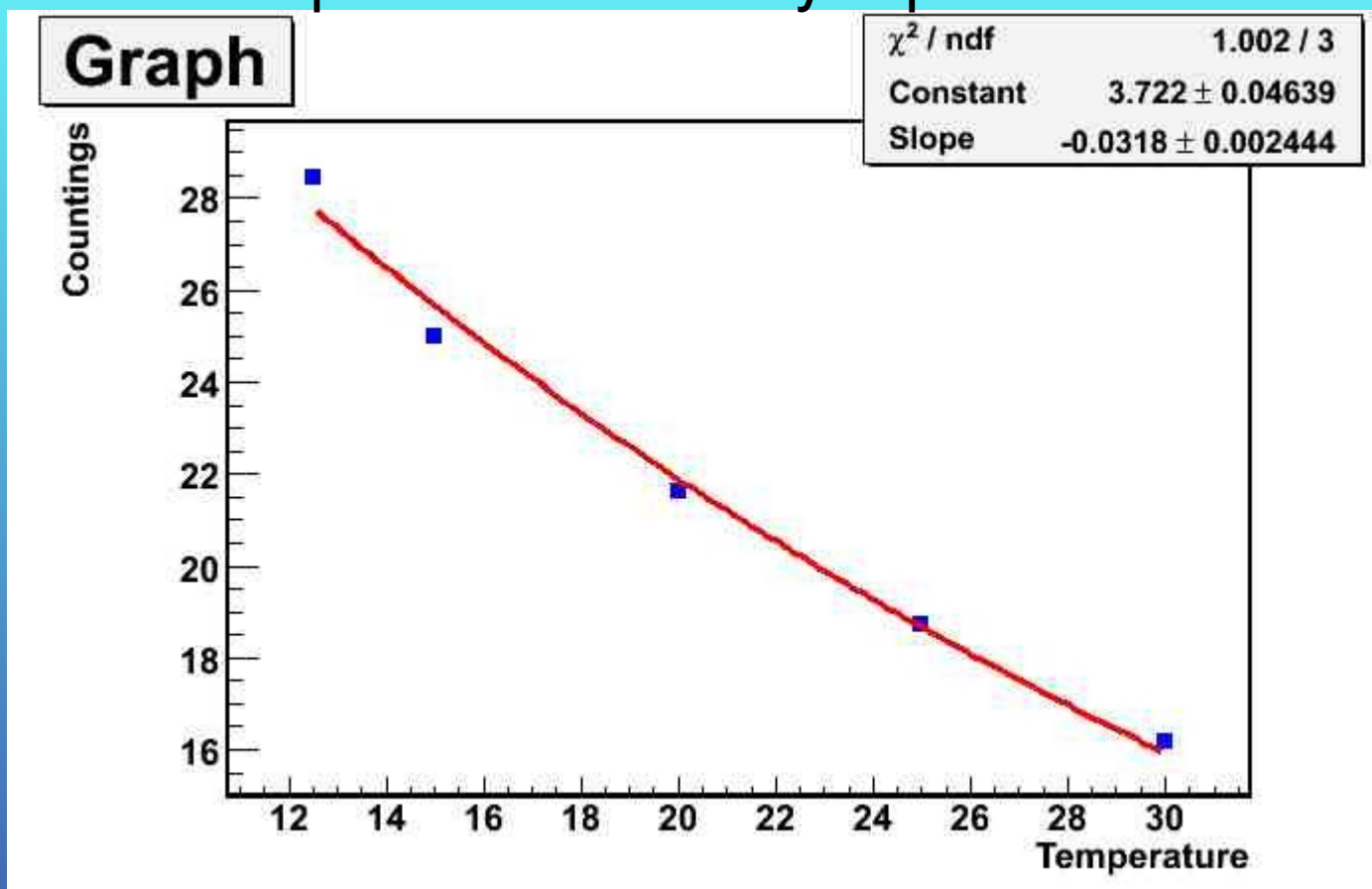
We study the dependence of the secondary peak position from the angle.



PbWO₄, runs 402-433 (50GeV e⁻) right PMT

The position is sensible to angular variation as a peack caused by a particle

The position is sensible also to temperature variation as a peak caused by a particle

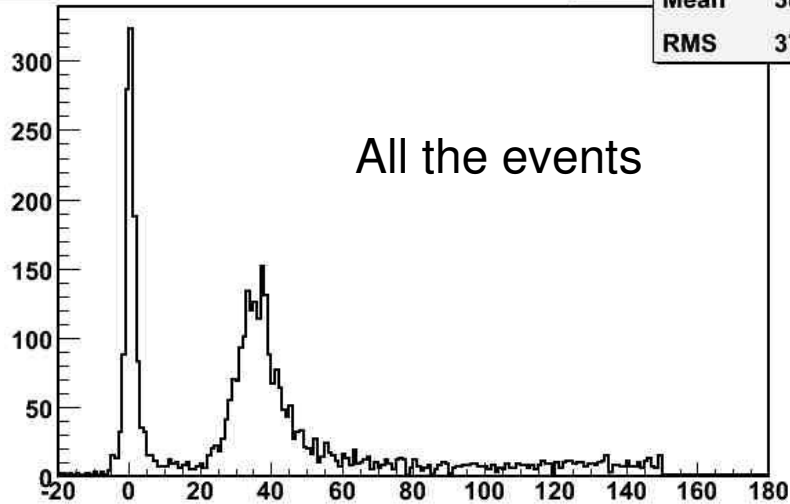


PbWO₄, runs 402-433 (50GeV e⁻) right PMT

A contamination of the e⁻ beam by MIP is the more probable explanation for the peak.

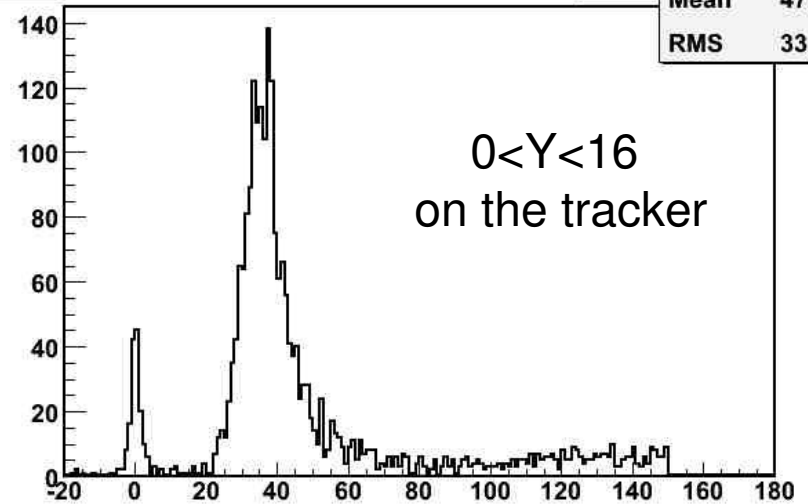
run 1580 0 deg ch26-ped

Entries	4042
Mean	38.65
RMS	37.62



run 1580 0 deg ch26-ped

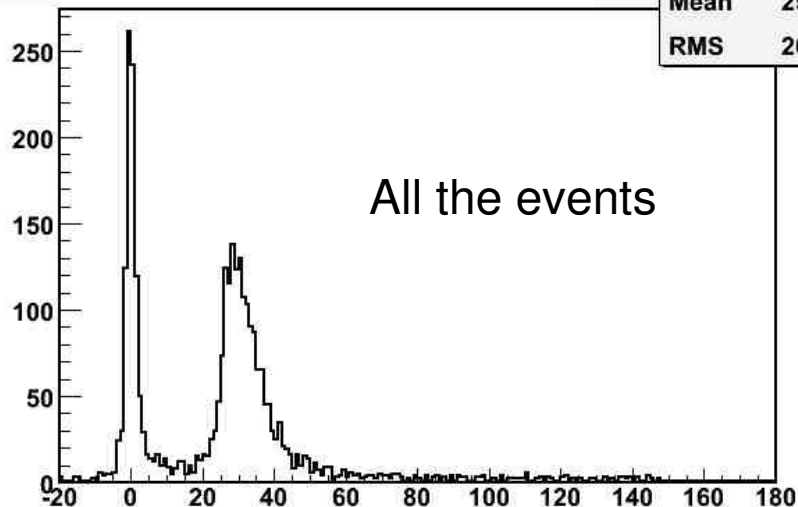
Entries	2385
Mean	47.92
RMS	33.18



Contamination found also for the BGO runs;
BGO, PMT2 (S) (0 deg. And 60 deg.) for e^-

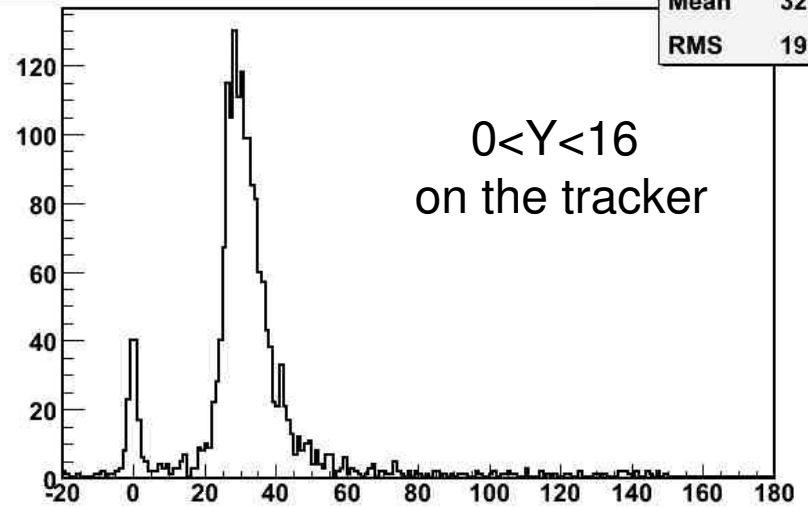
run 1608 60 deg ch26-ped

Entries	3046
Mean	25.99
RMS	26.12



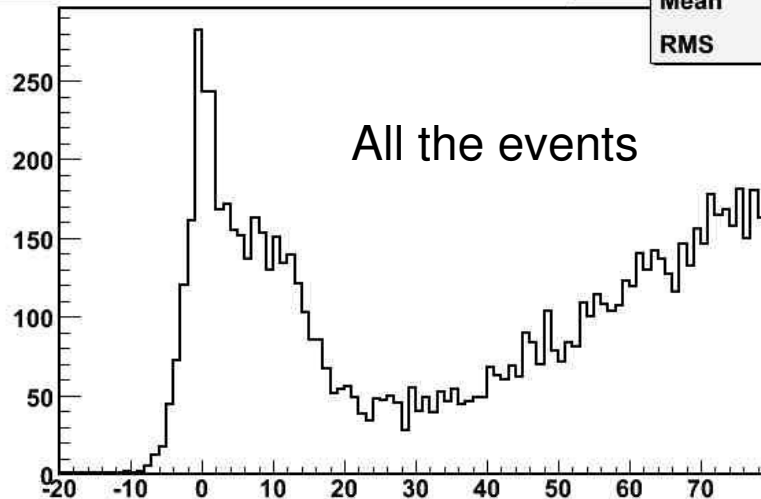
run 1608 60 deg ch26-ped

Entries	1848
Mean	32.34
RMS	19.44



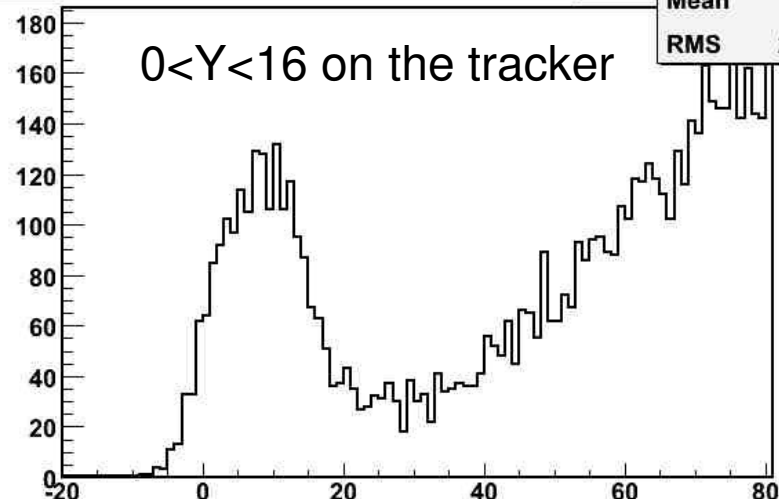
run 1580 0 deg ch25-ped

Entries 28240
Mean 37.61
RMS 28.22



run 1580 0 deg ch25-ped

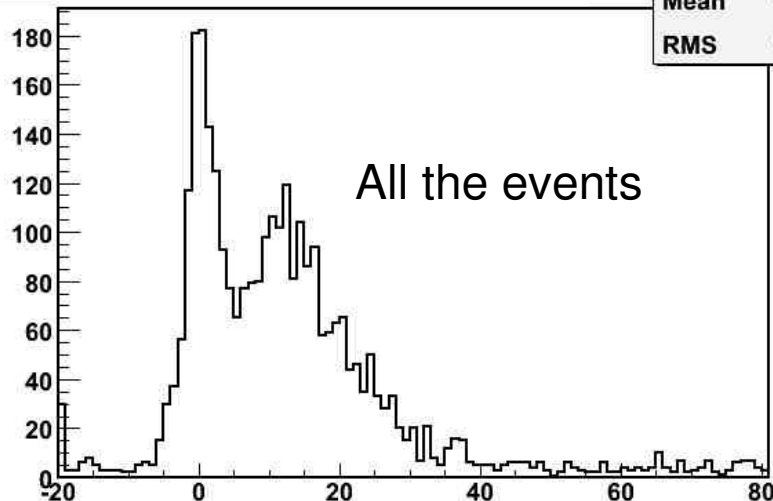
Entries 24335
Mean 45.21
RMS 27.04



BGO, PMT1 (C) (0 deg. And 60 deg.) for e^-

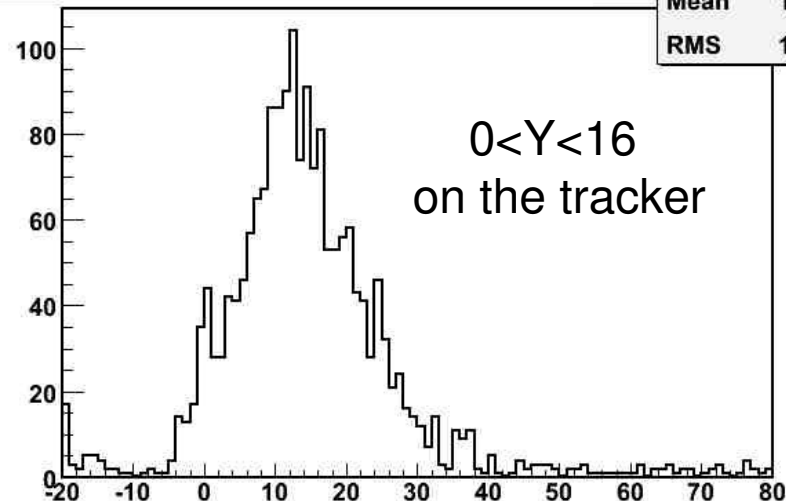
run 1608 60 deg ch25-ped

Entries 3285
Mean 12.38
RMS 15.79

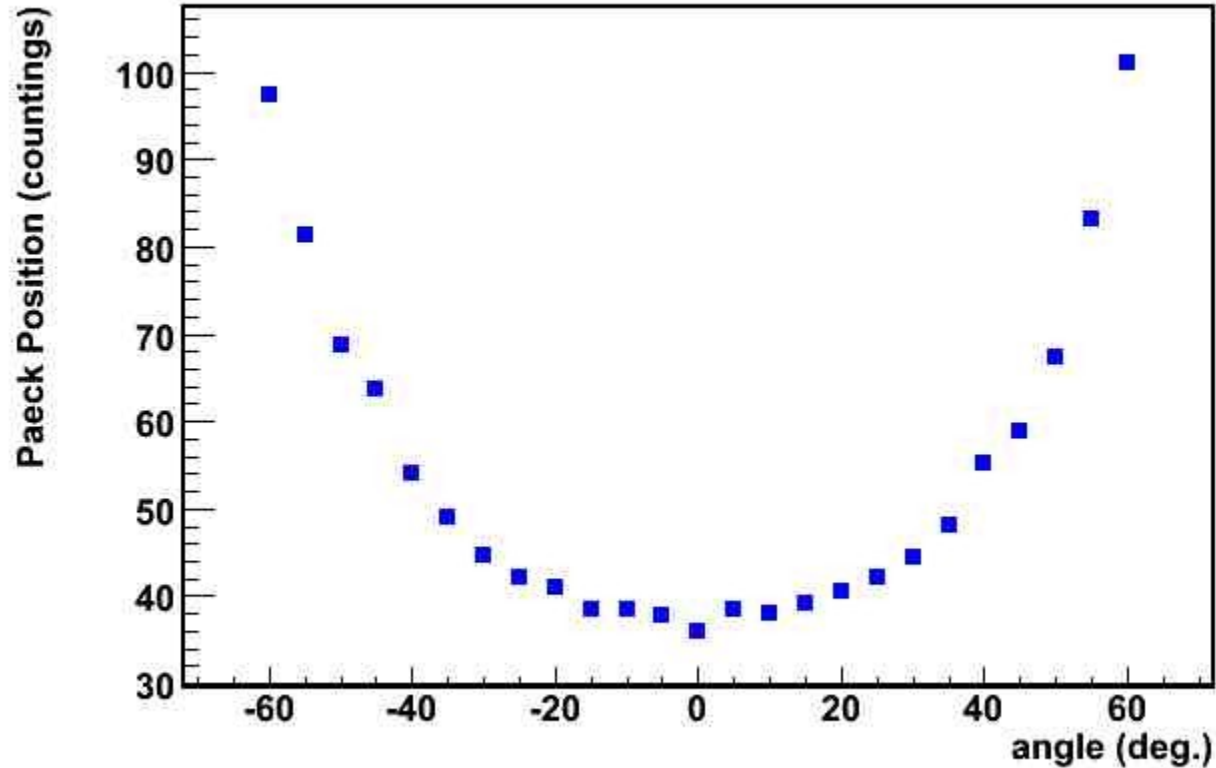


run 1608 60 deg ch25-ped

Entries 1944
Mean 14.72
RMS 13.12



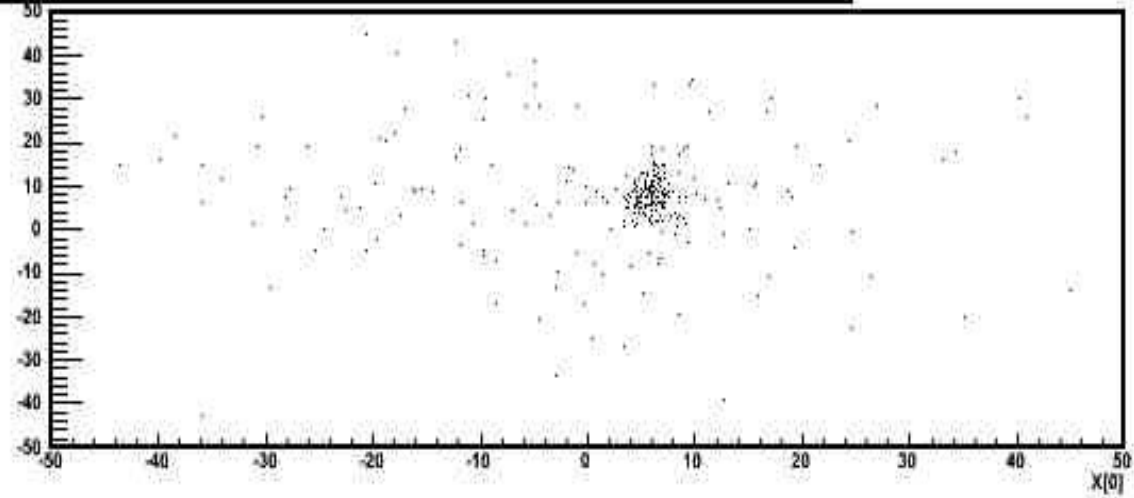
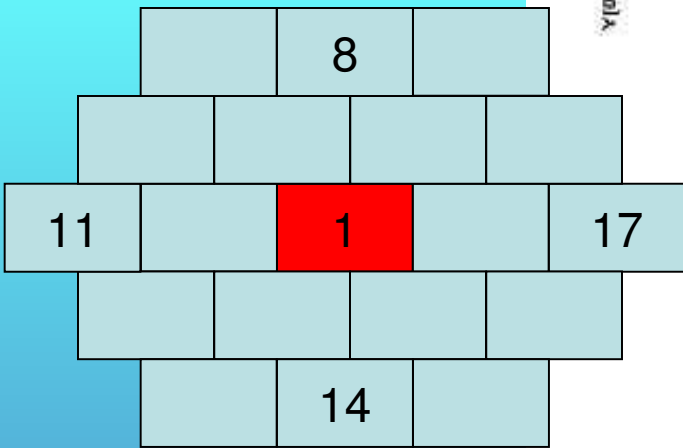
Graph



BGO, runs 1580-1608 (50GeV e^-) PMT1 (S)

We check the angular dependance of the secondary peak position also for BGO runs.

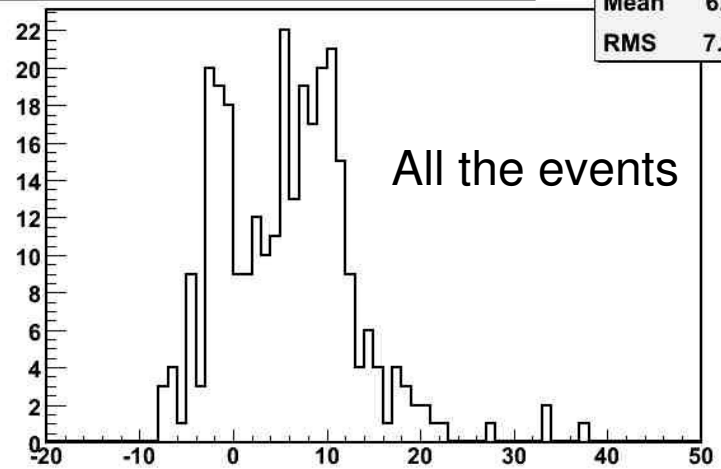

```
Y[0],X[0] (R, X=0&&N, Y=0&&X[0]=100.&&X[0]=-100.&&CHARGEADCN1=PED_MEAN_ADCN1[25]*3.*PED_RMS_ADCN1[25]&&CHADCN1==25)
```



Crystal matrix, e- beam centered on tower 1 (run 1243);
there are no visible border effects.
We check only the central part of the beam to be sure.

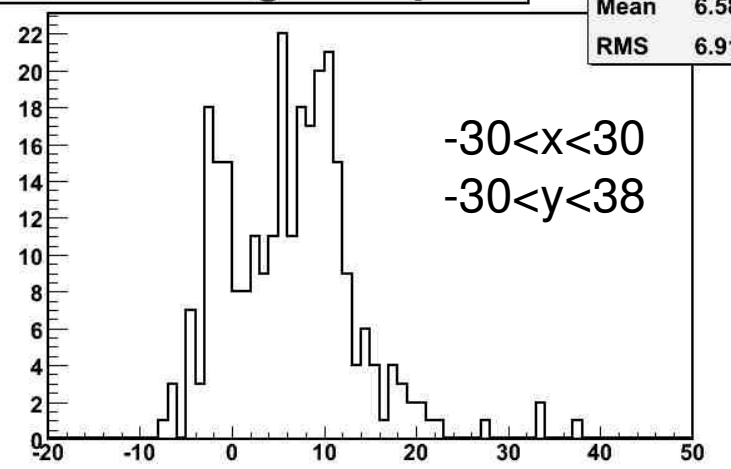
run 1243 60 deg ch25-ped

Entries	321
Mean	6.041
RMS	7.017

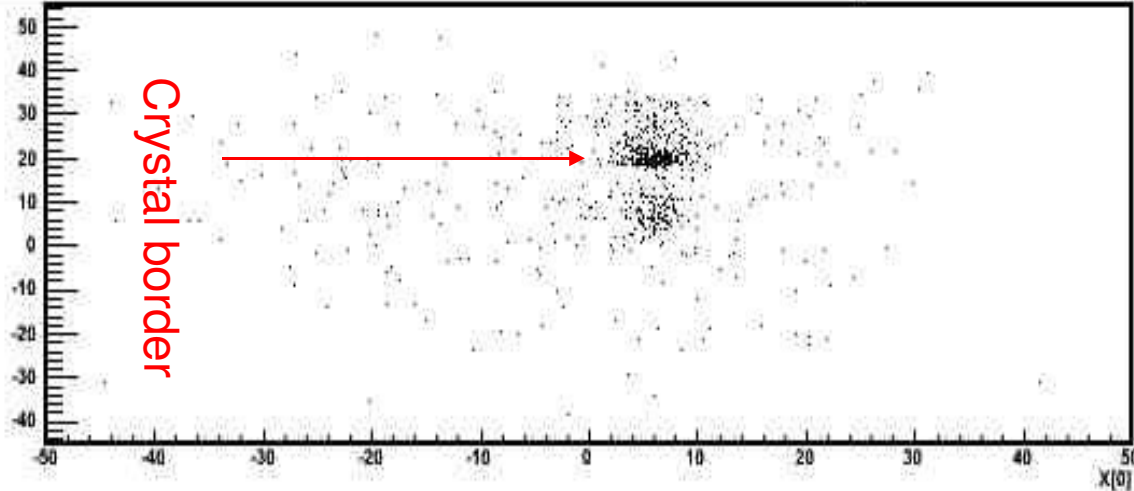
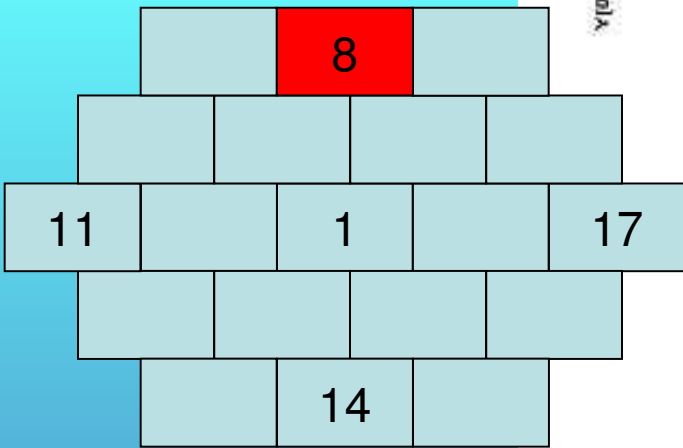


run 1243 60 deg ch25-ped

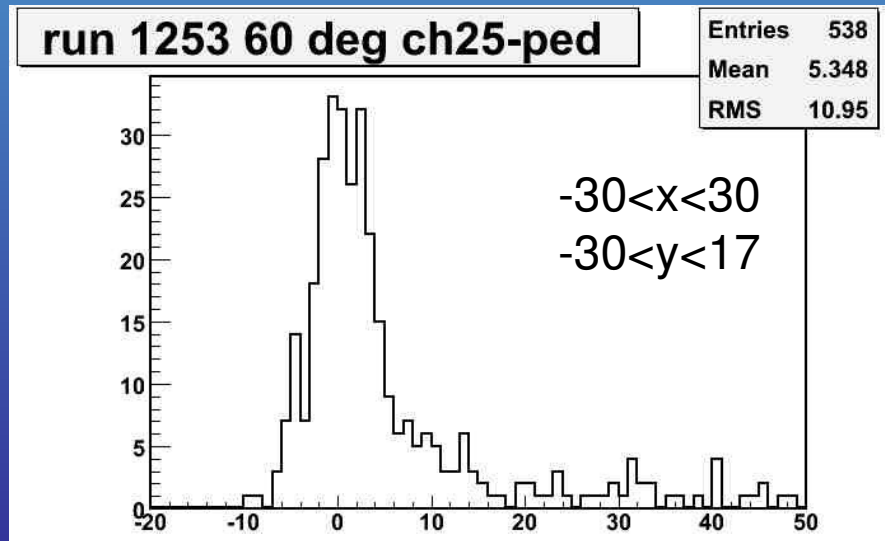
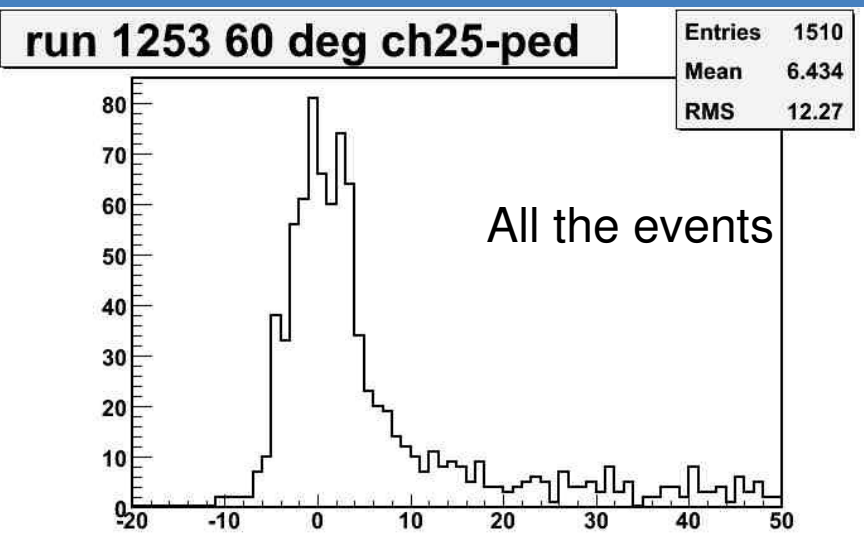
Entries	299
Mean	6.583
RMS	6.915



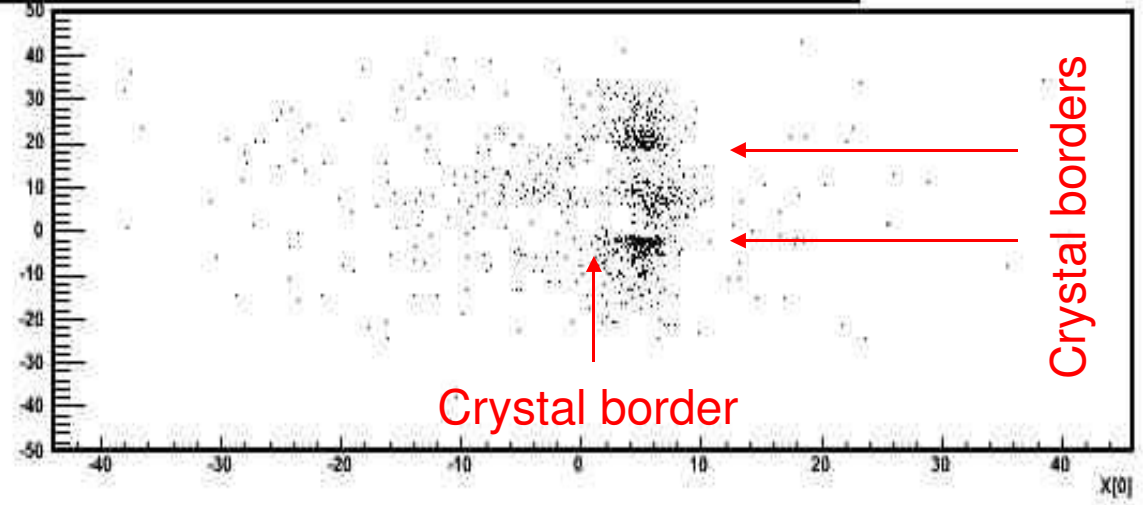
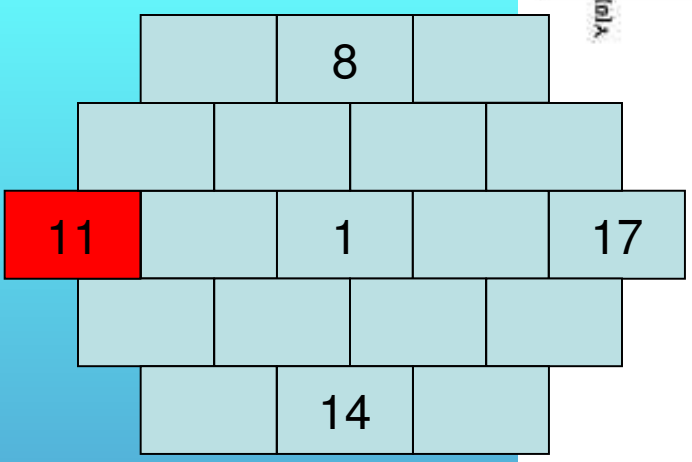
```
Y[0].X[0] (N, X=0&&N, Y=0&&X[0]=1000.&&X[0]=1000.&&CHARGEADCN1-PED_MEAN_ADCN1[25]=1.*PED_RMS_ADCN1[25]&&CHADCN1==25)
```



Crystal matrix, e- beam centered on tower 8 (run 1253).



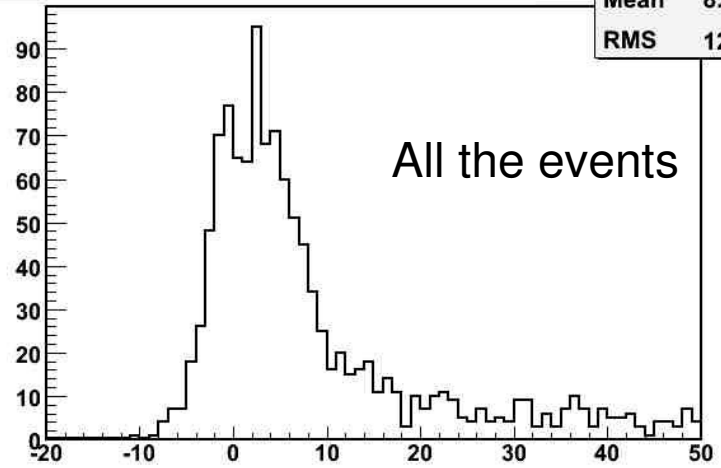
```
Y[0].X[0] (N, X=0&&N, Y=0&&X[0]-1000.&&X[0]-1000.&&CHARGEADCN1-PED_MEAN_ADCN1[25])=1.'PED_RMS_ADCN1[25]&&CHADCN1=-25)
```



Crystal matrix, e- beam centered on tower 11 (run 1245);

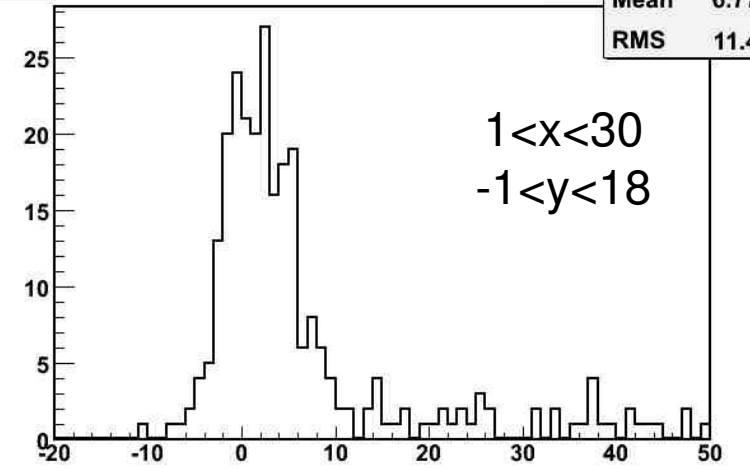
run 1245 60 deg ch25-ped

Entries	1143
Mean	8.694
RMS	12.12

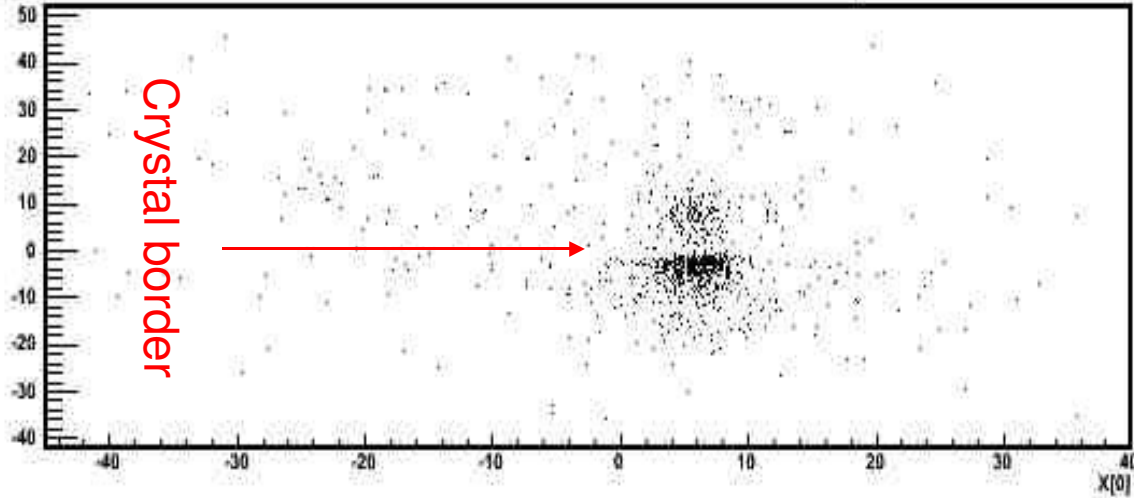
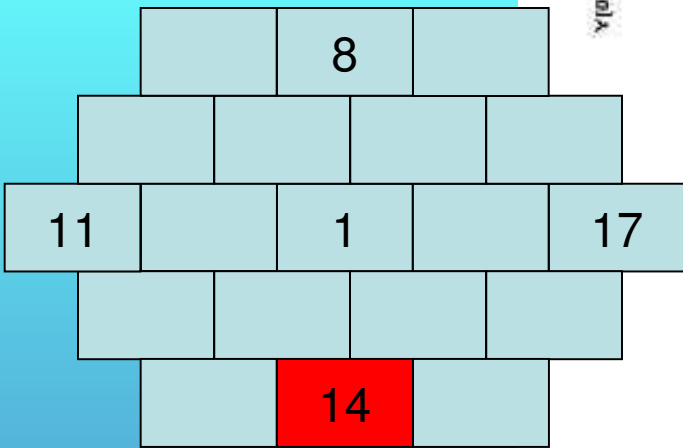


run 1245 60 deg ch25-ped

Entries	263
Mean	6.778
RMS	11.42



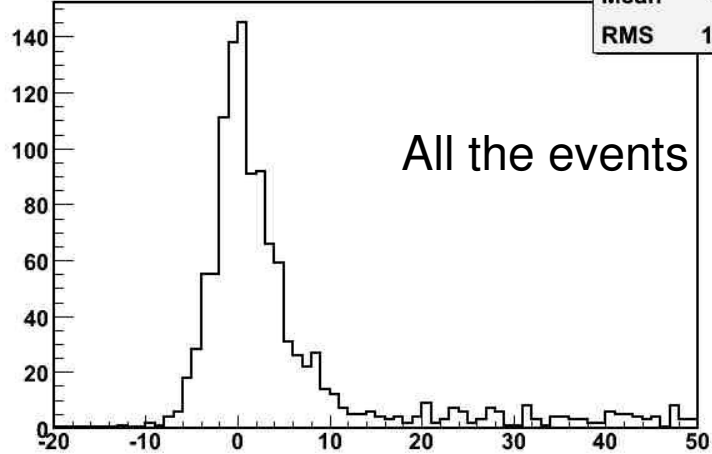
```
Y[0],X[0] (N, X=0&&N, Y=0&&X[0]=1000.&&X[0]=1000.&&CHARGEADCN1=PED_MEAN_ADCN1[25]=3.*PED_RMS_ADCN1[25]*X&&CHADCN1=35)
```



Crystal matrix, e- beam centered on tower 14 (run 1260);

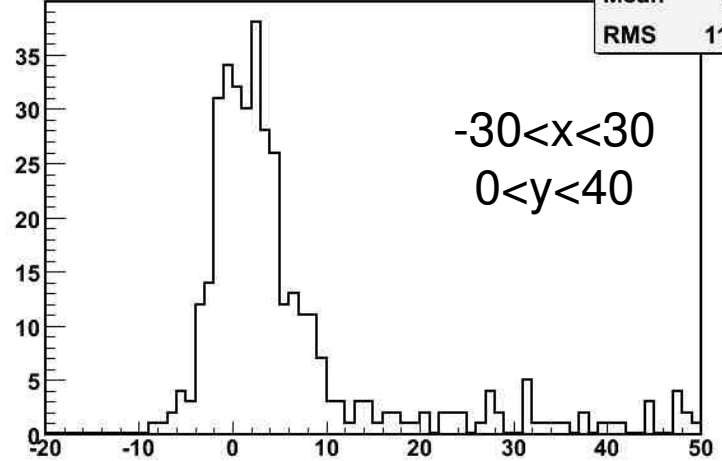
run 1260 60 deg ch25-ped

Entries	1162
Mean	4.97
RMS	11.08

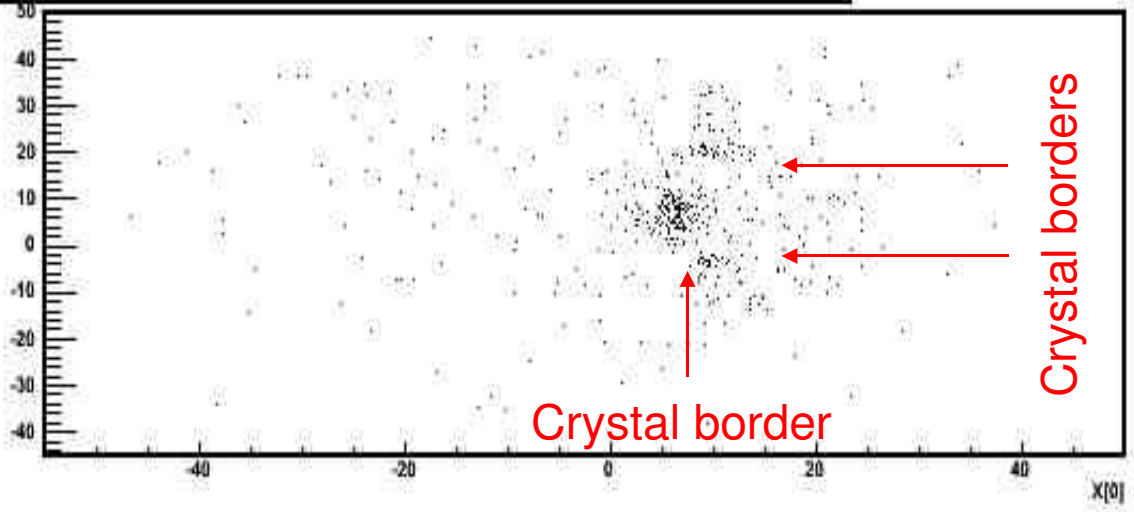
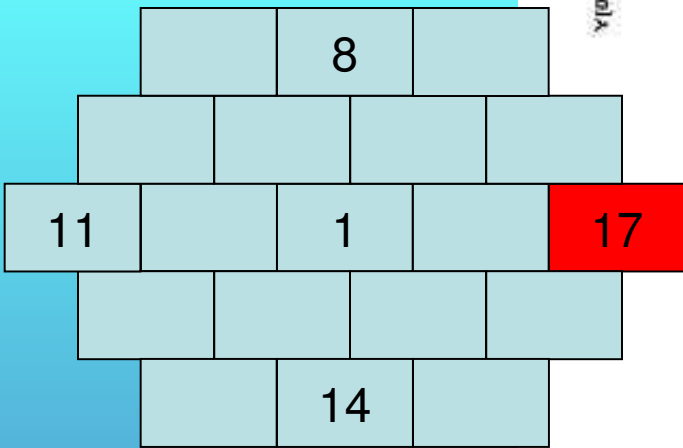


run 1260 60 deg ch25-ped

Entries	369
Mean	6.01
RMS	11.06



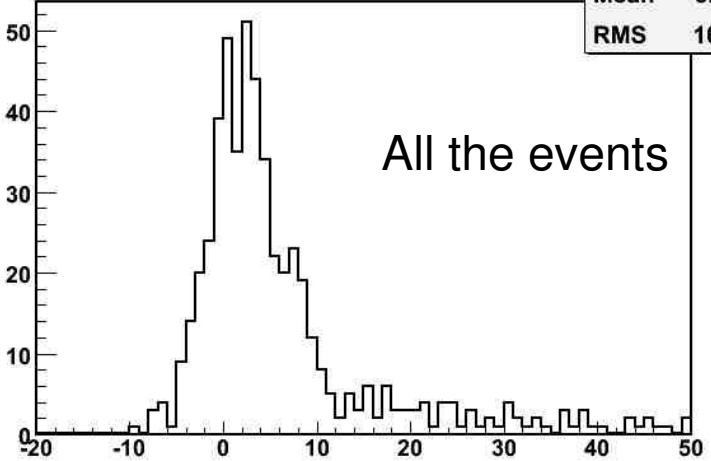
```
Y[0].X[0] (N, X=0&&N, Y=0&&X[0]-1000.&&X[0]-1000.&&CHARGEADCN1-PED_MEAN_ADCN1[25]<1.*PED_RMS_ADCN1[25]&&CHADCN1==25)
```



Crystal matrix, e- beam centered on tower 17 (run 1247);

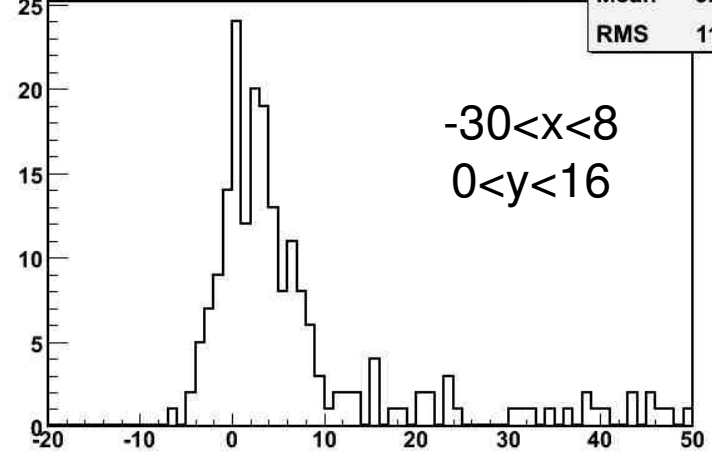
run 1247 60 deg ch25-ped

Entries	519
Mean	6.114
RMS	10.19



run 1247 60 deg ch25-ped

Entries	199
Mean	6.898
RMS	11.45



CONCLUSIONS

- We investigated about low counts origin in single crystals and crystal matrix.
- In PbWO₄ and BGO single crystals we can see a peak near the pedestal. This peak is clearly caused by a contamination of the beam.
- In the crystal matrix we cannot observe this effect (but we suppose the contamination exists).