Progress Today and Run Plan for Weekend

RIKEN/RBRC

Itaru Nakagawa

Who Expected analyzer

Progress of 2023/6/9

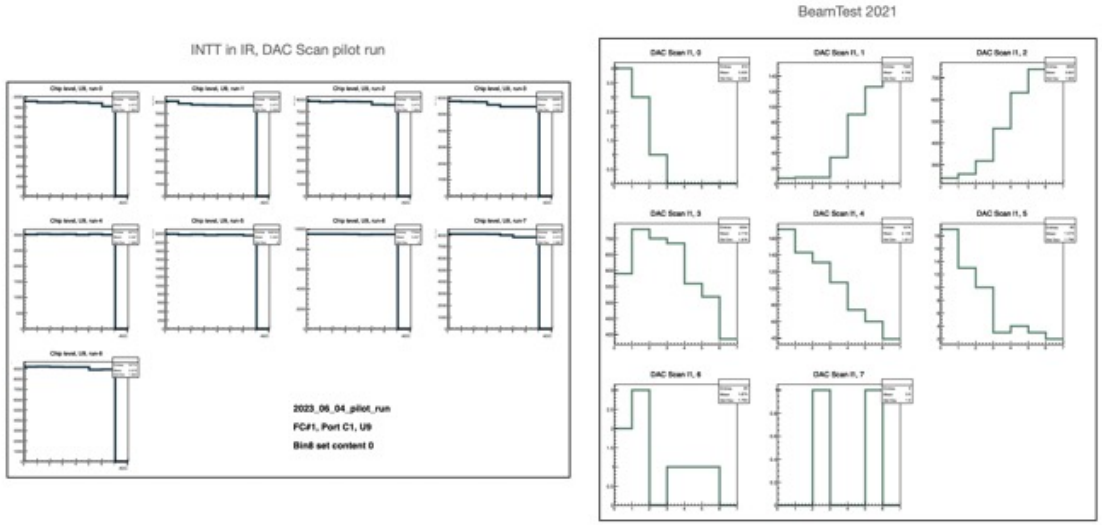
- New HV GUI
- Open Time Scan
- n_collision=6 test
- Update channel mask intt1 and 1st operation of 8 felix servers
- Recovery of missing Chip#26 and #21
- MIP observation by clustering

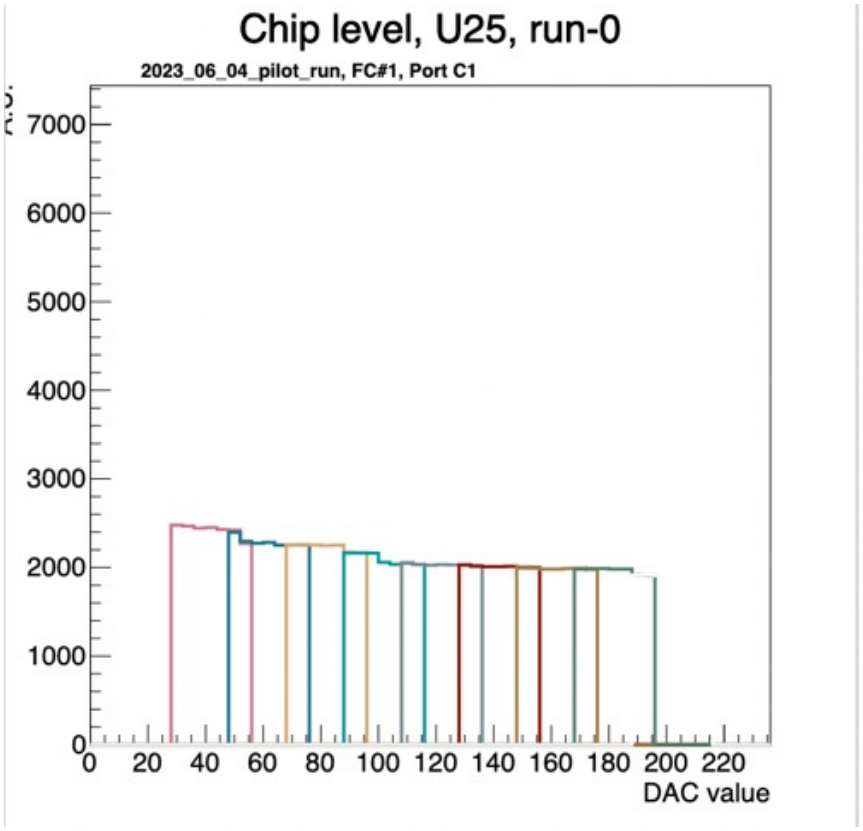
New HV GUI

- **Joseph** upgraded HV GUI which runs much faster than previous version.
- The GUI was tested 6/8 and works very well.
- Very much appreciated by DO shift crews. Thanks!
- We experienced communication lost with some HV channels (HV-15).
- We ended up with power cycling the Rack and recovered the communication. Thanks to Joseph.
- Joseph documented the procedure to power cycle the rack https://sphenix-intra.sdcc.bnl.gov/WWW/elog/INTT/191
- This is the *very* final solution facing towards beam dump.
- Let's discuss about this topic when Rachid is back.

DAC Scan Analysis Results

4 days after data were taken on 6/5!





- Thanks for **Cheng-Wei** for super quick analysis feedback.
- The MIP peak is yet seen even with higher resolution.
- Need tighter cuts to filter out suspicious data though we should run with MBD next time so that we can classify by z-vertex.

INTT Open Time Scan (6/9)

DAC0=15, L1Delay = 25, n_collision = 4, Modebit=0:0x33, 78:0x35 Thanks **Genki** to prepare the script

Scan num	1	2	3	4	5	6	7	8
Open Time	80	40	35	30	20	10	5	1
# of Events (M)	2	2	2	2	1	1	1	1
Run#	9548	9546	9545	9547	9549	9550	9551	9552

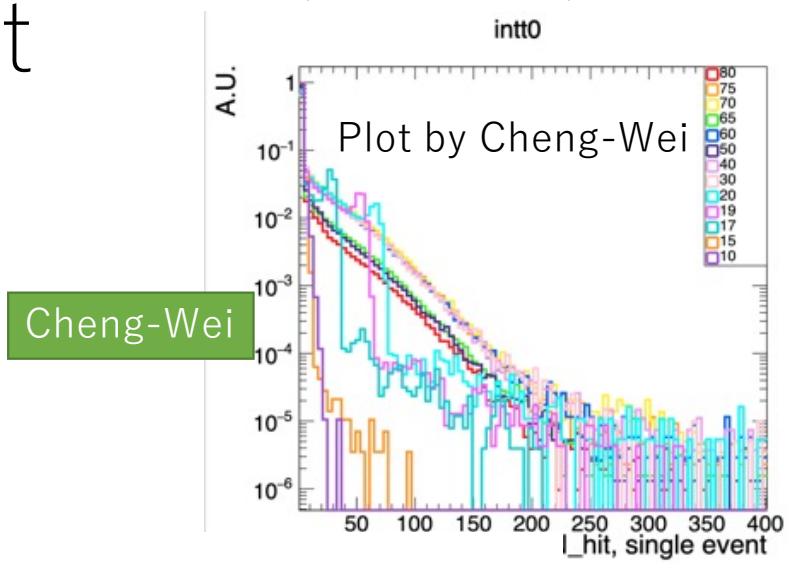
https://sphenix-intra.sdcc.bnl.gov/WWW/elog/INTT/190

- Some ladders behaved relatively poorly in earlier runs though, the performance were improved towards later runs especially after executing cold start after Run#9547.
- Much higher statistics with timed in events. Previous scan was done with n_collision=127.

Indication of possible hit lost

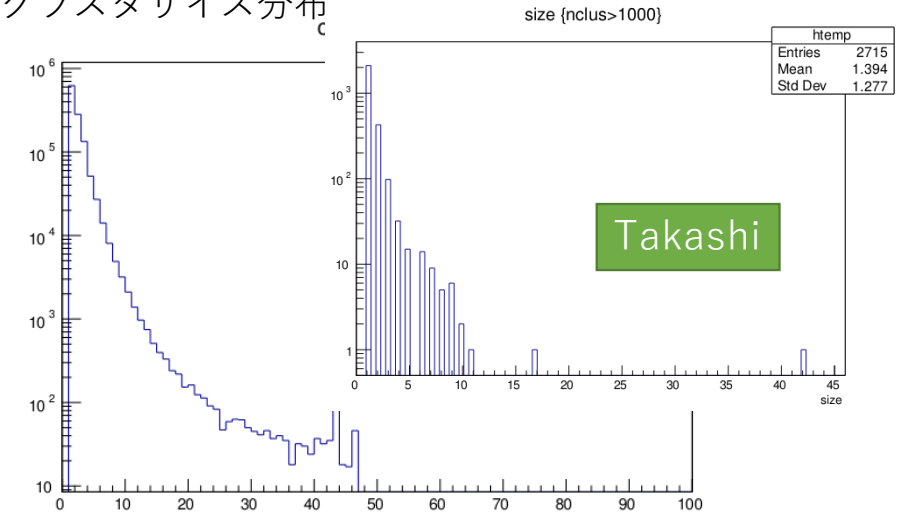
- Takashi pointed out a possible hit lost in Run#8059 taken with open window of 35.
- The indication was the cluster size for the cluster multiplicity > 1000 requirement made cluster size smaller than total.
- In addition to multiplicity distributiton of single event, cluster size should be compared as Takashi did.

/home/inttdev/data/IR_DAQ_server/INTT_study_run/BCO_window/data_analysis/8020_Time_5min_L1Delay00_Ncollision127_Opentime120



Cheng-Wei

クラスタサイズ分布



Takashi

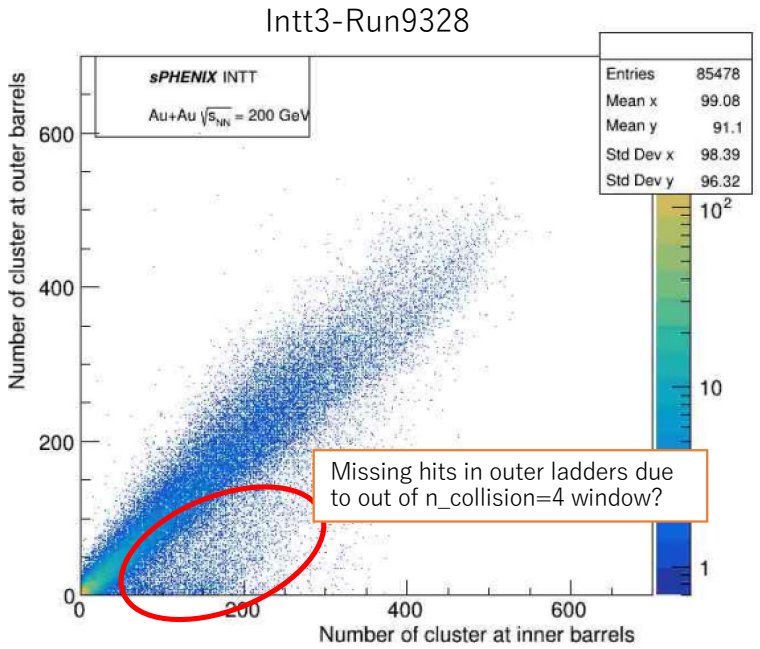
https://indico2.riken.jp/event/4499/contributions/21221/attachments/12029/17432/20230607_hachiya_クィックデータ解析.pdf

Open up n_collision window

- Given the suspect in intt-3 that we may be missing correlated hits under 78:0x35 & n_collision=4, we'll try following program.

1. Run 2M events with 79:0x35 & n_collision=6. (**Run#9554, 3Mevents**)
2. Run 1M events with 78:0x35 & n_collision=4 for 3 times without changing any conditions (**Run#9555, 9556, 9557**)

Mai

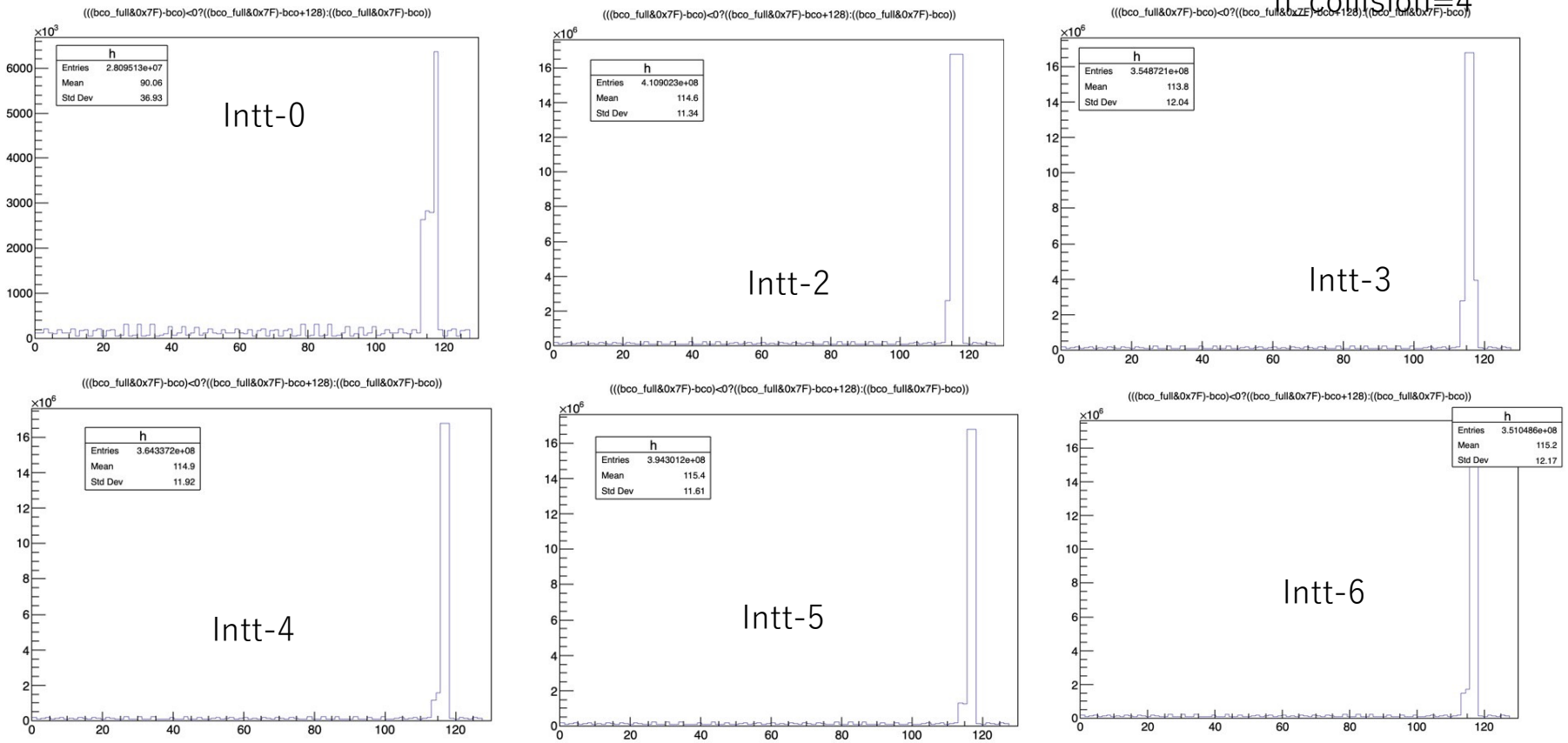


https://indico2.riken.jp/event/4499/contributions/21220/attachments/12031/17440/20230606_INTTJPMT.pdf

Checked Run#9554 evt file by ddump and confirmed there are events which has 5 consecutive BCO hits in a given event.

bco_full – bco distribution on other felixs (Run#9328)

n_collision=4



https://indico2.riken.jp/event/4499/contributions/21219/attachments/12028/17431/230606_BCO_Issues_maya_日本語ミーティング.pdf

Same tendency.
Different number of events between different felixs which should not be.

Make above timing plots from Runs#9554 ~ 9557 to see if n_collision=4 is relevant. Maya

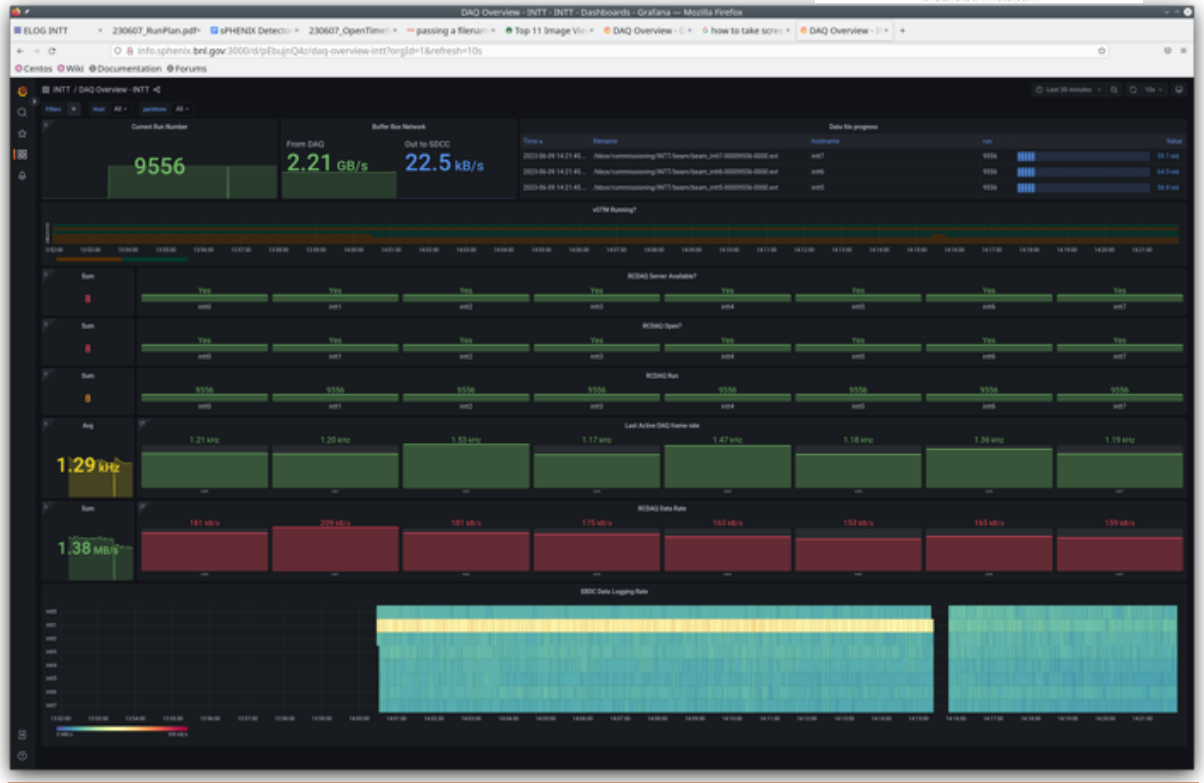
Update Intt-1 Mask File

- **Jaien** analyzed Run#9402~9431 and updated mask channel list for intt1. Now intt1 runs without hanging the DAQ.
- `Newly updated mask file: ~/INTT/sphenix_inttpy/run_scripts/mask_ch_south_v1.txt`

`The original file was backed up in bkp/mask_ch_south_v1.txt.230609`

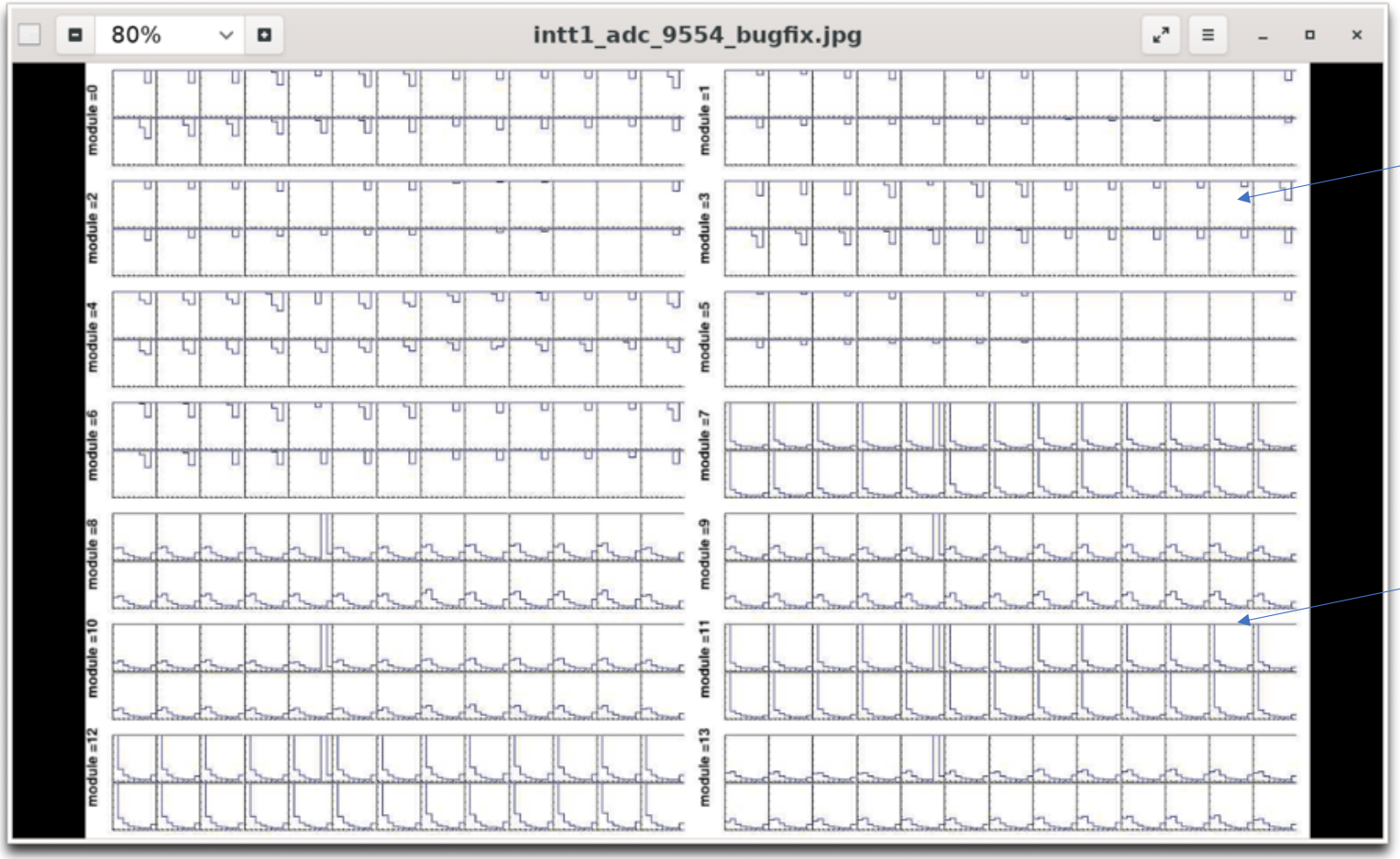
- However, the datasize of intt1 tends to be larger than other servers by factor of 1~10. Jaein should continue to update mask files.

Jaein



8 felix servers accumulating simultaneously!

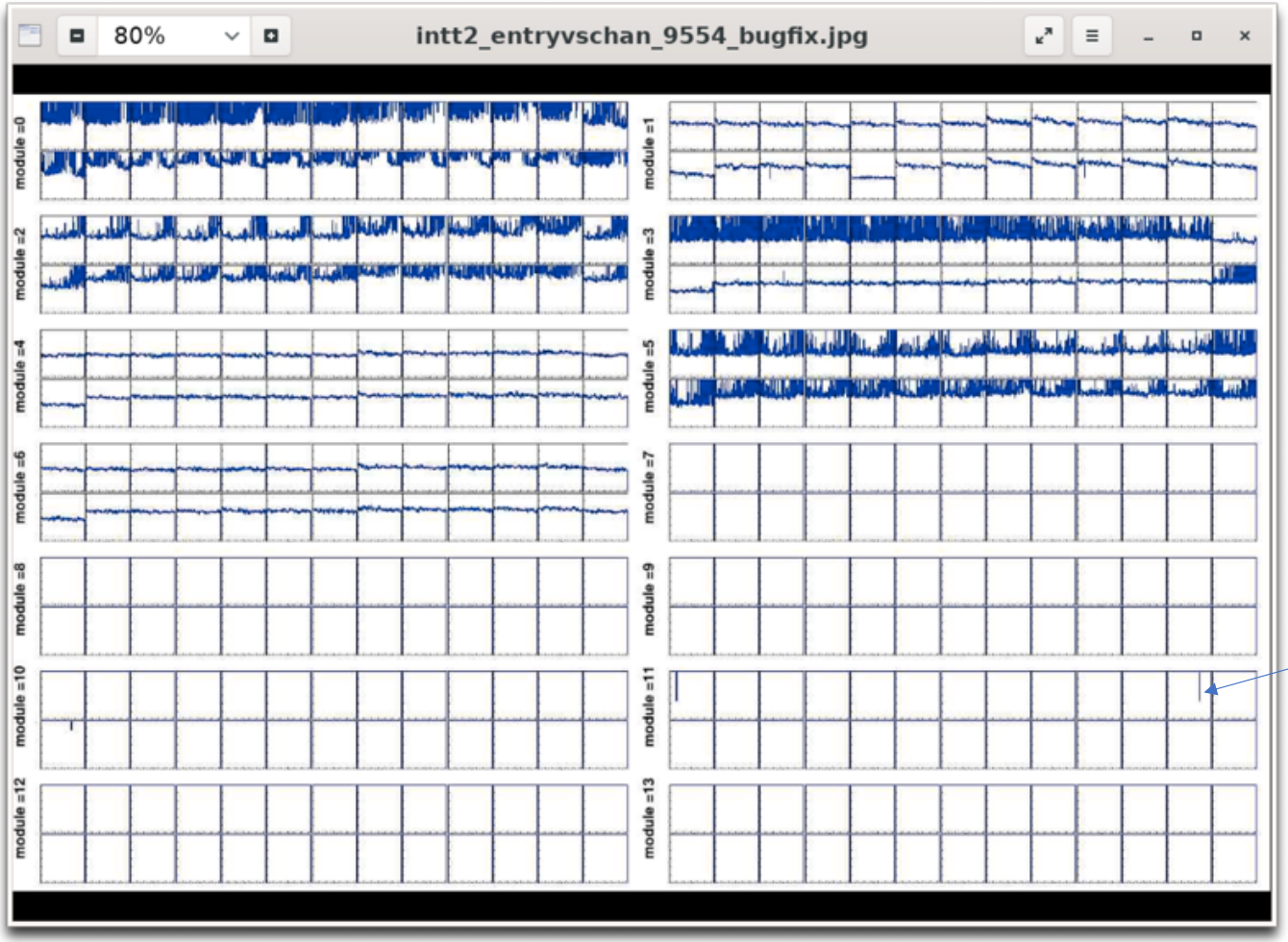
Intt1 performance at a glance (1)



- ADC distribution shows square shape. Similar symptom was observed in out of time data though, strip distribution in next page are reasonable. Noise effect?

- Bottom ADC distributions look reasonable while strip distribution look awkward. Confusing…

Intt1 performance at a glance (2)

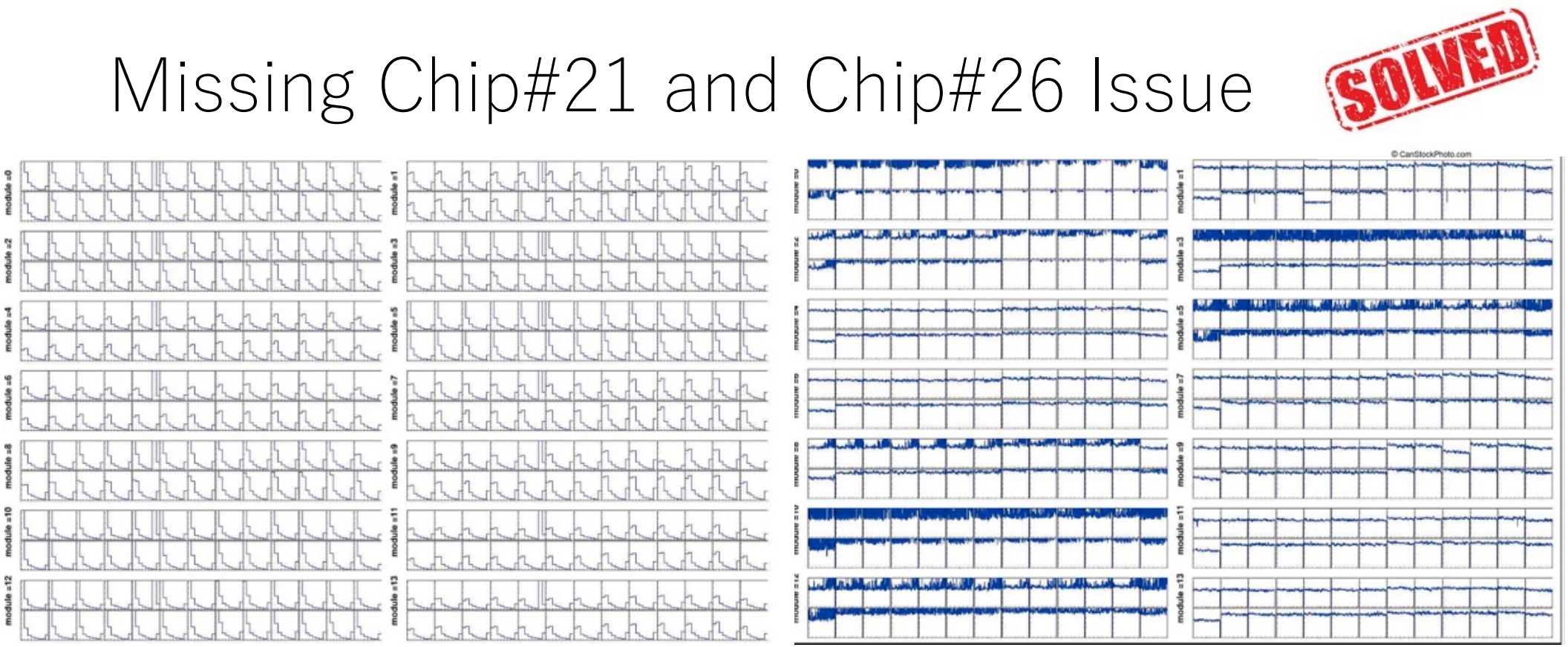


- Some ladders shows decent distributions, while others are suffered from noise like “fish bone”.
- Better to check the grounding of this ROC board with a voltmeter in the next opportunity.

- Distributions are invisible due to still noisy channel?

Further analysis and feedback is appreciated!

Missing Chip#21 and Chip#26 Issue

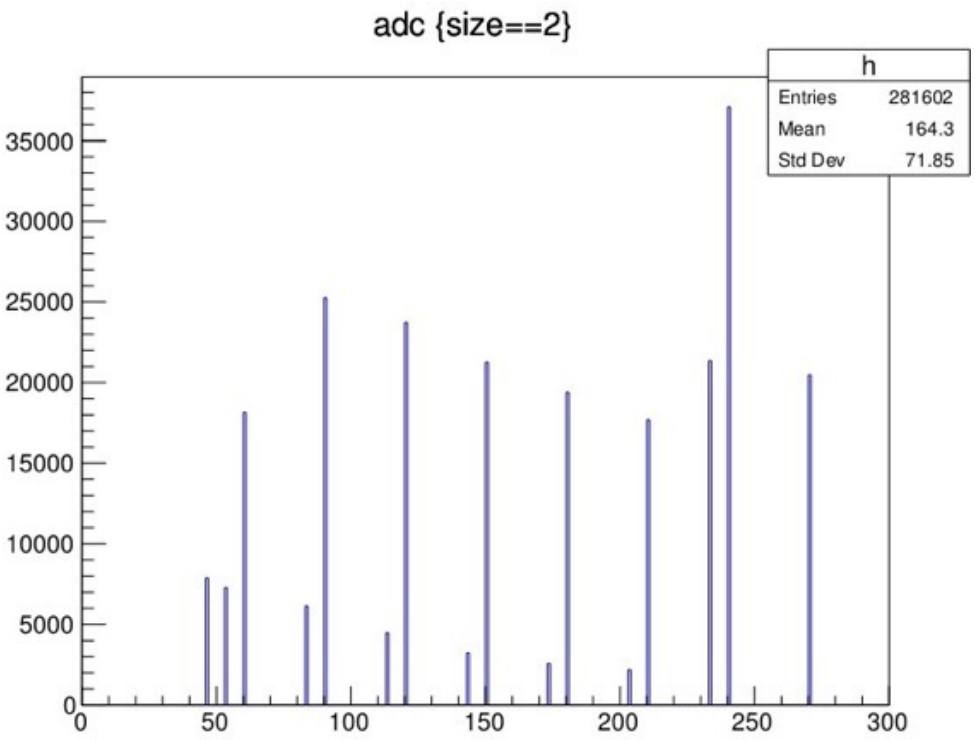


- Bug was fixed in the decorder and chip#21 hits are now properly saved in root file. Thanks to Martin.
- Chip-ID 0 or 1 origin resolved missing chip#26 issue. Thanks to **Jaein** to point this out. Shortly, we have to unify the chip-ID either 0 or 1 in data.

Now we see all chips in FelixQuickViewer.C plots

https://sphenix-intra.sdcc.bnl.gov/WWW/elog/INTT/195

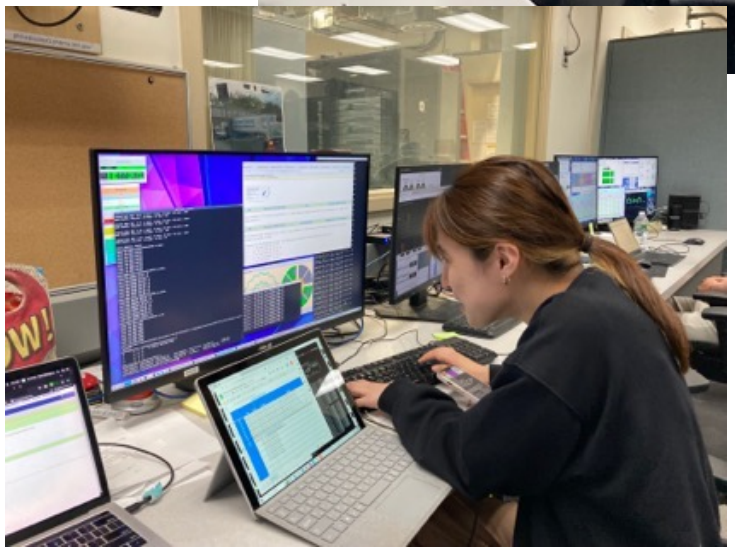
MIP Peak Verification

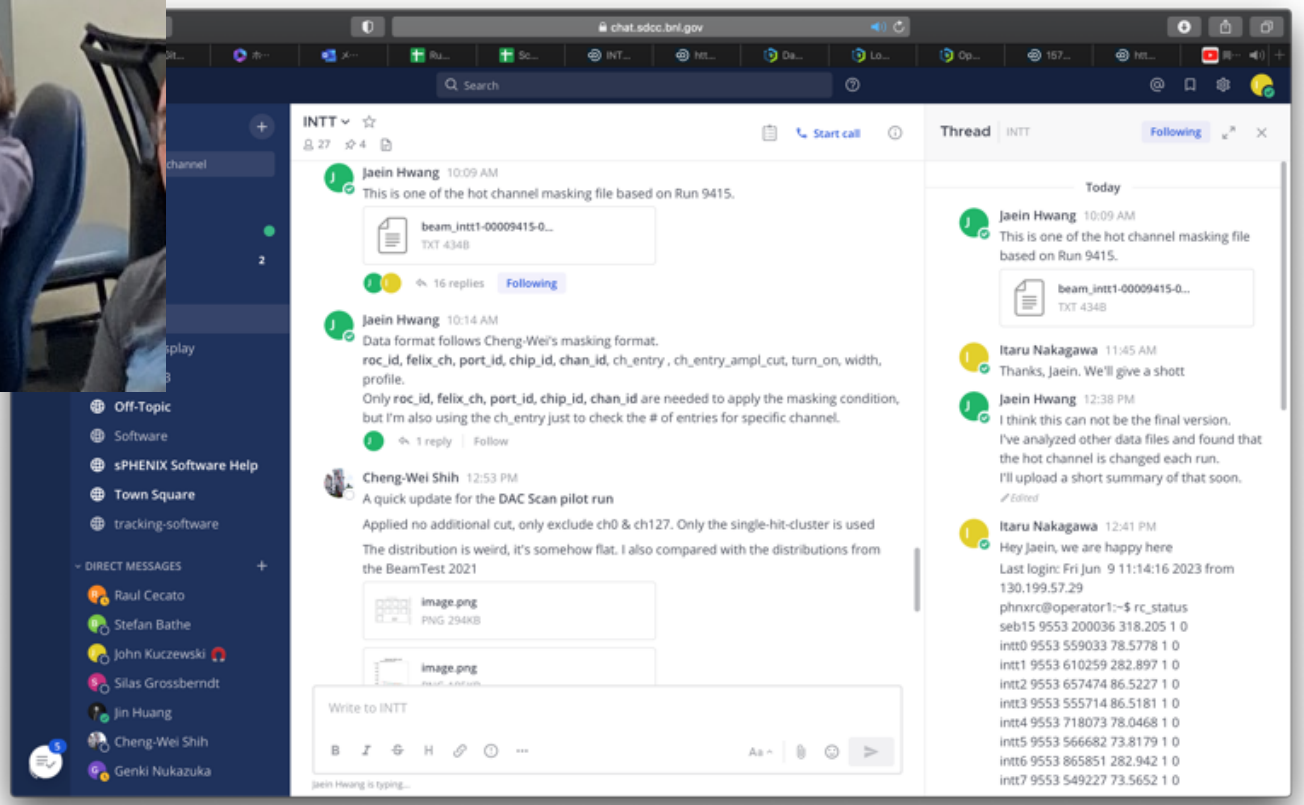


Plot by Takashi

- Custom DAC value setting run (**Run#9558**) to verify the clustered MIP peak ~ 90 observed in the default DAC setting so far f.i. (15,30,90,120,150,180,210)
- The custom setting is (15, 30, 50, 70, 90,110, 130,150) fphx_parameters_20230609.txt
- The cluster ADC sum should be verified if the peak appears around 90 regardless of DAC setting. Takashi

Special Thanks to INTT Crews for the productive day!





Run Plan

DAC0 Scan

Run	1	2	3	4	5	6	7	8	9
DAC0	**19**	**17**	**15**	**13**	**11**	**9**	**8**	**7**	**6**
DAC1	30	30	30	30	30	30	30	30	30
DAC2	60	60	60	60	60	60	60	60	60
DAC3	80	80	80	80	80	80	80	80	80
DAC4	120	120	120	120	120	120	120	120	120
DAC5	150	150	150	150	150	150	150	150	150
DAC6	180	180	180	180	180	180	180	180	180
DAC7	210	210	210	210	210	210	210	210	210

- MBDL1 Trigger : ~ 1kHz
- Number of events ~ 0.5 Mevents/Run
- Script (Genki)
- Analysis (Jaein) Constant rate DAC0 threshold

Exciting times in 1008!

2023/6/9 157th General Meeting Gunther's slide