

Status of the FPCCD software

Physics and Software meeting

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Today's report

■ Range cut study

- with the noise and threshold.
- # clusters, dE/dx and pixel occupancy were checked.

■ Tracking study

- tracking study with FPCCD was started.
- $t\bar{t} \rightarrow 6$ quarks 350 GeV sample was analyzed.

(500 GeV sample is not available because these don't include momentum.)

Pixel occupancy

- The occupancy of pair background with various range cut were checked.
 - Noise rate : 50 electrons / pixel
 - Threshold : 200 electrons / pixel
 - digitized into 7bit, bin width : 25 electrons

The occupancy of pair background for 1 train

Range cut	layer1a	layer1b	Data statistics
100um	2.07 %	1.11 %	100BX
10um	1.99 %	1.08 %	100BX
1um	1.68 %	9.5 %	100BX

- The difference between 1 um and 10 um cannot be ignored.

Number of clusters

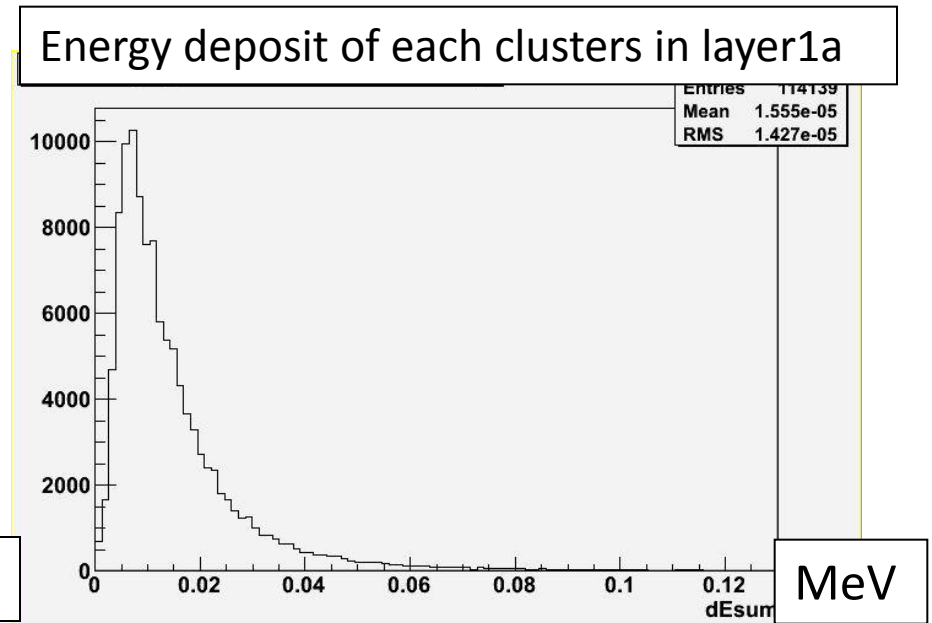
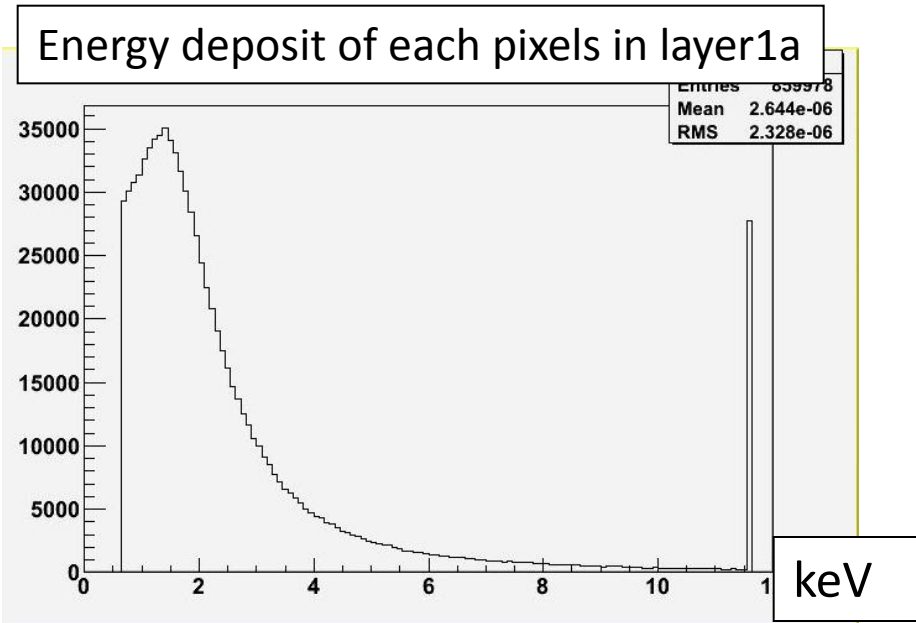
- The number of clusters pair background with various range cut were checked.

# clusters / BX			
Range cut	layer1a	layer1b	Data statistics
100um	115	67	100BX
10um	143	85	100BX
1um	146	88	100BX

- Value at range cut 100um is significantly different.

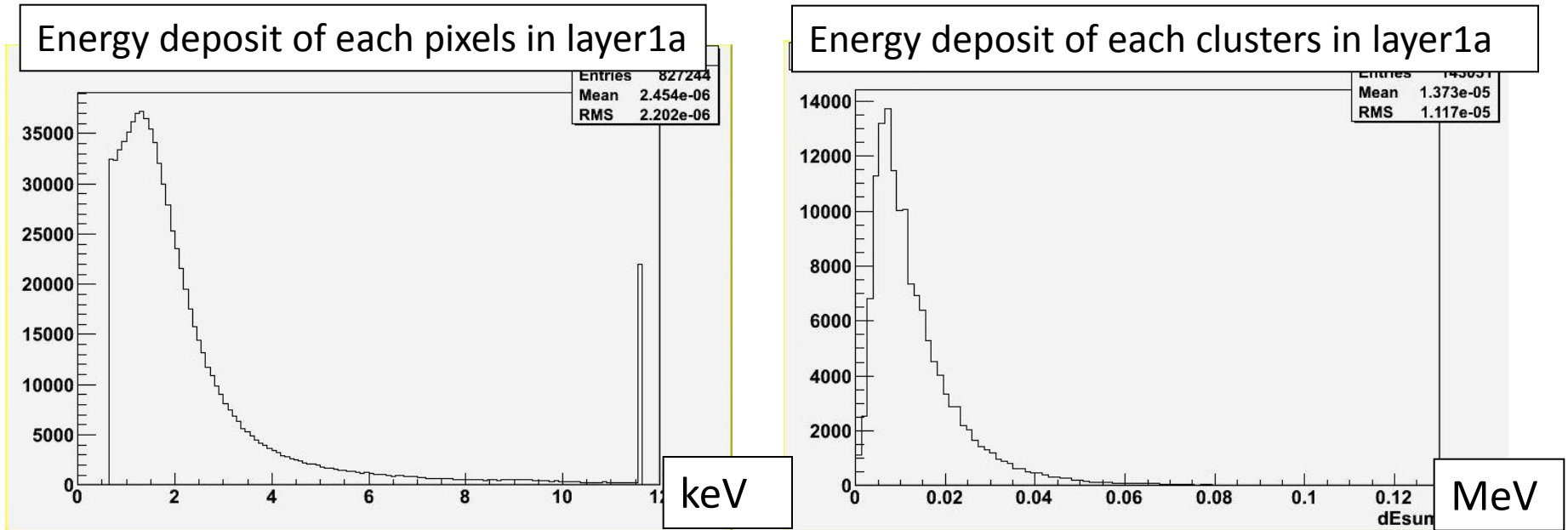
Pulse height at range cut 100um

- The pulse height of each pixels and each clusters at range cut 100um.



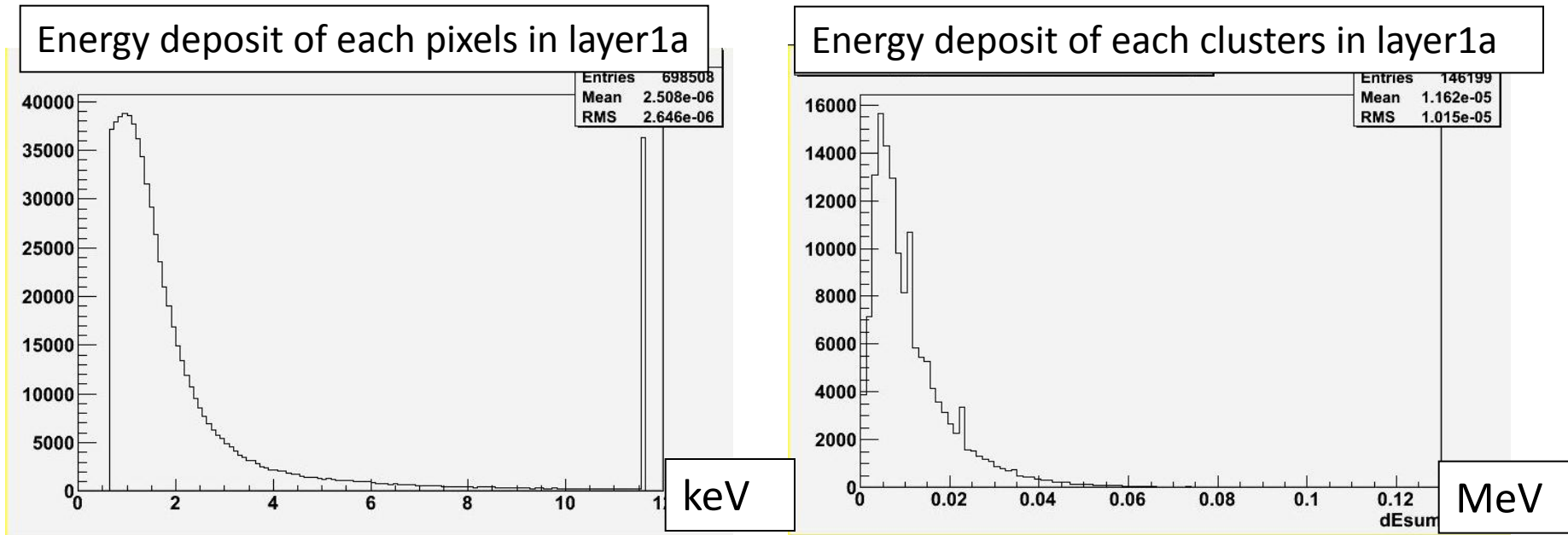
Pulse height at range cut 10um

- The pulse height of each pixels and each clusters at range cut 10um.



Pulse height at range cut 1um

- The pulse height of each pixels and each clusters at range cut 1um.



- At shorter range cut, low energy deposition hit was increased.

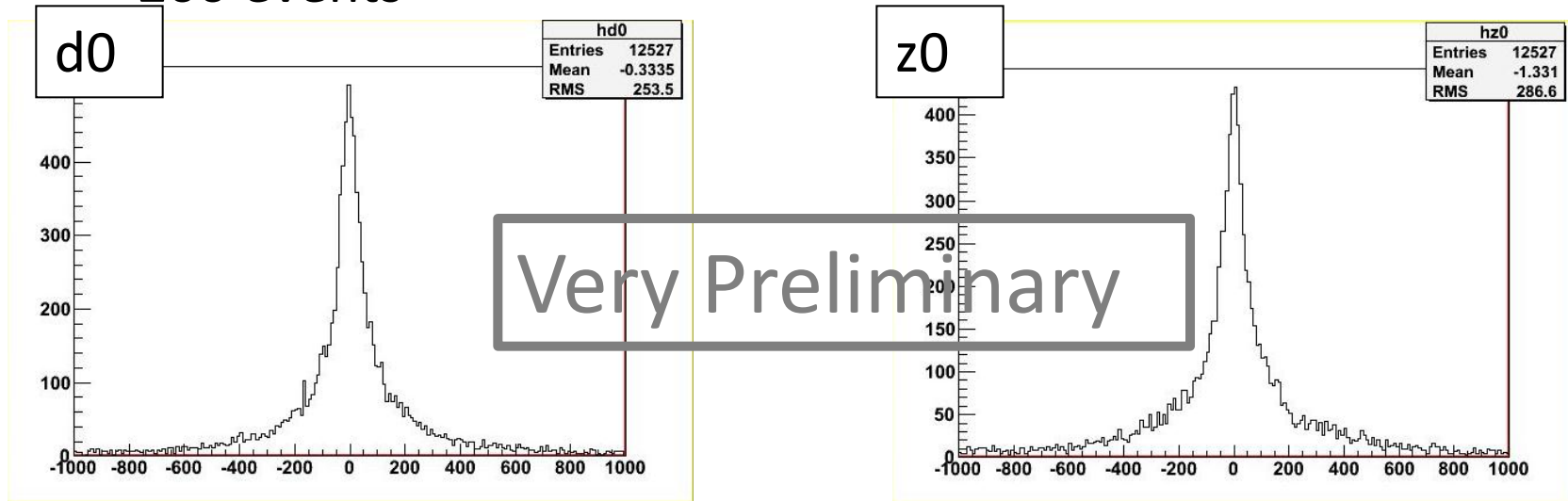
Tracking study

■ Tracking study with FPCCD was started.

— ttbar -> 6 quarks

— $E_{\text{CM}} : 350\text{GeV}$

— 200 events



- IP resolution can be estimated.
- This is very preliminary result. (only for 200 events)
- Many more events will be analyzed.

Summary/Plan

■ Range cut study

- with noise and threshold.
- Pixel occupancy : there are not negligible differences at range cut 1 μ m.
- # clusters : significantly different at range cut 100 μ m.
- pulse height : low energy deposition hit was increased at shorter range cut.

It seems to need to analyze about range cut between 1~10 μ m.

■ Tracking study

- Tracking study with FPCCD was started.
- Many more events will be analyzed.