

INTT DB and Channel definition

1. DB for Ladder status
2. Chips and Channels in HW

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DB for ladder status

- Current situation
 - ChengWei nicely started the discussion about DB last week.
 - DB to keep track the **ladder status** step by step
 - making -> go into barrel, -> IR..
 - It is unclear to me what kind of information to be kept in DB
 - This represent **“ladder status”**
 - Ladder database
 - DB to store the ladder “STATUS” obtained by the calibration test
 - What information to be saved in DB?
 - Need to (re)define “ladder status”
 - Raw data and plots are not candidates.
 - Raw data + classification = “STATUS”
 - Summary is **the status**
 - Chip-by-chip OK/NG classification.
- 2022/9/15 • Whenever needed, we can access the raw data quickly but...

STATUS and rawdata

CW - ladder database format

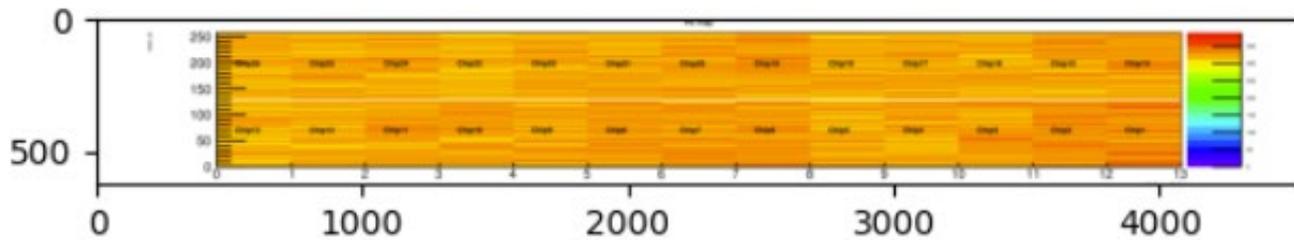
| B1L0 | | Hardware Components | | | | Calibration Test | | | | | | | | Survey, Cool | | | |
|------|-----------------|---------------------|--------------|--------------|--------------------|------------------|-----------------|--------|--------------------|-----------------|------------|--------|---|--------------|---------------|----------------|-------------|
| ID | Ladder Position | Ladder Name | HDI | | BEX | | South | | | | North | | | | Survey Status | GND Wire Slave | Glee Conn r |
| | | | South/Nor th | South/hor th | Current SA/SB [nA] | TA/TB [Celsius] | File Name | Status | Current SA/SB [nA] | TA/TB [Celsius] | File Name | Status | | | | | |
| 1 | B1L000 | PB2-L316 | 242/243 | 67/70 | 359/341 | 22.8/22.6 | 20220826-1249.8 | 1 | 359/341 | 22.8/22.6 | 220826-124 | 1 | 1 | 1 | 1 | | |
| 2 | B1L001 | PB2-L323 | 149/150 | 69/72 | 387/361 | 21.6/21.6 | 20220822-1750.8 | 1 | 396/360 | 22.6/22.0 | 220823-135 | 1 | 1 | 1 | 1 | | |
| 3 | B1L002 | PB2-L334 | 310/311 | 71/74 | 410/362 | 22.2/22.1 | 20220816-1741.8 | 1 | 350/230 | 22.9/22.9 | 220823-135 | 1 | 1 | 1 | 1 | | |
| 4 | B1L003 | PB2-L349 | 374/375 | 73/76 | 280/370 | 23.1/-5.2 | 20220822-1843.8 | 1 | 400/350 | 21.4/21.5 | 220823-141 | 1 | 1 | 1 | 1 | | |
| 5 | B1L004 | PB2-L345 | 369/367 | 75/78 | 297/291 | 23.3/-17.8 | 20220817-1526.8 | 1 | 391/362 | 23.6/36.1 | 220823-143 | 1 | 1 | 1 | 1 | | |
| 6 | B1L005 | PB2-L301 | 617/618 | 77/80 | 487/362 | 22.6/22.3 | 20220818-1813.8 | 1 | 407/330 | 23.3/22.5 | 220823-150 | 1 | 1 | 1 | 1 | | |
| 7 | B1L006 | PB2-L318 | 194/196 | 79/82 | 370/279 | 22.8/22.6 | 20220822-1646.8 | 1 | 407/376 | 22.9/22.2 | 220823-152 | 1 | 1 | 1 | 1 | | |
| 8 | B1L007 | PB2-L326 | 291/292 | 81/84 | 382/385 | 22.8/22.6 | 20220822-1718.8 | 1 | 352/350 | 22.7/22.2 | 220823-152 | 1 | 1 | 1 | 1 | | |
| 9 | B1L008 | PB2-L327 | 293/294 | 81/84 | 373/354 | 21.5/23.2 | 20220812-1851.8 | 1 | 299/295 | 23.2/22.5 | 220816-180 | 1 | 1 | 1 | 1 | | |
| 10 | B1L009 | PB2-L311 | 232/233 | 53/56 | 392/365 | 22.5/22.2 | 20220812-1908.8 | 1 | 410/292 | 23.3/22.7 | 220816-180 | 1 | 1 | 1 | 1 | | |
| 11 | B1L010 | PB2-L331 | 187/188 | 55/58 | 394/271 | 23.3/4.2 | 20220810-1348.8 | 1 | 416/301 | 21.0/-14.8 | 220816-165 | 1 | 1 | 1 | 1 | | |
| 12 | B1L011 | PB2-L308 | 226/227 | 57/60 | 394/371 | 23.3/-13.8 | 20220811-1048.8 | 1 | 427/297 | 23.3/-13.8 | 220816-163 | 1 | 1 | 1 | 1 | | |
| 13 | B1L012 | PB2-L309 | 228/229 | 59/62 | 374/385 | 23.3/-7.5 | 20220812-1111.8 | 1 | 418/299 | 23.2/-16.6 | 220816-171 | 1 | 1 | 1 | 1 | | |
| 14 | B1L013 | PB2-L338 | 185/187 | 61/64 | 13/342 | 21.1/22.9 | 20220826-1737.8 | 1 | 290/297 | 23.1/22.3 | 220816-173 | 1 | 1 | 1 | 1 | | |
| 15 | B1L014 | PB2-L332 | 303/304 | 63/66 | 363/395 | 23.2/22.8 | 20220816-1620.8 | 1 | -402/-262 | 23.3/-10.6 | 220816-182 | 1 | 1 | 1 | 1 | | |
| 16 | B1L015 | PB2-L330 | 303/301 | 65/68 | 358/376 | 21.5/23.8 | 20220816-1613.8 | 1 | 257/260 | 23.1/22.1 | 220816-183 | 1 | 1 | 1 | 1 | | |

• STATUS

- Ladder-by-ladder status is currently kept in the spreadsheet in Si-LAB.
- Ladder name, leakage current, classID, and, time, so on..
- Good to keep the dataID which is used to classify the ladder
 - Date, Filename, Directory

• Rawdata

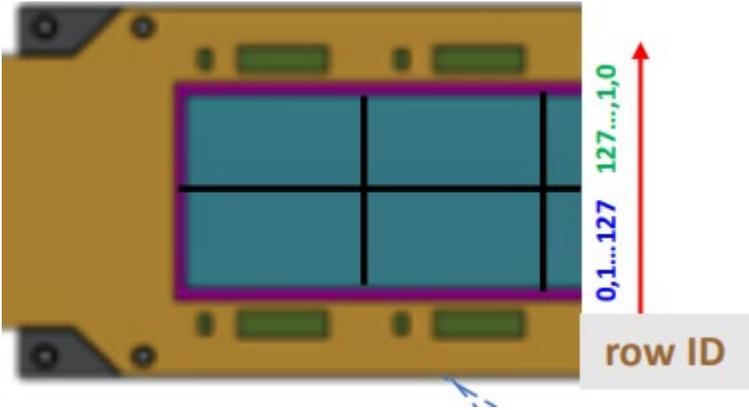
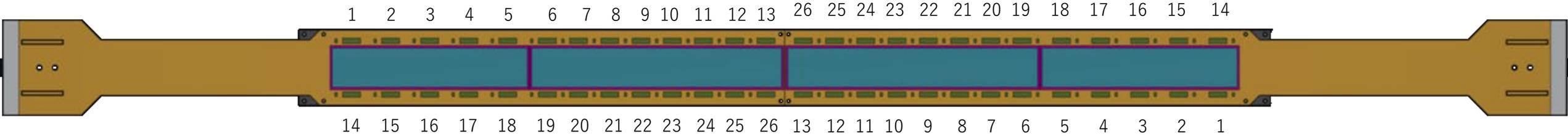
- ROOT file
- Figures based on calibration data
 - ADC vs amplitude
 - Nhit vs chip-channel



Numbering definitions

- Thank you, Joseph, Milan, and Wei, for compiling information about the numbering definition. There are two different definitions: Hardware and Offline (tracking)
 1. Hardware definition
 - Numbering is defined in hardware level by wiring and code in FPHX chip, HDI, and ROC.
 - The numbering cannot be changed practically
 - The numbering is used at the testbench now
 2. Offline (tracking) definition:
 - Offline-tracking code uses the numbering. Cannot be changed.
 - GEANT also use the same numbering
- After the discussion, we use the hardware definition in the online monitoring and INTT GUI.

Hardware definition ChipID



- ChipID starts from 1.
- Channel ID is as it is.

Rawdata at FEM (FELIX format need to be checked)

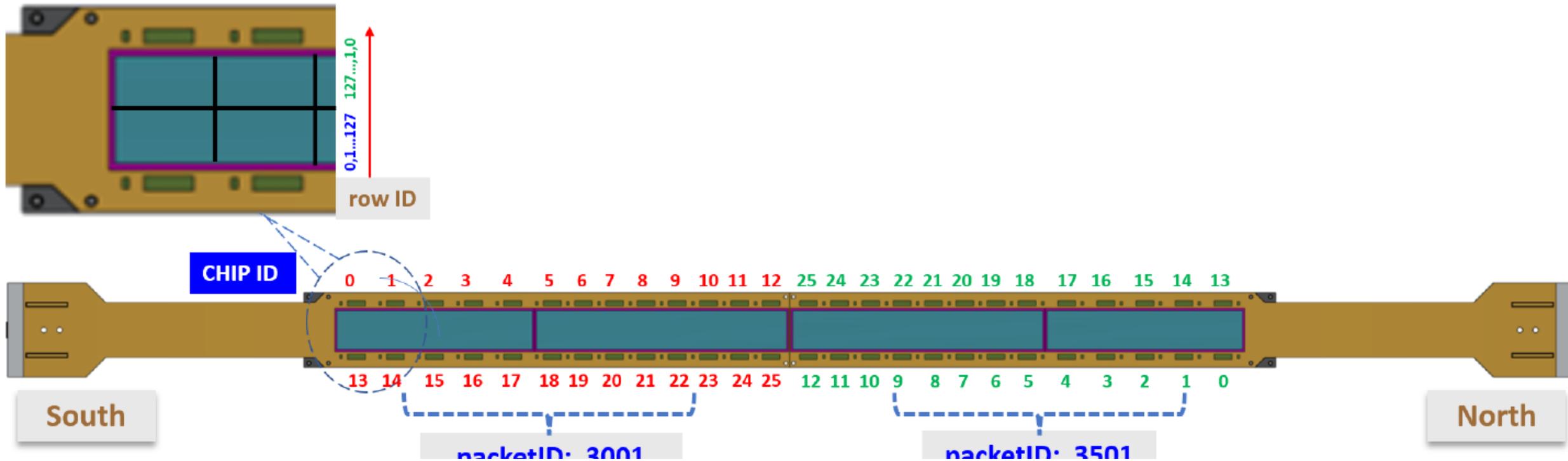
Output from FO

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|----|------|------|-----|----|----|----|----|----|----|----|-----|----|----|---------------|----|------------|----|----|-----|----|---|---|---|-------------|---|---|---|---|---|---|
| 31 | 30 | 29 | 28 | 27 | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 1 | 0 | 0 | 0 | 0 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 5 | 4 | 3 | 2 | 1 | 0 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 1 |
| Full | | Line | Full | BCO | | | | | | | | ADC | | | Align ment | | CHIP ID | | | ROW | | | | | not used | | | | | | |

backup

Proposed Chip/Channel Indexing

- Follows the hardware chip indexing convention, but is base 0 instead of base 1
- Rotationally symmetric



Data Flow for INTT clustering in real data

