DAC0 scan/
Digital control test

2025/06/13 Takahiro Kikuchi

Commissioning at 6/10 night

- DAC0 scan (by Itsuka)
  - Run66695-66711 (not all)
- Digital control test (me)
  - Run 66712-66716

DAC0 scan

- Took DAC0 = 15, 20, 25, 30, 35, 40
- 2 runs for each value.
- Run66695-66711
- Please see Run sheet
- https://docs.google.com/spreadsheets/d/175Z06nDFWACKIrvqN_R43ABLtRfE6r23u9CZtVuwDHg/edit?gid=1495268696#gid=1495268696

- DSTs are in
- **/sphenix/tg/tg01/commissioning/INTT/data/dst_files/2025/DST_beam_intt-00066689_special.root**

- Will be handed to Nao.

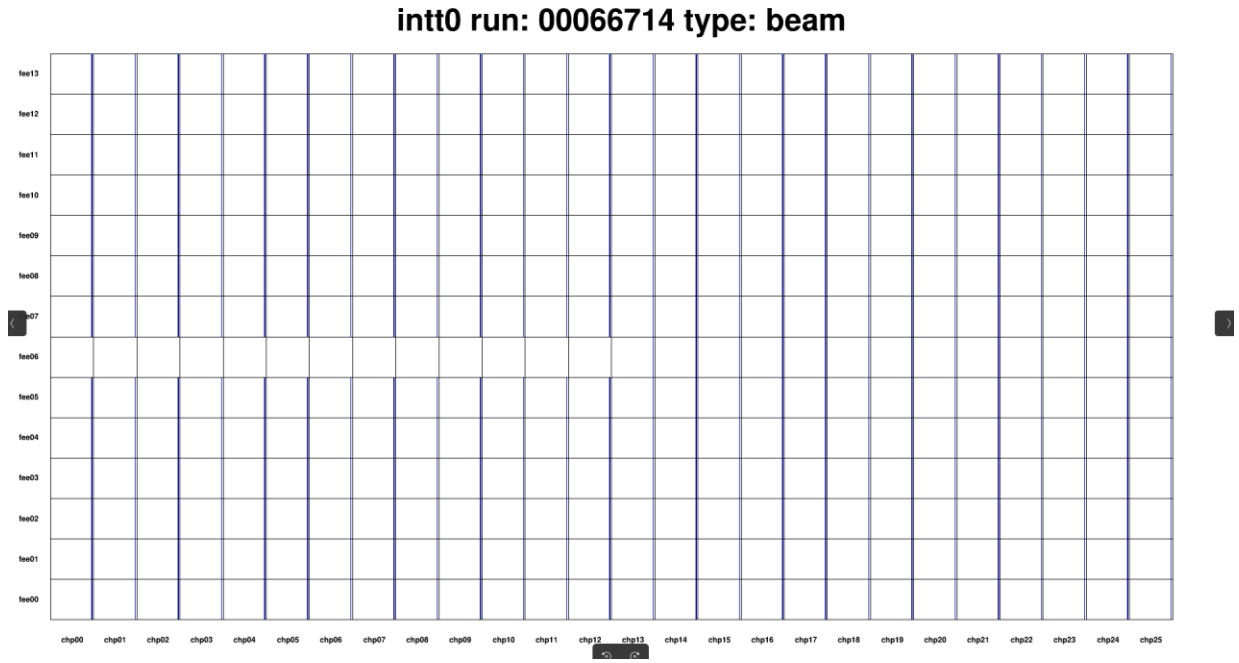
Digital control test

- I took 6 runs:
  - Normal (0xCF5110**7**0)
  - One output serial line (0xCF5110**6**0)
  - Another one output serial line (0xCF5110**E**0)
  - Mask everything (0xCF5110**0**0)
  - Custom setting ×2
- Run 66712-66716
- DSTs are in
- **/sphenix/tg/tg01/commissioning/INTT/data/dst_files/2025/DST_beam_intt-00066712_special.root**
- DST will be handed to Tomoki

Quick view DigCon

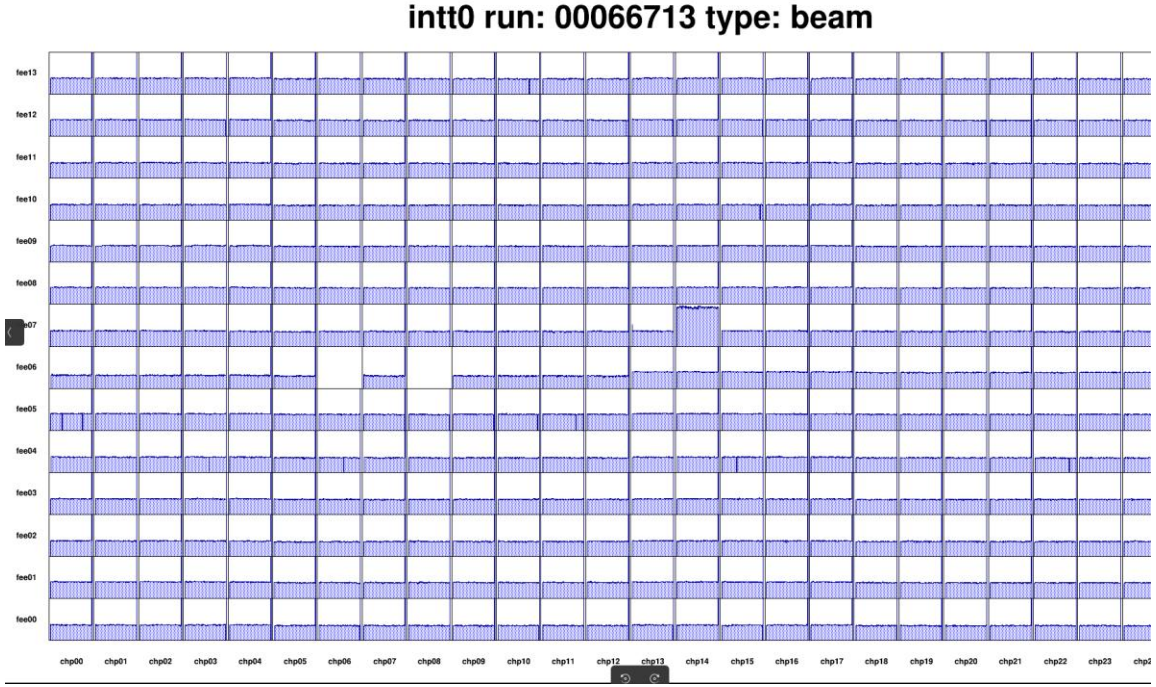
- Mask everything looks working
- Except for (maybe) ch127

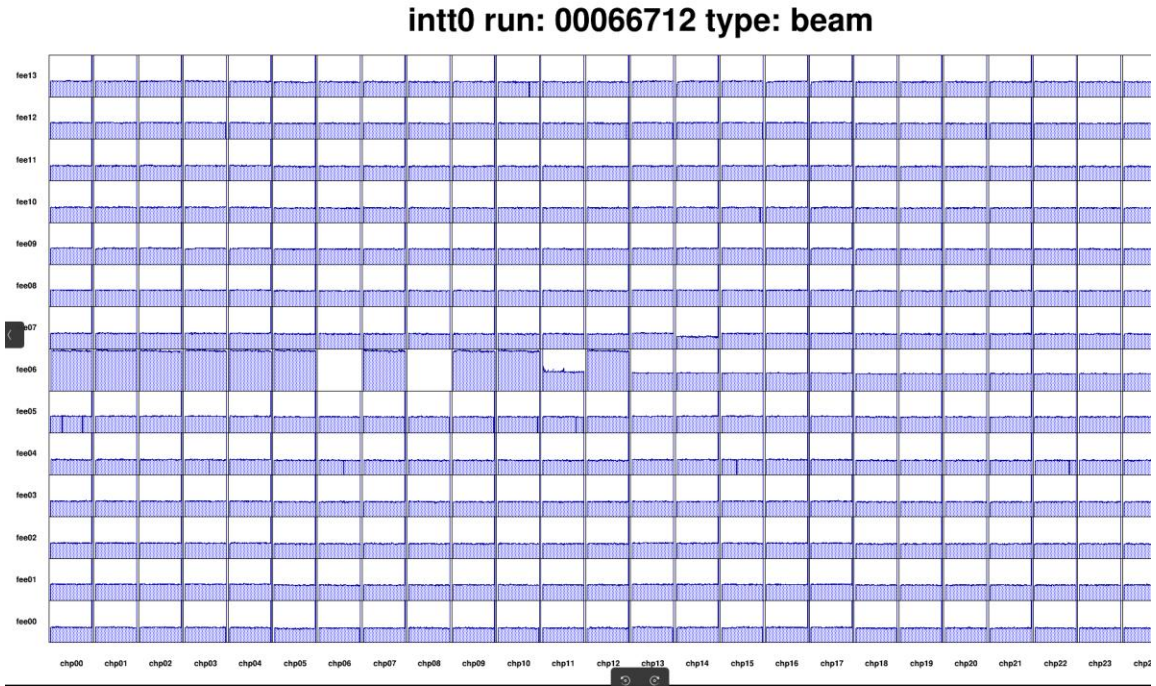
- Ch127 hit is coming from outside?
- Might be low ADC value.



Quick view

- With one serial line, hitmap looks like that.
- I’m not sure what these “**looks half(log scale?) hitmap**” means since I just checked by eye.

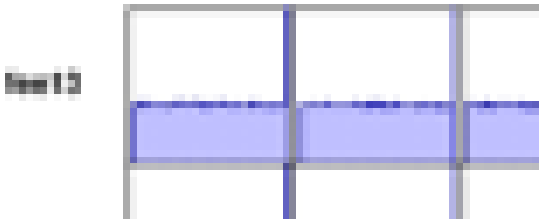




Quick view

- For custom Digital Control setting:
  - I choose some ladders as “mask”, “one serial line”, “another serial line” randomly.
- “mask” must show

- “one/another serial line” must show

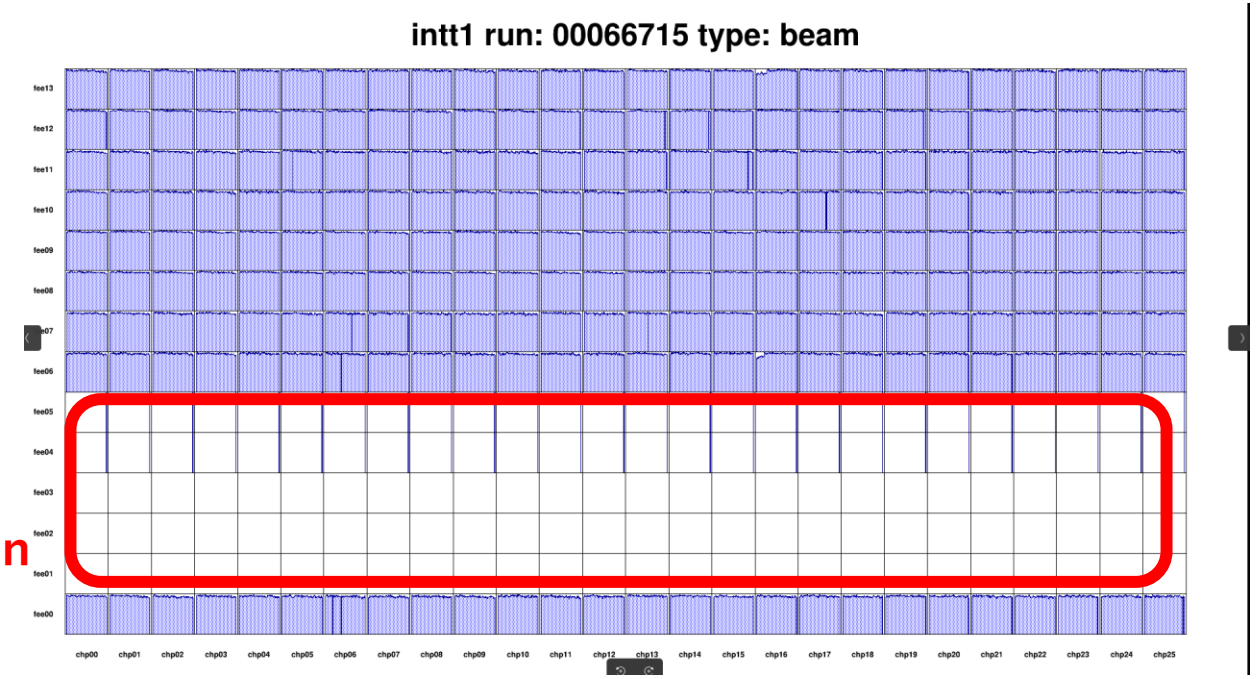


Quick view

- Intt 0
- Ladder 1-5 “mask”

- Looks good

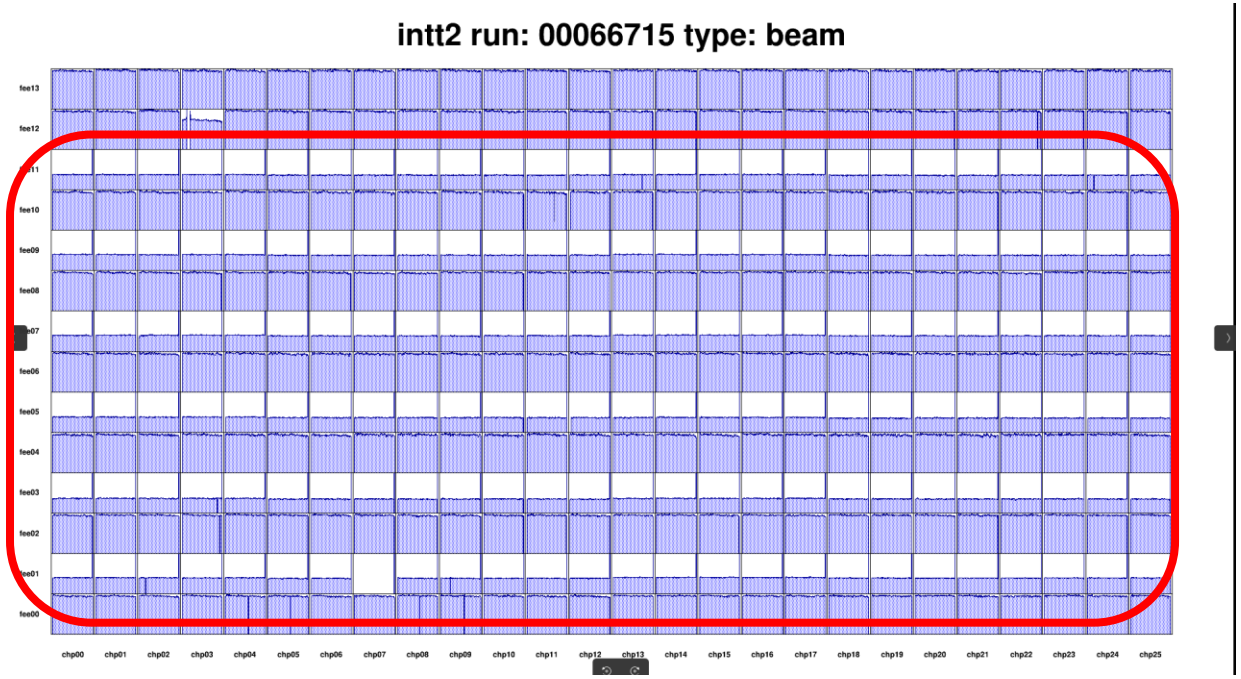
Now masking by DigCon



Quick view

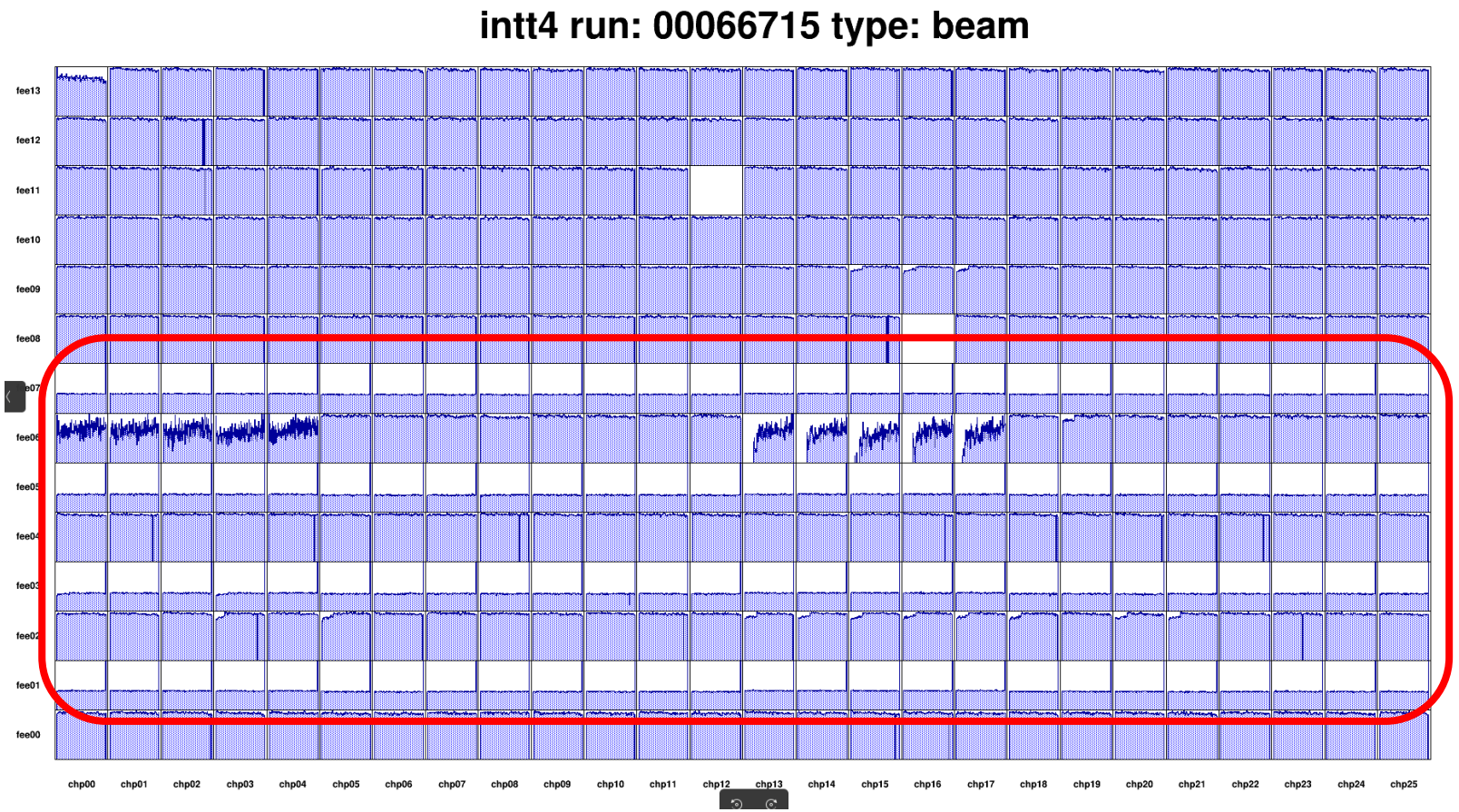
- Intt2
- Ladder 1,3,5,7,9,11 “one serial”
- Looks good

1,3,5,7,9,11
One serial line



Quick view

- Intt3
- Ladder 1,3,5,7 “one serial”
- Looks good



1,3,5,7
One serial line

DigCon test

- Changing all digital control command looks working.
- Also, Custom Digital Control looks working.

- The clue of Digital control working is the increase of clone hits.
- Tomoki will analyze these run and check
  - “number of hits”
  - “number of clone hits”
  - Which chips have “half entry issue” and make new map

How to apply Custom Digital Control

- Change the symbolic link “intt_ext.py”
  in ~/INTT/sphenix_inttpy　(ssh intt0)

- /home/phnxrc/INTT/INTT_repository/felix/intt_ext.py
- ↓
- /home/phnxrc/INTT/INTT_repository/felix/intt_ext_takahiro_20250326.py

New function

- I made function
  - “apply_digcon()”
  - “ReadDigConMap()”
- In /home/phnxrc/INTT/INTT_repository/felix/intt_ext_takahiro_20250326.py
- And also added “apply_digcon()” in “take_data()” after running “enable_ro()”.

- Everything is based on Custom DAC0 Value function.

Edit DigCon map

- /home/phnxrc/INTT/map_digcon/latest/digcon_map.txt
- “#” works as comment out
- “*” works as wild card
- DAQ_server: Felix_ch: Chip_id: DigCon

```
 1 #DAQ_server Felix_ch Chip_id DigCon
 2
 3 #data can be 0
 4 1   1   *   13
 5 1   2   *   13
 6 1   3   *   5
 7 1   4   *   4
 8 1   5   *   0
 9
10 #try to cut one serial line
11
12 2   1   *   4
13 2   1   *   6
```