Phase-IV Time-In n_collision=0 w/ all Felix Servers

RIKEN/RBRC

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History of INTT Timing Tunes

Phase	Date	Run	Comments
I	5/25	7364 ~ 8059	• LVL1 Delay Scan • n_collision Scan • Open time Scan
II	5/30	8100 ~ 8126	• Modebit delay scan • Intt2 timed in at modebit=76:0x35
II	6/2	9158 ~ 9231	• Modebit 78:0x35 • Open up n_collision = 4
IV	6/17	13091 ~ 13127	• Modebit delay scan 7 servers • Run-by-run timing shift observation

Modebit Timing Scan with 8 servers

- Purpose : Actual measurement of felix-to-felix timing difference with all 8 servers.

Scan #	1	2	3	4	5	6	7	8	9	10	11
Modebit delay	71	72	73	74	75	76	77	78	79	80	81

Conditions:

- n_collision=0
- Open time=35
- DAC setting 15, 30, 60, 90, 120, 150, 180, 210
- 300 kEvents (5minutes @ 1kHz) x 3 runs/setting x 11 setting ~ 3 hours
- Intt1 can go triggerless mode during any run. Do the recovery within the run and repeat the run again.

Preparation and Analysis:

- Script development to change modebits and log : Mai
- Time in plots are to be made in felix-by-felix basis. Analysis and make plot : volunteer?

Data taking by Mai

Settings and Run Numbers

Scan #	1	2	3	4	5	6	7	8	9	10	11
Modebit delay	71	72	73	74	75	76	77	78	79	80	81
Run#	13125 13126 13127	13119 13120 13121	13112 13114 13115	13106 13107 13108	13099 13100 13101	13091 13094 13095	13096 13097 13098	13102 13103 13101	13109 13110 13111	13116 13117 13118	13122 13123 13124

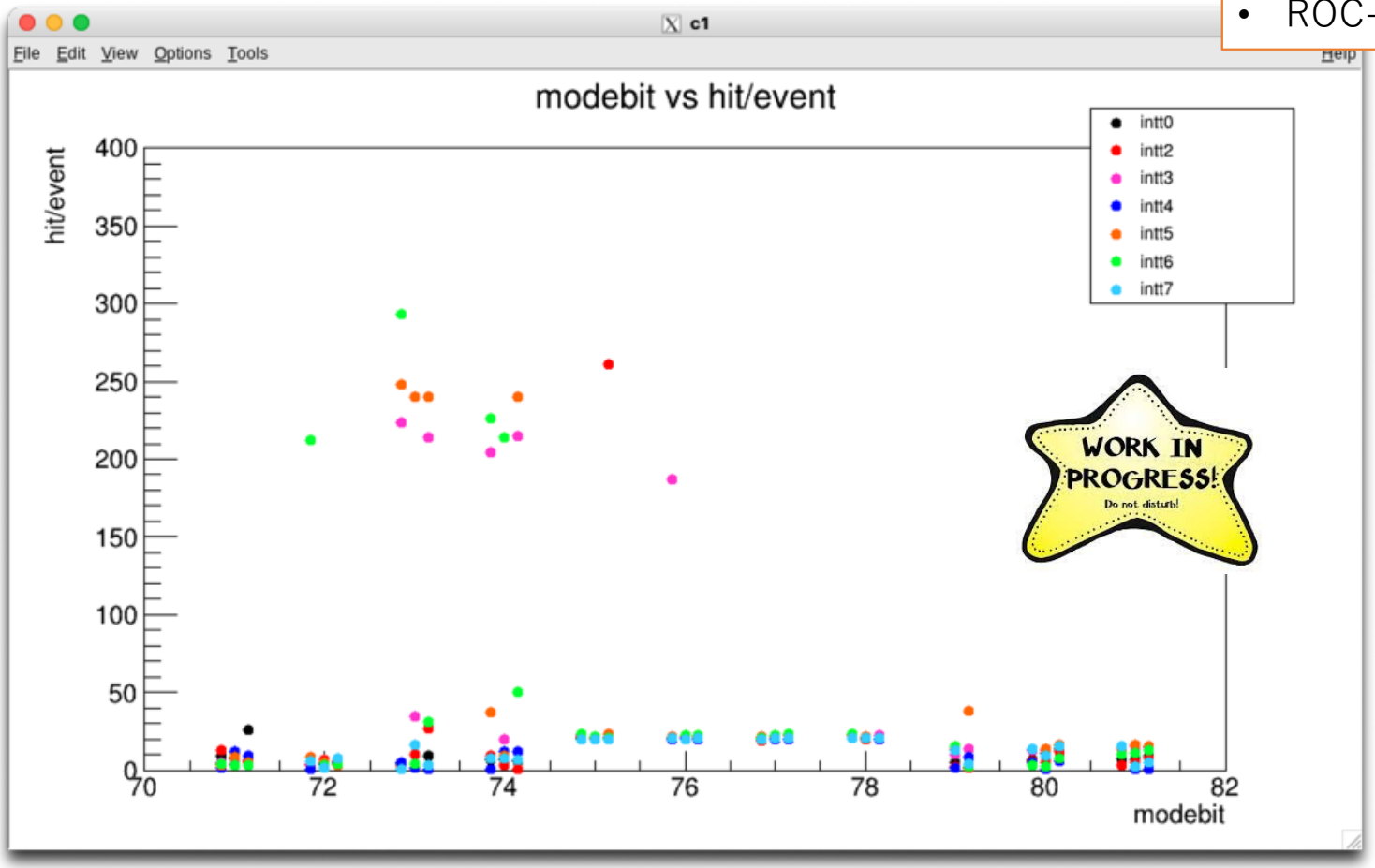
Data Process Status

- Root Data files : `~/INTT/commissioning/hit_files`
- Takashi's new decorder-event based rootfiles available from Run#13107

Data process by Genki

Time-in Scan results

Manami's homework
- Legend ✓
- Axis title ✓
- Try to avoid overlapping plot ✓
- ROC-by-ROC basis

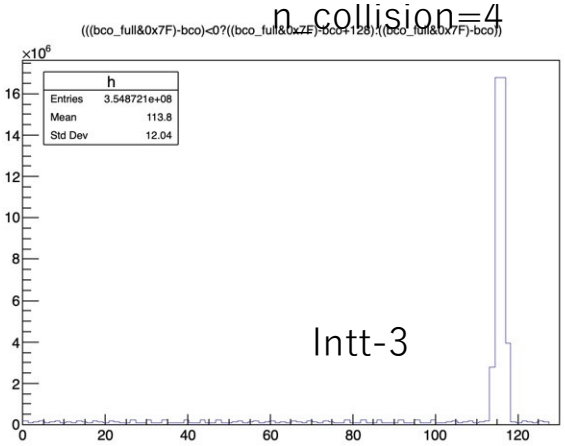


Analysis by Manami

Lessons from the measurement so far

- Time-in observed intt2, 3, 5, 6 (intt1 excluded from measurement.), around 74:0x35 +/- 1 or 2 BLCKs
- Failed to time-in intt0, 4, 7
- Each server has 3BCLK resolution
- Intt2 server is off from 76:0x35 by 1BCLK
- 3 consecutive runs w/ exactly the same setting do not always collect correlated hits even at the region of 74:0x35. Don't know yet if this is caused by run-by-run BCO timing shift or DAQ failure.
- Average multiplicity is ~400/felix (~200/ROC~1hit/chip)
- No Felix has accommodated 2ROCs timed-in within 1BCLK today.
- Misaki's ADC dist lost sensitivity to timed-in/not timed-in condition. Perhaps due to decorder mismatch? Mai's correlation plots seems to work instead.

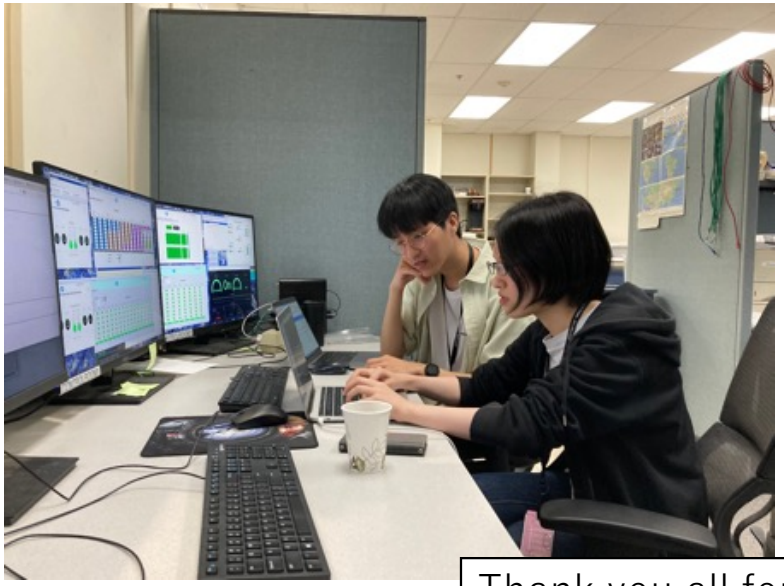
Mai's Homework

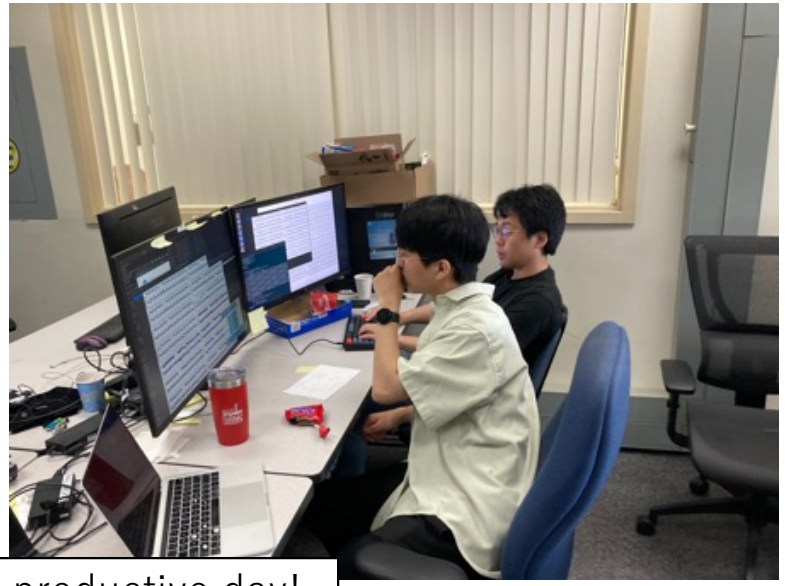


- Make sure all ave hit~200 has correlation
- (BCO_FULL)-(FPHX_BCO) peak position is expected to be shifted by one when we change the modebit delay by 1 BCLK. Please confirm by using timed-in inttX data taken at modebit delay=73~76. The peak width should be 1 for the data we took with n_collision=0 (with help from Maya)

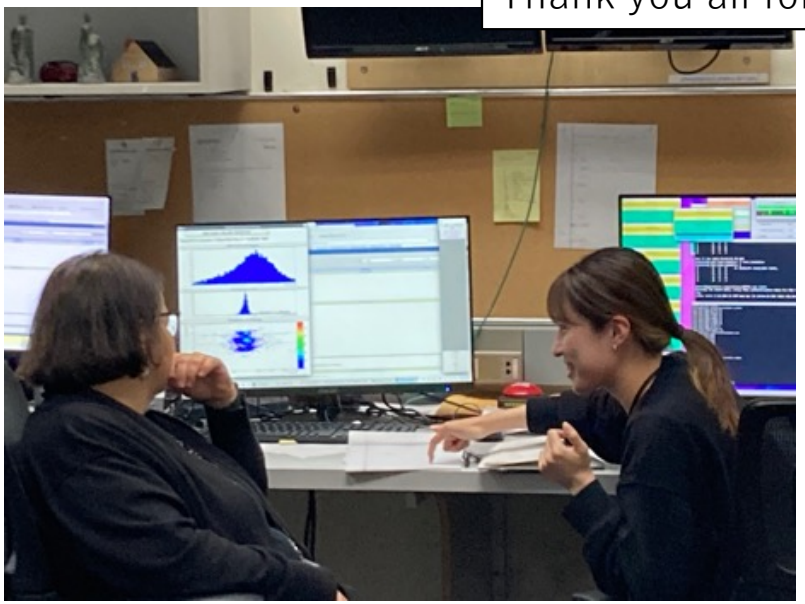
Itaru's Homework

- Complete RunLog Entry ✓
- Make nice summary, table scan# & Run# ✓
- Check ADC spectrum of time-in/time-out with Takashi's new decorder

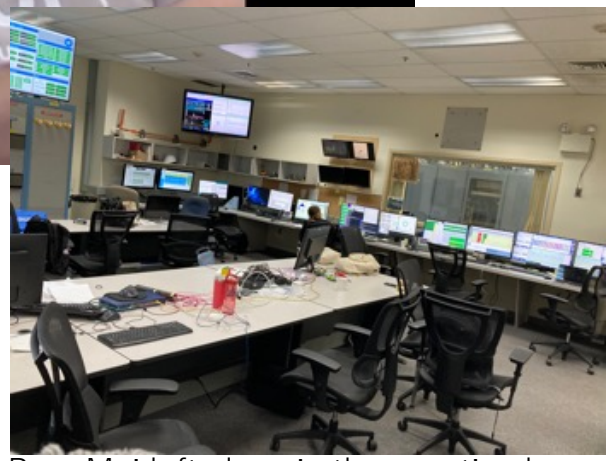




Thank you all for another productive day!



Manami reported in the shift change meeting *bravely*.



Poor Mai left alone in the counting house…

Plan for Today 6/18

- Jaein's DAQ training by Mai
- Modebit 74:0x35, n_collision=6. Take 10 runs to observe possible BCO timing shift between runs by BCO_FULL-FPHX_BCO analysis (Maya, Mai)
- Practice phase delay scan to test the BCO phase control.