# 第？回

# ビームを使ったコミッショニング

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# 第？回 (2023/07/26): DAC0 スキャン

E-Log

## 目的

- 最新の状況で DAC0 スキャンをする

## 測定

- ラン：23896 - 23923
- 測定を始めてすぐ金・金衝突のタイミングが 2 BCO ほどズレていることを発見した。
  - 前日に GTM ファームウェアの更新があったことが原因だった
  - MBD も同様に影響を受けていたがその時は調整がされていなかったのでトリガーレートが低かったようだ
- modebits = 92, n_collisions 4 と少し広めのタイミング幅でデータ収集した。
- Jaein が解析を行っている。

## 次のステップ

- DAC0 スキャン
- ラダーマップの確認
- チャンネルマスク

| Time | Run | Run Length (min) | DAC0 | Rate(Hz) | Comment |
|---|---|---|---|---|---|
| 04:08 | 23911 | 5 | 18 | 900 | single BCO peak |
| 04:15 | 23912 | 5 | 17 | 950 | single BCO peak |
| 04:25 | 23913 | 5 | 16 | 980 | single BCO peak |
| 04:33 | 23914 | 5 | 15 | 1000 | single BCO peak |
| 04:43 | 23915 | 5 | 14 | 1050 | |
| 04:54 | 23916 | 5 | 13 | 1070 | |
| 05:00 | 23917 | 5 | 12 | 1100 | Data process done |
| 05:17 | 23919 | 5 | 11 | 1100 | |
| 05:25 | 23920 | 0 | 11 | 1100 | very short run for a test, single BCO |
| 05:30 | 23921 | 5 | 20 | 1090 | |
| 05:39 | 23922 | 5 | 30 | 1090 | |
| 05:48 | 23923 | 5 | 40 | 1120 | |

# 第？回 (2023/07/26): DAC0 スキャン

E-Log

Run 2023 Log | Run 2023 Shift Checklist | HCAL | EMCAL | TPC | TPOT | MVTX | INTT | MBD | BBCXtest | DAQ | Trigger | Electronics | sEPD | ZDC | T1044_2017 | sPHEN

**INTT Logbook**

List | New | Edit | Delete | Reply | Duplicate | Find | Config | Help

Message ID: **407** Entry time: **Wed Jul 26 21:08:47 2023**

| | |
|---|---|
| Author: | Tomoya Kato |
| Subject: | 7/27 DAC0 SCAN |

9:39 INTT chillers stats

chil mode/chil state/P out/P in/F out/F in/F rate/FF rate

LAD1 running /clear/17.7/18.6/17.3/16.4/5.09

LAD2 running/clear/17.6/18.4/20.6/15.7/5.38

Today's purpose: DAC0 Scan with local mode

21:49 rcdaq_intt2 Connection refused

23:23â€©rcdaq_intt2's problem was resolved. Jaebeom solved the problem.

23:24 trigger live doesn't appear in the LL1 trigger control display.

24:21 trigger live appears. Jaebeom solved the problem.

24:21 timing changed

0:53 INTT turned off

1:03 Raul changed the polarity to the default setting. Then we turned on INTT.

1:29 We changed the mask file

1:50 beam lost

around 0:20 The magnets had already begun to decrease in current value.

2:58 INTT trun on .

3:30 INTT trun off

| Time | Run | Run Length (min) | DAC0 | Rate(Hz) | other settings | Comment | result |
|---|---|---|---|---|---|---|---|
| 0:27 | 23896 | 1 | 15 | 1000 | default /n_collisin =4. | confirm time in | time in 1 6 4. entries is 1~8x10^5 |
| 0:30 | 23898 | 1 | 15 | 1000 | default | confirm time in | process crash |
| 0:36 | 23900 | 1 | 15 | 1000 | default | confirm time in | |
| 0:38 | 23901 | 1 | 15 | 1000 | d | confirm time in | sprit |
| 0:41 | 23902 | 1 | 15 | 1000 | d | confirm time in | time in /but our sweet spot is 89. sweet spot moved |
| 1:08 | 23903 | 1 | 15 | 1000 | d | confirm time in | process crash |
| 00:00 | 23904 | 1 | 15 | 1000 | d | same | The timing is in 2BCK. |
| 01:21 | 23905 | 5 | 18 | 1000 | d | Dac0 Scan | we don't change mask file .so we can't use this run |
| 01:36 | 23906 | 5 | 18 | 1000 | d | same | timing is in 2BCK |
| 01:43 | 23907 | 5 | 17 | 1000 | d | same | timing is in 2BCK |
| 3:05 | | 5 | 18 | 1 | 1 | @ | new fill |
| 04:08 | 23911 | 5 | 18 | 900 | | single BCO peak | |
| 04:15 | 23912 | 5 | 17 | 950 | | single BCO peak | |
| 04:25 | 23913 | 5 | 16 | 980 | | single BCO peak | |
| 04:33 | 23914 | 5 | 15 | 1000 | | single BCO peak | |
| 04:43 | 23915 | 5 | 14 | 1050 | | | |
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| 05:00 | 23917 | 5 | 12 | 1100 | | Data process done | |
| 05:17 | 23919 | 5 | 11 | 1100 | | | |
| 05:25 | 23920 | 0 | 11 | 1100 | | very short run for a test, single BCO peak | |
| 05:30 | 23921 | 5 | 20 | 1090 | | | |
| 05:39 | 23922 | 5 | 30 | 1090 | | | |
| 05:48 | 23923 | 5 | 40 | 1120 | | | |
| | | | | | | | |
| | | | | | | | |

# 第？回 (2023/07/31): タイミングスキャン

E-Log

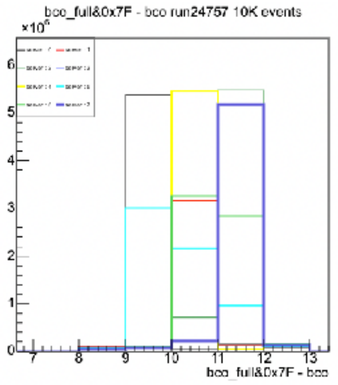
## 目的

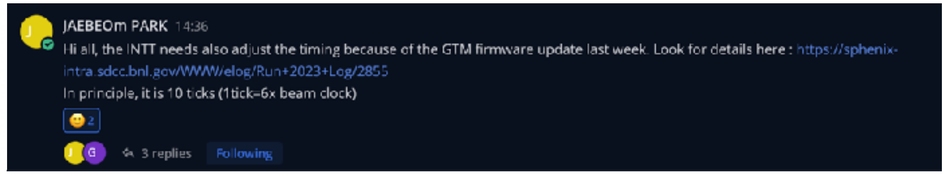
- 2023/07/27 朝に GTM ファームウェアが更新されタイミングがズレたので、タイミングスキャンを行い INTT を time-in させる

## 測定

- ラン：24750 - 24757
- ズレは他のシステムの測定から 10/6 BCO ~ 1.7 BCO 程度と予想されていた。TPOT は 2 BCO ほどのズレを確認していた（はず）
- 最終的に modebits = 92→95, n_collisions=4 にした。
  - 時間分解能を最良にするのは modebits = 94, n_collisions=2 だが、BCO full & 0x7F - BCO 分布の挙動がこれまでの理解と異なったので、少し広めの設定にした。
- Cheng-Wei, 下村、糠塚の最小構成で測定した。約 2 時間で完了した。

| Time | Run | Run Length (min) | n_collisions | mode bits | DAC0 | Rate (Hz) | Comment |
|---|---|---|---|---|---|---|---|
| 01:21 | 24750 | 2 mins | 4 | 92 | 15 | 300 | Global mode, rate : live rate. INTT3 no data, high current |
| 02:09 | 24750 | 2 mins | 4 | 92 | 15 | 1.4k | Local mode, rate : live rate. INTT3 same (The previous run is over written somehow !) Maybe not written (N entry the seems to be the |
| 02:29 | 24751 | 1min | 4 | 92 | 15 | 1.5k | INTT3 Off |
| 02:35 | 24752 | 1 min | 4 | 95 | 15 | 0 | INTT3 Off -> No data. We may lose the trigger (MBD no running) |
| 02:48 | 24753 | 1 min | 4 | 95 | 15 | 1.5k | INTT3 Off. The rest servers have > 2.5M hits. seems to be timed in (GOOD) |
| 02:59 | 24754 | 1 min | 7 | 95 | 15 | 0 | INTT3 Off -> No data. We may lose the trigger (MBD no running) |
| 03:04 | 24755 | 1 min | 7 | 95 | 15 | 1k | INTT3 Off The rest servers have > 2.5M hits. seems to be timed in (GOOD) |
| 03:11 | 24756 | 1 min | 127 | 95 | 15 | 500 | INTT3 Off : try to check whether we see other peaks or not (GOOD, no second peak, but the dist. shape changes a bit. ) |
| 03:19 | 24757 | 1 min | 4 | 95 | 15 | 1.5K | INTT3 Off. FInal confirmation (GOOD) |



# 第？回 (2023/07/31): タイミングスキャン

E-Log

| 413 | Mon Jul 31 22:32:46 2023 | Cheng-Wei, Genki & Maya | INTT time in check |
|---|---|---|---|

We realized that once the GTM firmware is updated, it may effect the delay. Since we are trying to reduce the n_collisions, we get the junks if the delay shifts the signal peak out of the the wind

We better redo the time in scan to check it.

Beam was aborted.

Aug 1st

1:00 am Physics declare.

1:30 am found that INTT3 has no data. the RC-6S RC-7S high current ~ 18.5A

1:30 am reboot the system LV & HV. The INTT3 LV current is still high. Give up INTT3 for the moment.

2:10 am Use the expert HV GUI to turn on the HV except the INTT3 ROCs -> so, only 7 servers are running.

-> The plan is to do the time in scan with 7 servers. If the 7 servers are timed in, most likely the INTT3 can be timed in with same config.

-> We leave this confirmation test to the shift crew.

3:53 am
try to recover INTT3 : by following Jaein's instruction https://sphenix-intra.sdcc.bnl.gov/WWW/run/2023/INTT/

3:55 am

reboot the INTT LV. INTT3 still high current.

3:56 am
So we set the running config back (INTT3 LV HV off)

| Time | Run | Run Length (min)dsa | n_collisions | modebits | DAC0 | Rate (Hz) | Comment |
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| 02:29 | 24751 | 1min | 4 | 92 | 15 | 1.5k | INTT3 Off |
| 02:35 | 24752 | 1 min | 4 | 95 | 15 | 0 | INTT3 Off -> No data. We may lose the trigger (MBD no running) |
| 02:48 | 24753 | 1 min | 4 | 95 | 15 | 1.5k | INTT3 Off. The rest servers have > 2.5M hits. seems to be timed in (GOOD) |
| 02:59 | 24754 | 1 min | 7 | 95 | 15 | 0 | INTT3 Off -> No data. We may lose the trigger (MBD no running) |
| 03:04 | 24755 | 1 min | 7 | 95 | 15 | 1k | INTT3 Off The rest servers have > 2.5M hits. seems to be timed in (GOOD) |
| 03:11 | 24756 | 1 min | 127 | 95 | 15 | 500 | INTT3 Off : try to check whether we see other peaks or not (GOOD, no second peak, but the dist. shape changes a bit. ) |
| 03:19 | 24757 | 1 min | 4 | 95 | 15 | 1.5K | INTT3 Off. FInal confirmation (GOOD) |
| 00:00 | 00000000 | 1 | 1 | 1 | 1 | 1 | @ |
| 00:00 | 00000000 | 1 | 1 | 1 | 1 | 1 | [ |
| 00:00 | 00000000 | 1 | 1 | 1 | 1 | 1 | a |
| 00:00 | 00000000 | 1 | 1 | 1 | 1 | 1 | s |

# RHIC 電磁石の問題

# 宇宙線測定

2023/08/01 夕方

HCAL と共に HCAL cosmic トリガー（~4 kHz）を使って宇宙線測定を試みた。

INTT は全くデータが収集できなかった。おそらく簡単な初期化ステップを飛ばしているだけだと思うが、Raul の助けが必要。

# 宇宙線測定

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## 知っていますか？

HCAL cosmic トリガーは HCAL の
エネルギー較正のためのトリガーで、
Outer HCAL を接線方向に突き抜ける
宇宙線でトリガーを発行するそうです。