

Beam test status update

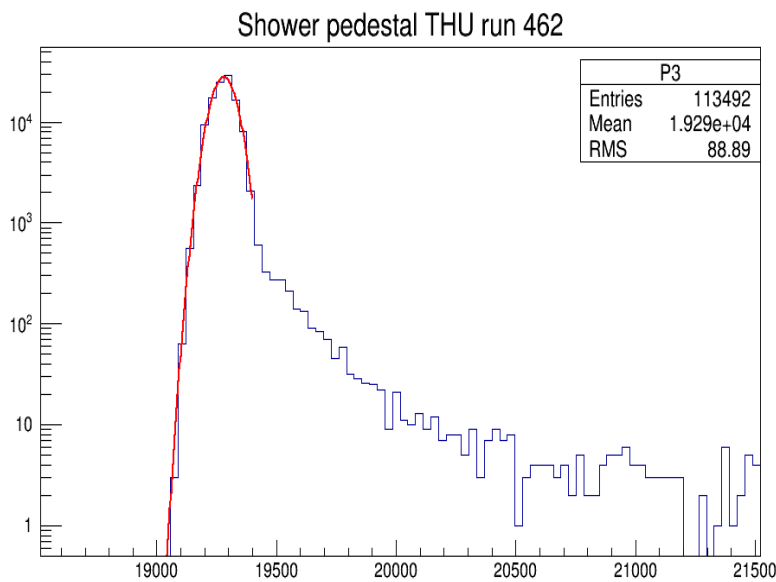
12/22/2016

Ye Tian, SDU

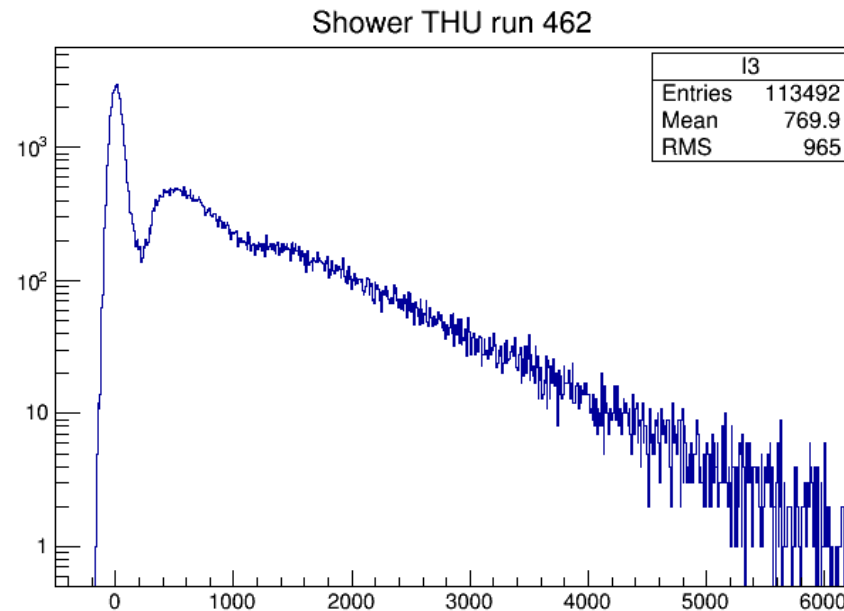
Vincent Sulkosky, UVA

Alteration on dealing with pedestal

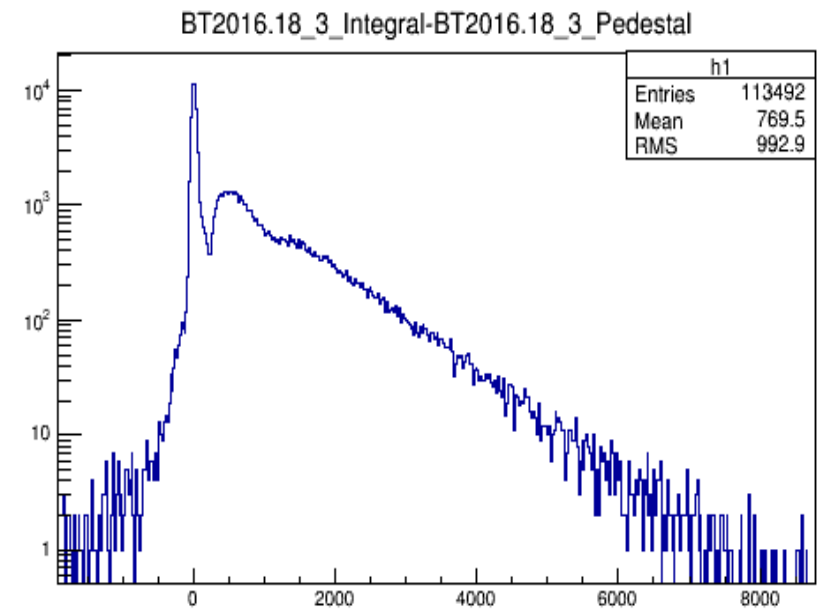
- Fit the pedestal spectrum that is sum of first 10 points in FADC, get the mean value constant of pedestal spectrum as pedestal, not event by event showed before. (No weird negative peak now.)



Pedestal fit



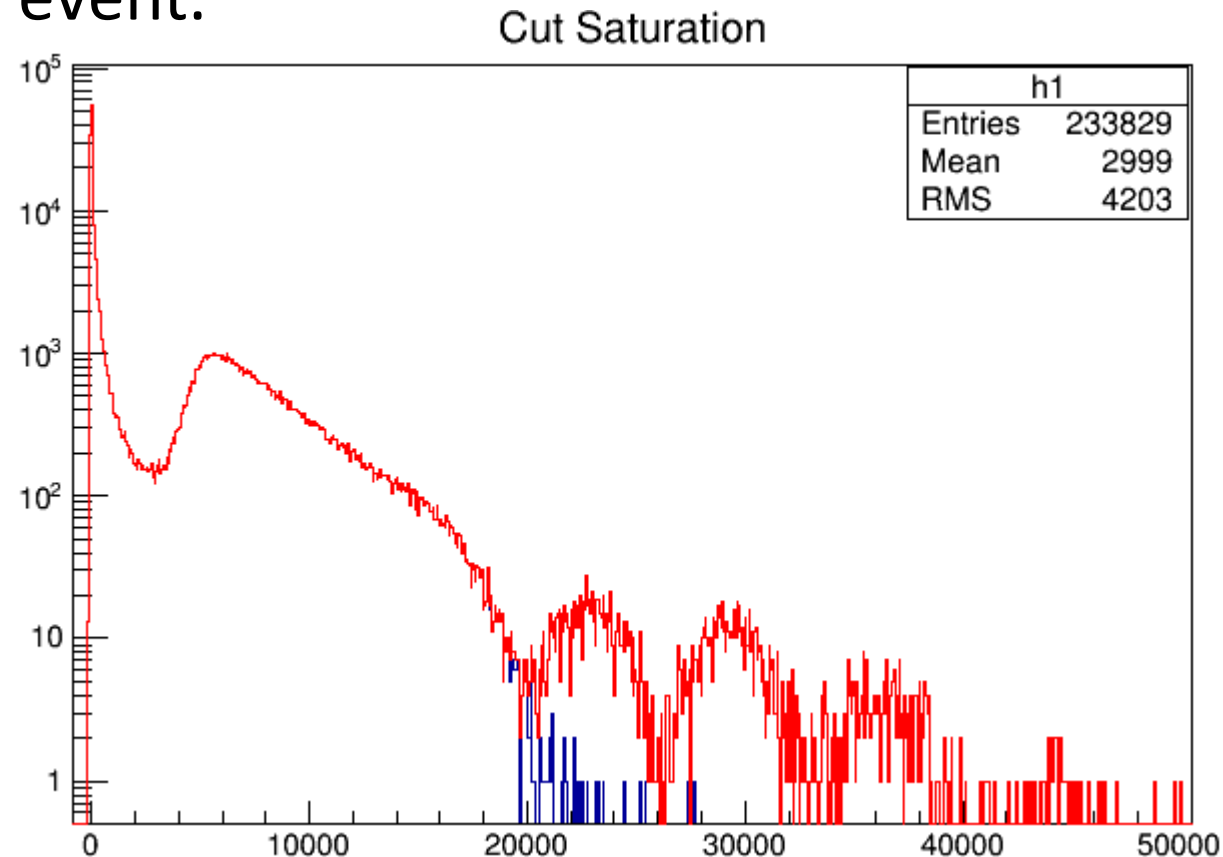
Subtracted by pedestal mean value
Pedestal fit sigma 50



Subtract pedestal event by event
Pedestal fit sigma 30

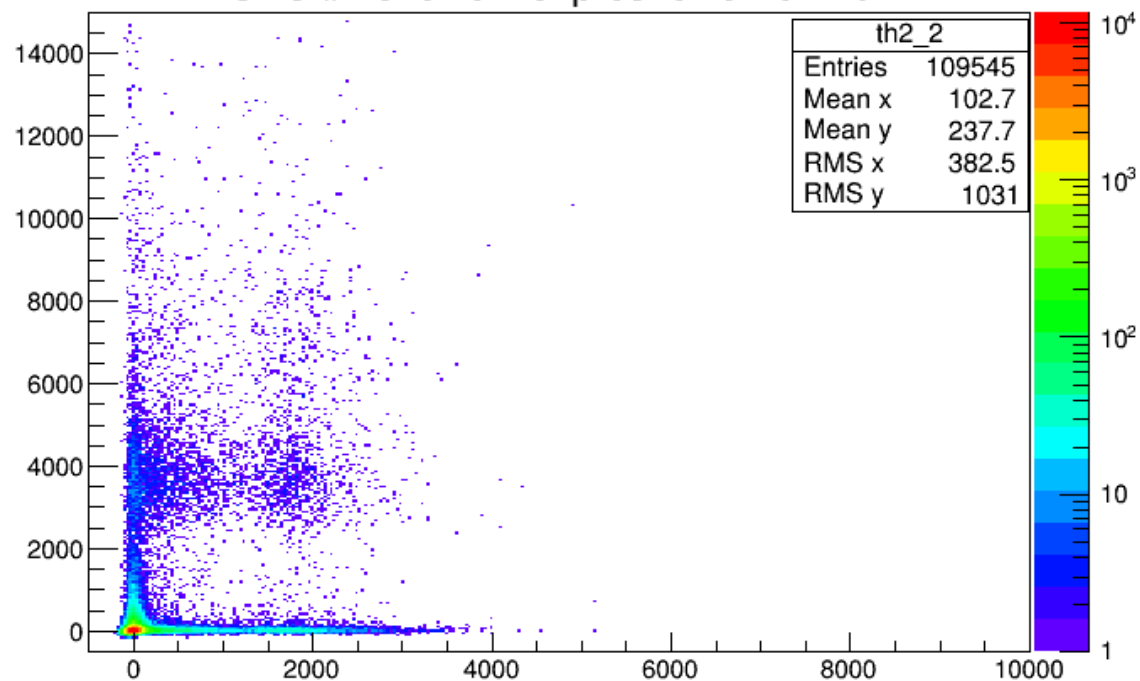
Saturation cut

- Run 387, SDU#2. Events with integral above 20000 should be regarded as saturation event.

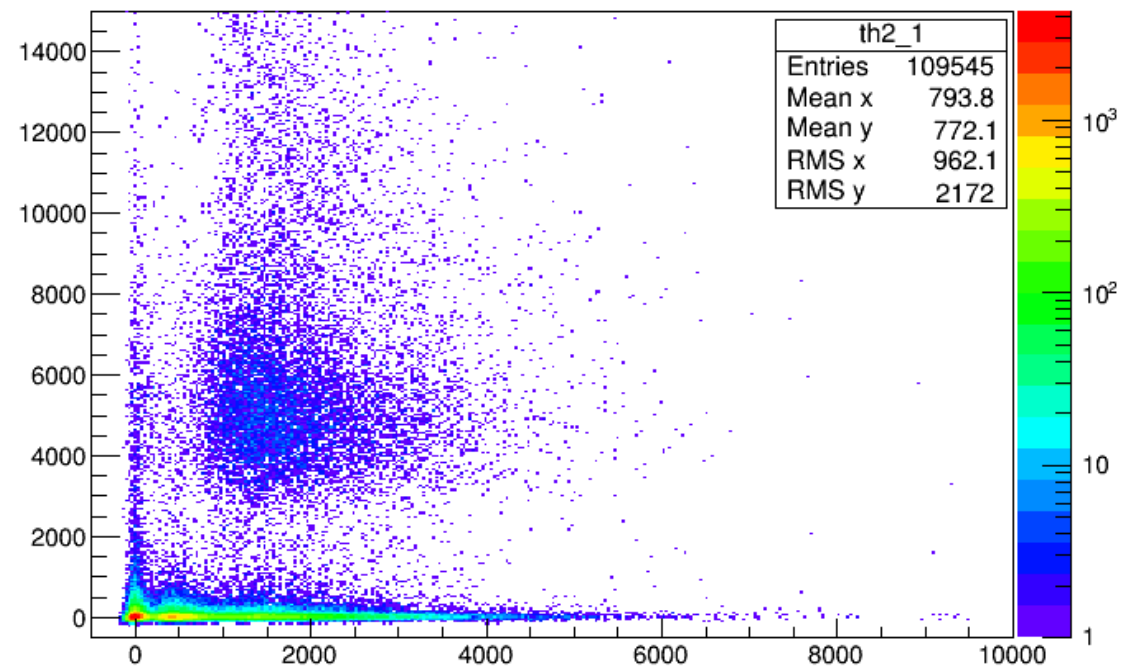


Run 461, lowest HV of test

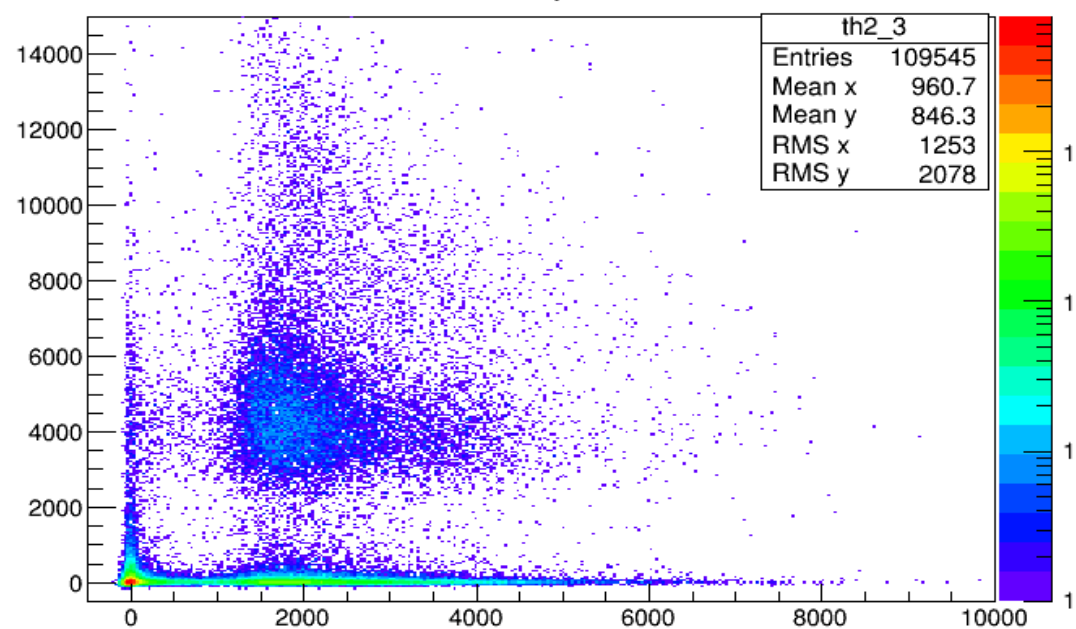
SDU #1 shower vs. preshower run 461



THU shower vs. preshower run 461

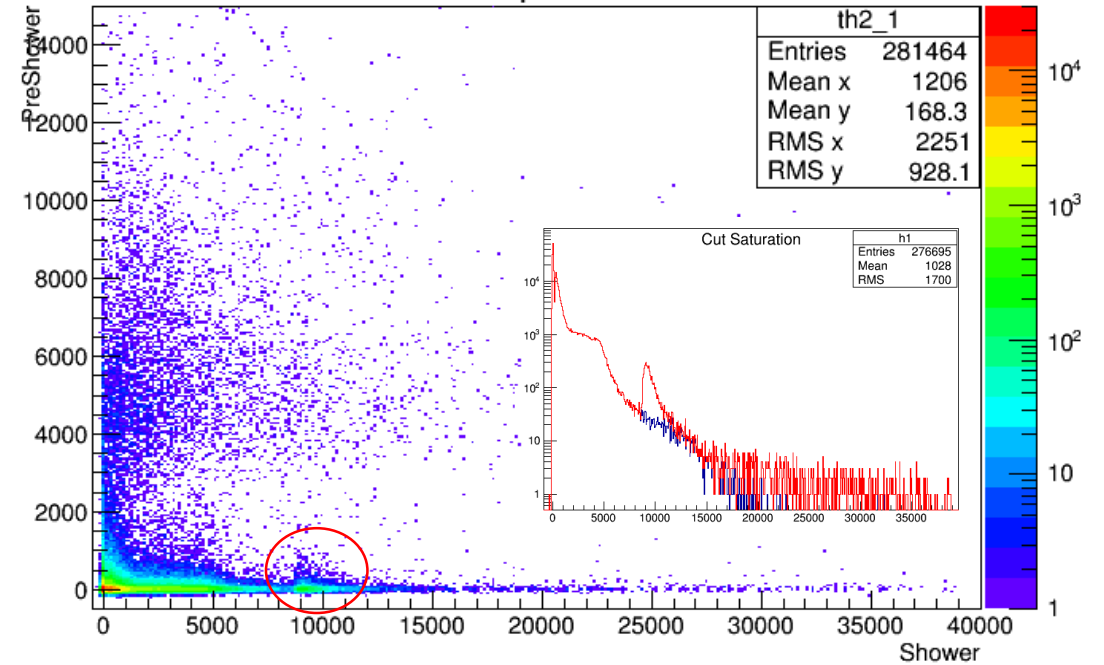


SDU #2 shower vs. preshower run 461

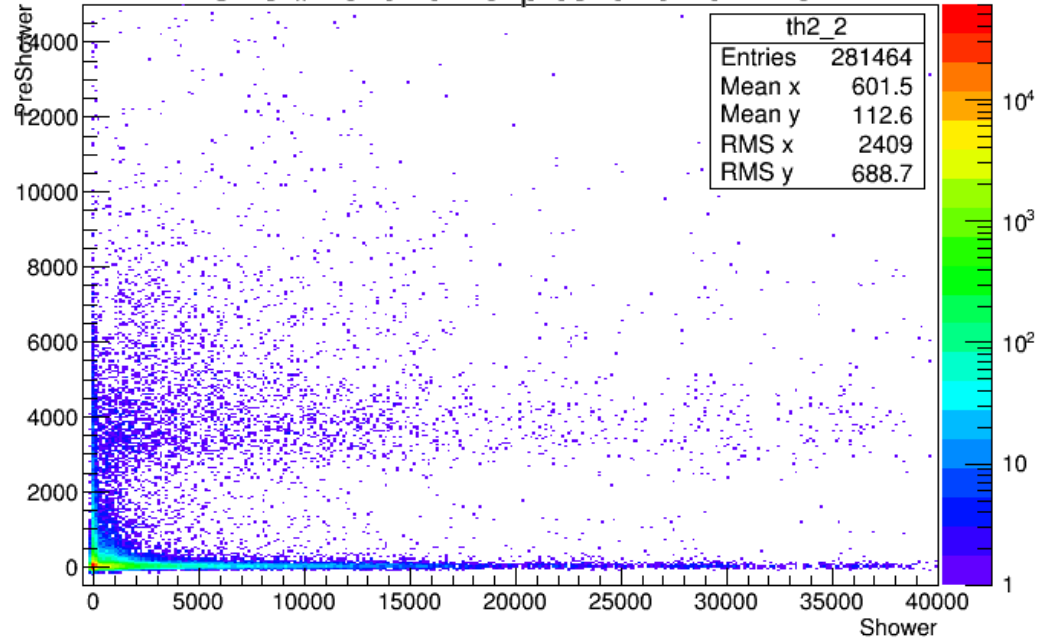


Run 473, highest HV of test

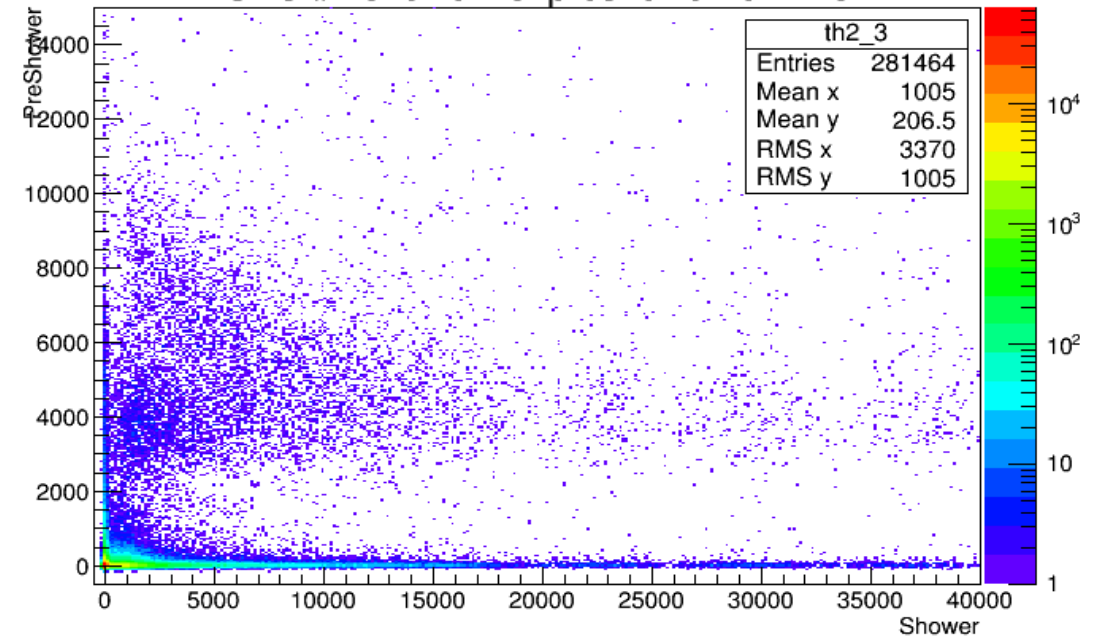
THU shower vs. preshower run 473



SDU #1 shower vs. preshower run 473



SDU #2 shower vs. preshower run 473



High rate on THU module

- Run 465, THU HV: 2420

No beam

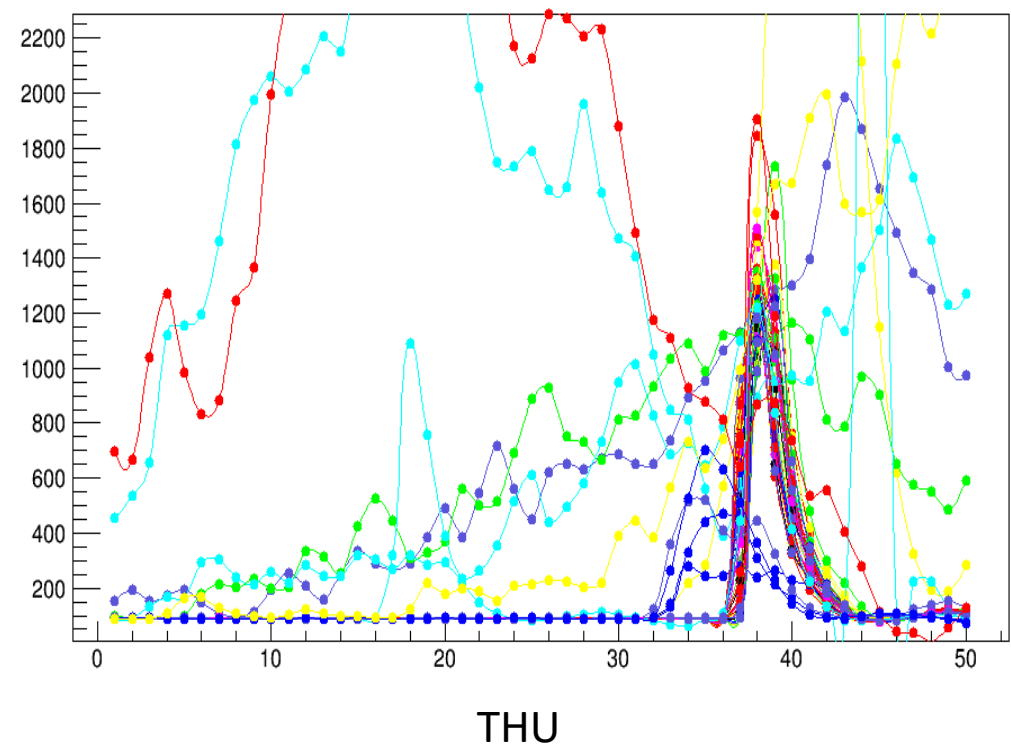
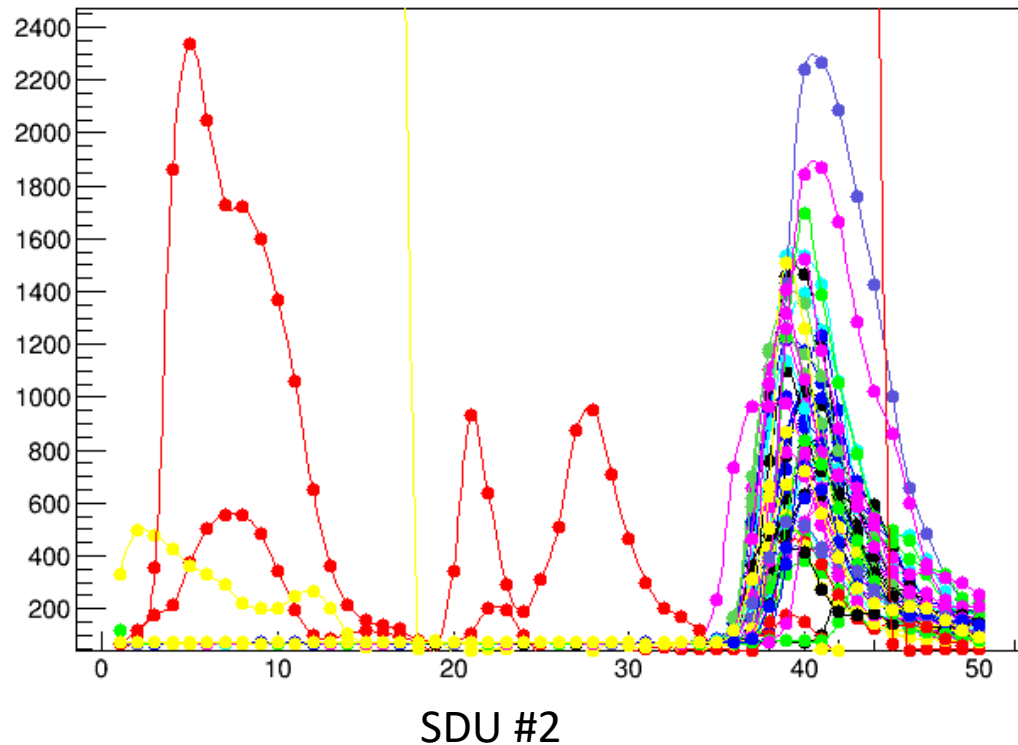
```
===== 1151 Scalers =====  
scaler num 1  
Type           Counts    Rate (Hz)  Rate (KHz)  
    EJEN spd    115138    inf        inf  
    SDU mod 1 shower    562      inf        inf  
    NCS6 preshower    2990     inf        inf  
    SDU mod 2 shower    577      inf        inf  
    KEDI6 preshower    2149     inf        inf  
    THU mod 1 shower  1730194  inf        inf  
    NCS5 preshower    5504     inf        inf  
    10 KHz pulser      0        nan        nan  
hac_bcm_average      0.0538544  
haBDSPOS.VAL         2.57999e+07  
haBDSPOS              2.57999e+07  
haBDSSELECT          Loop 2  
*****  
Sun Dec 18 01:50:53 EST 2016
```

10 uA beam, recent data

```
===== 1151 Scalers =====  
scaler num 1  
Type           Counts    Rate (Hz)  Rate (KHz)  
    EJEN spd    27702130  inf        inf  
    SDU mod 1 shower    901829   inf        inf  
    NCS6 preshower    3290658  inf        inf  
    SDU mod 2 shower    1185556  inf        inf  
    KEDI6 preshower    2398167  inf        inf  
    THU mod 1 shower    3658561  inf        inf  
    NCS5 preshower    3928961  inf        inf  
    10 KHz pulser      0        nan        nan  
hac_bcm_average      9.74526  
haBDSPOS.VAL         2.57999e+07  
haBDSPOS              2.57999e+07  
haBDSSELECT          Loop 2  
*****  
Sat Dec 17 23:48:06 EST 2016
```

Cosmic run

- Time resolution is much better than beam test
- We have limited cosmic run using previous electronic now, but it's OK to take more data in January.
- I'm afraid for our detector, trigger time is determined by front scintillator.



Problems

- Have no idea on PID just analyse Shashlyk, preshower and FASPD.
- The peak in FADC integral spectrum is influenced by threshold, not the detector. How to compare shashlik detectors and monitor radiation damage? Rate could get some ideas, but rate is not stable.
- Missing TDC data, need to adjust cable length for future test.