

TB status, [2023-07-31 Mo]

Straw TB team

July 31, 2023

Summary after July TB – Tiger only

| Pressure | Description | gas gain | N hits 5 mm |
|----------|--------------------------------|----------------------------|-------------------|
| +0.1 | Electrons, 30GeV | 45K | 65K |
| +0 | ToT mode | 45K | 250K |
| +0 | Default, gain 45K | 45K | 6.9M |
| +0 | Default + 1900V(20mm) | 45K && 20mm-1900V | 250K (1M on 20mm) |
| +0 | Thr scan (4-10,12,13,15,17 mV) | 45K | 30K-150K |
| +0.1 | Default, gain 45K | 45K | 1.3M |
| +0.1 | Thr scan (4,6,8,10,13,17 mV) | 45K | 70-100K |
| +0.1 | Default, gain 25K | 25K | 75K |
| +0.1 | Thr scan (4,6,8,10,13,17 mV) | 25K | 50-100K |
| +0.1 | HV scan | 4 points between 25 and 45 | ~ 100K each |

Summary after July TB – Mu2E #3

| Pressure | Description | gas gain | N hits 5 mm |
|----------|--|----------------------------|----------------|
| +0 | 3.0mV/fC, 25ns, 5mV thr | 45K | 1.3M |
| +0 | 3.0mV/fC, 25ns, thr scan (7,10,15 mV) | 45K | 70K |
| +0.1 | 3.0mV/fC, 25ns, thr 5mV | 1500/1800/2050 | 70K |
| +0.1 | 3.0mV/fC, 25ns, thr 5mV | 45K | 1.3M |
| +0.1 | 3.0mV/fC, 25ns, Thr scan (4-10,15,17 mV) | 45K | 50-75K |
| +0.5 | 3.0mV/fC, 25ns, thr 5mV | 45K | 130K |
| ~+0.6 | 3.0mV/fC, 25ns, thr 5mV | 1650 | 81K |
| +1.0 | 3.0mV/fC, 25ns, thr 5mV | 45K | 100K |
| +0.1 | 3.0mV/fC, 25ns, thr 5mV | 25K | 130K |
| +0.5 | 3.0mV/fC, 25ns, thr 5mV | 25K | 75K |
| +1.0 | 3.0mV/fC, 25ns, thr 5mV | 25K | 90K |
| +0.1 | 0.5mV/fC, 200ns, thr 5mV | 45K | 1.1M |
| +0.5 | 0.5mV/fC, 200ns, thr 5mV | 45K | 45K |
| +1.0 | 0.5mV/fC, 200ns, thr 5mV | 45K | 90K |
| +0.1 | 0.5mV/fC, 200ns, thr 5mV | 25K | 100K |
| +0.5 | 0.5mV/fC, 200ns, thr 5mV | 25K | 30K |
| +1.0 | 0.5mV/fC, 200ns, thr 5mV | 25K | 60K |
| +0.1 | 0.5mV/fC, 200ns, thr 5mV, HV scan | 4 points between 25 and 45 | 75-100K |
| +0.1 | 1.0mV/fC, 25ns, thr 5mV | 45K | 115K |
| +0.1 | 0.5mV/fC, 25ns, thr 5mV | 45K | 160K |

Summary after July TB – Additional

Mu2E #2

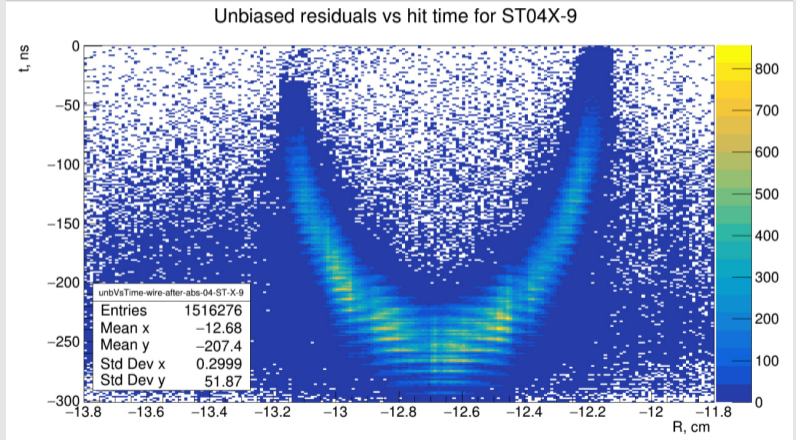
| Pressure | Description | gas gain | N hits 5 mm |
|----------|---------------------------|-------------------|----------------|
| +0 | 1.0mV/fC, 25ns, ~12mV thr | 45K && 20mm-1900V | 1.9M |
| +0 | 1.0mV/fC, 25ns, ~34mV thr | 45K && 20mm-1900V | 250K |
| +0 | 3.0mV/fC, 25ns, -8mV thr | 45K | 1.3M |

Rotated setup (Tiger + Mu2E #3)

| Pressure | Description | gas gain | N hits 5 mm |
|----------|--------------------------|----------|----------------|
| +0.1 | 3.0mV/fC, 25ns, thr 5mV | 25K | 125K |
| +0.1 | 0.5mV/fC, 200ns, thr 5mV | 25K | 70K |
| +0.1 | 3.0mV/fC, 25ns, thr 5mV | 45K | 125K |
| +0.1 | 0.5mV/fC, 200ns, thr 5mV | 45K | 75K |

Merging status

RT (10mm)

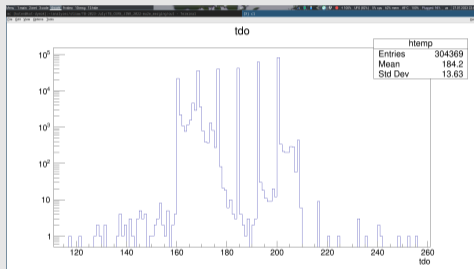


Merging status

- ① Merging is working.
- ② For Mu2E, merging is performed based on BCID only
- ③ Efficiency is about 75%
- ④ Problem with wide RT can be caused with strange Mu2E **tdo**

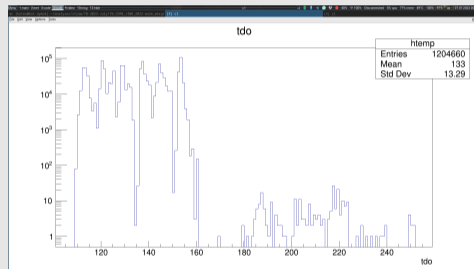
Cuts used for merging

Scint& channel



- $tdo \in [158, 209]$
- pdo: overflow

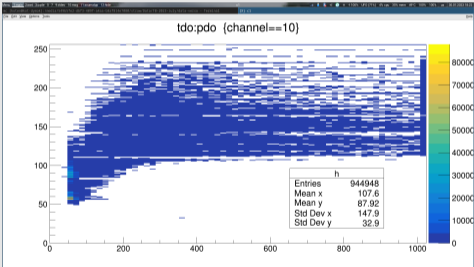
Pulsar channel



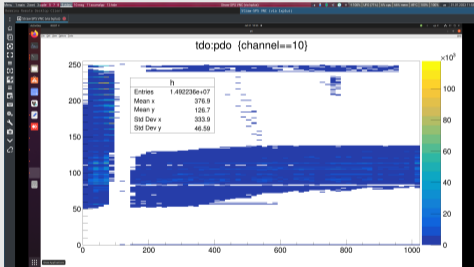
- $tdo \in [109, 160]$
- pdo: overflow

Comparison of tdo between calibration and real data

Data



Calibration



X-check calibration settings

Possible TDO against TP Skew (full range)

