Packet-ID Assignment for INTT

RIKEN/RBRC

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FVTX Packet-ID

FVTX : 25000
South : 25000
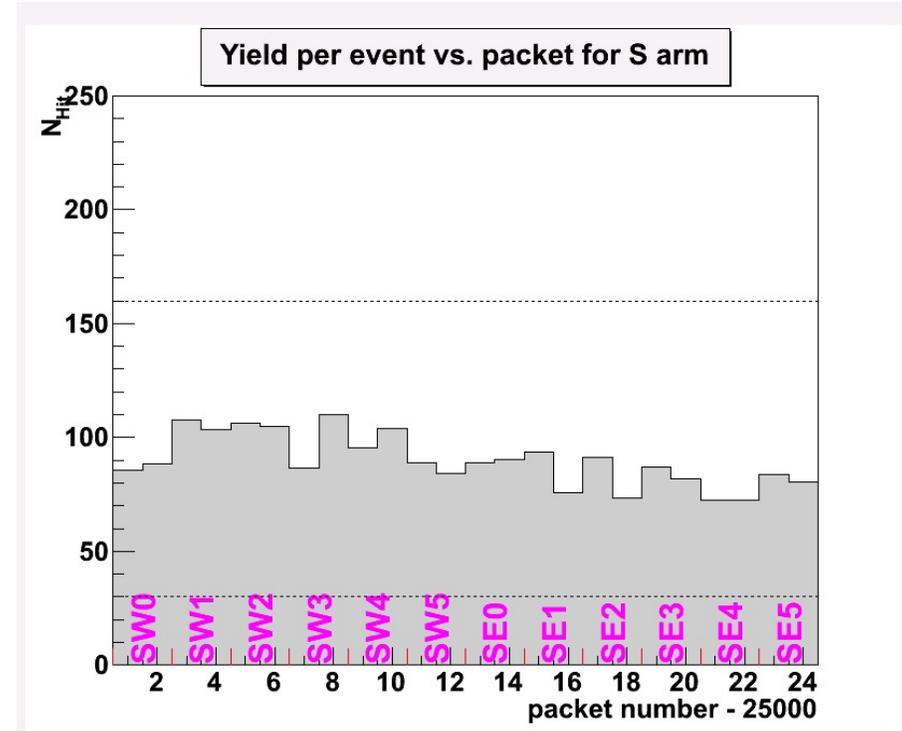North : 25100
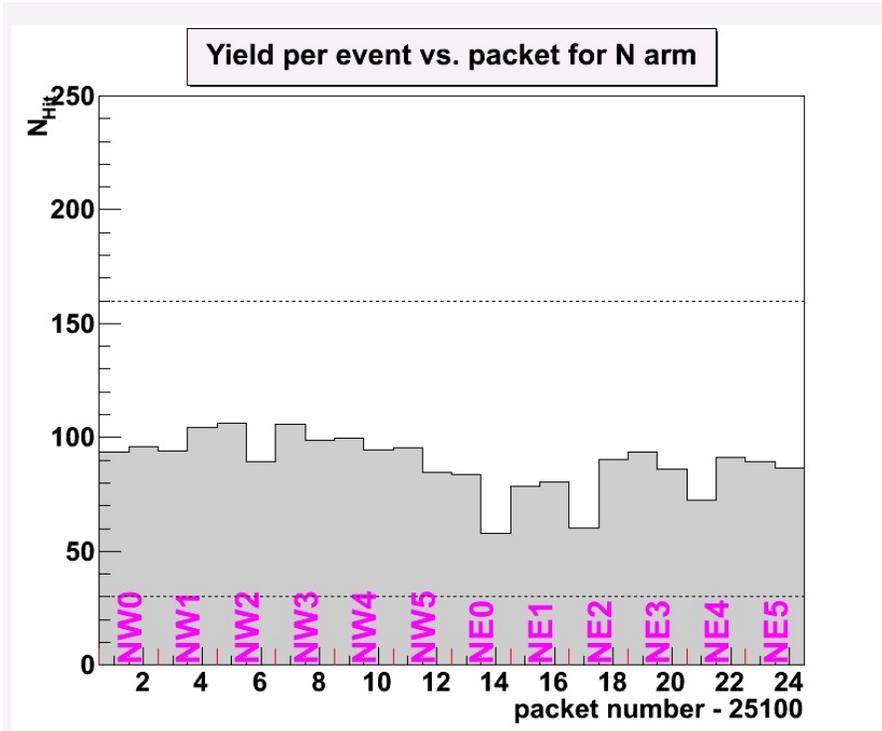
Yield per event vs. packet for N arm

Run# 459200   Nevt:105944   Date:Sat Jun 25 22:30:56 2016

Blue arrows indicate new cold packets

Red arrows indicate new hot packets

Green arrows indicate known hot/cold packets

Yield per event vs. packet for S arm

Run# 459200   Nevt:105944   Date:Sat Jun 25 22:30:56 2016

Blue arrows indicate new cold packets

Red arrows indicate new hot packets

Green arrows indicate known hot/cold packets

Packet ID assignments for sPHENIX Subsystems

- We assign each detector a "detector number"

- That number drives a number of things, especially DAQ packet ids

- If your detector number is 4, then the range 4001…4999 is "yours"

- The "even thousand" id (like 4000) is reserved for future use

- That has served us extremely well in PHENIX. When someone told us that packet 4063 has a problem, we'd immediately know which detector it was

- Current sPHENIX lineup:

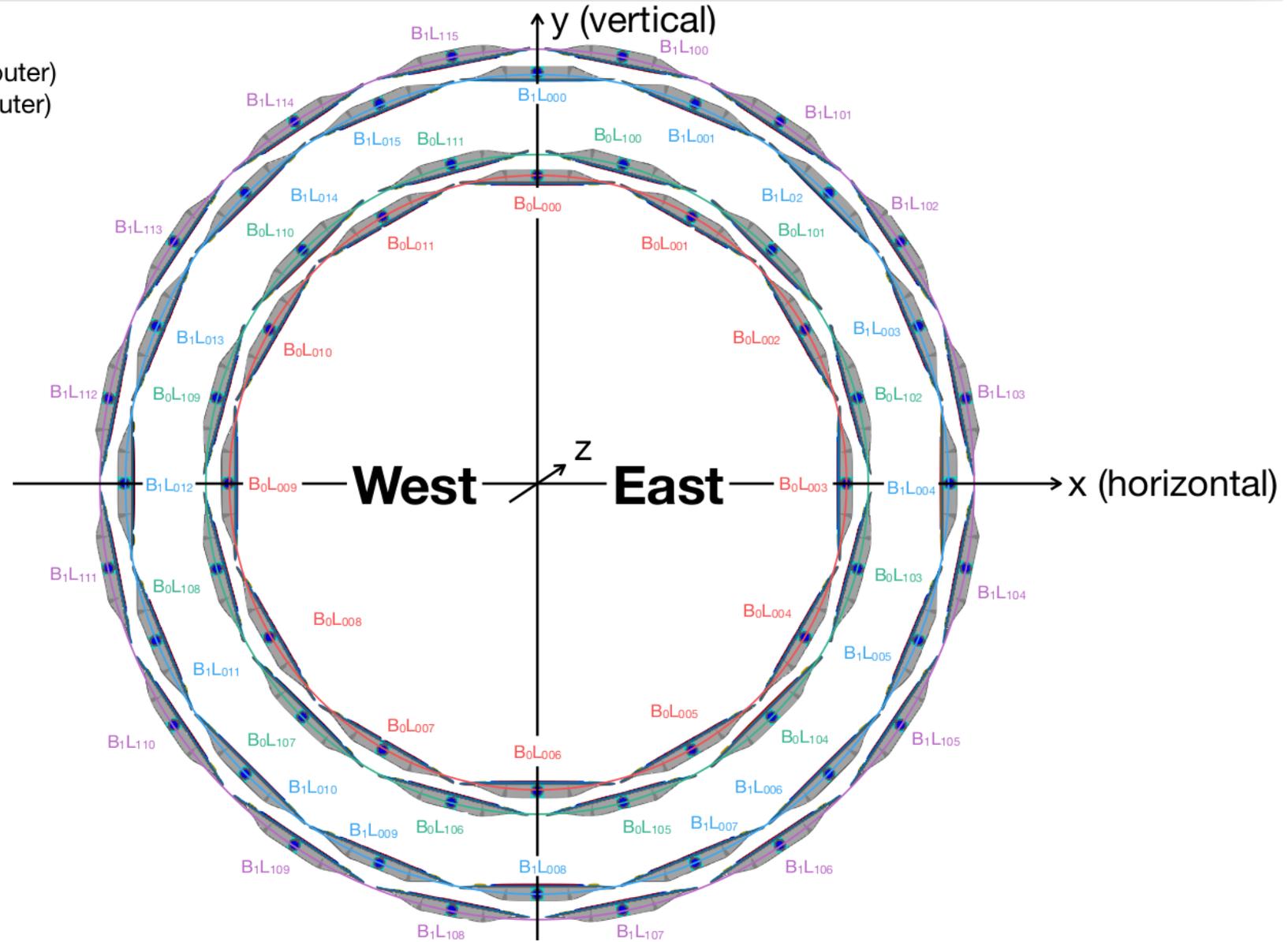| SubSystem	ID	Packet ID
MBD	1	
MVTX	2	
INTT	**3**	**3001 ⋯ 3999**
TPC	4	
TPOT	5	
EMCal	6	
iHCal	7	
oHCal	8	
sEPD	9	
Trigger	14	Historic Number

Barrels Configuration in sPHENIX Geant

Notation: B_xL_{yzz}
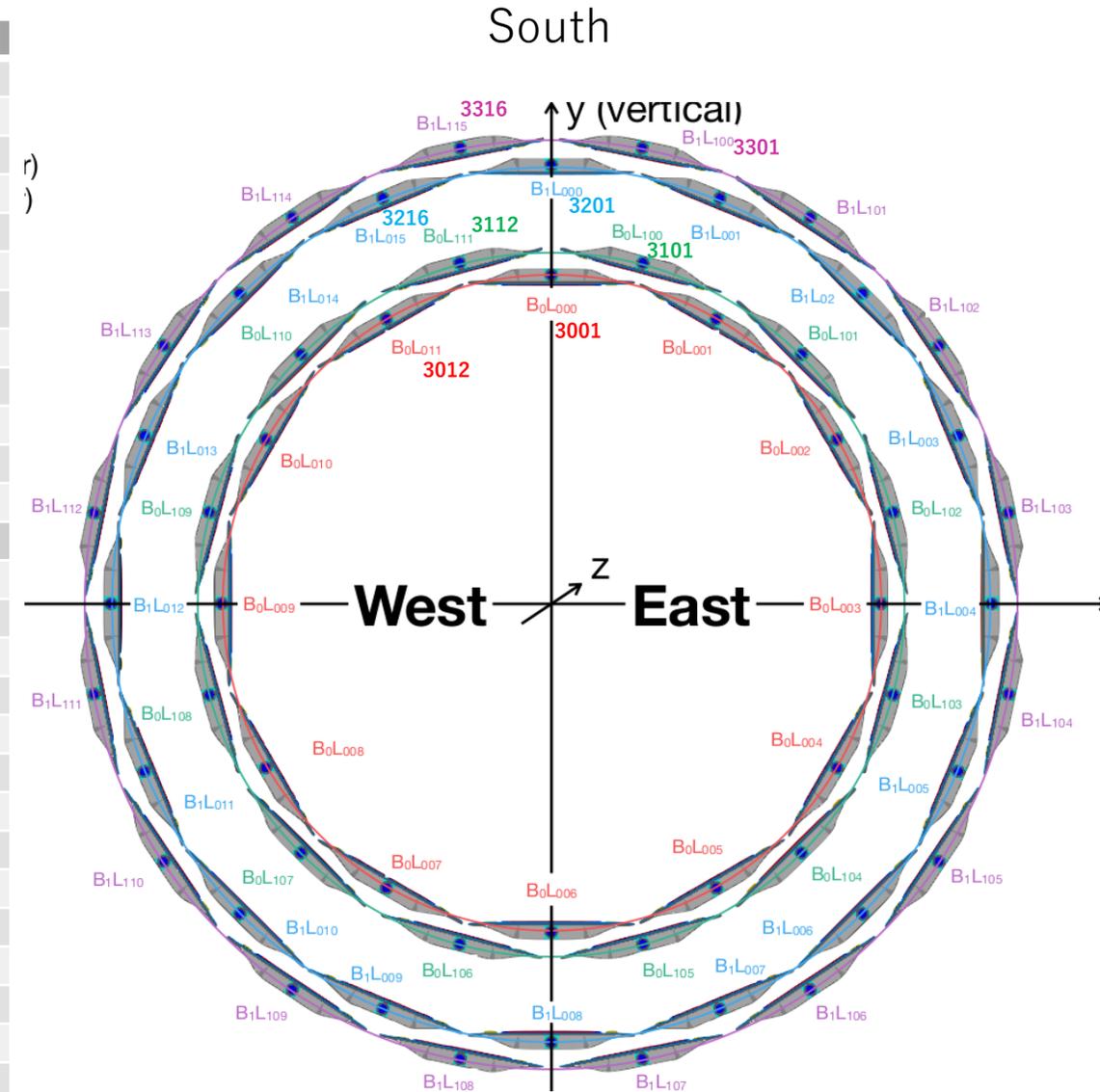 x: Barrel ID (0 for inner or 1 for outer)
  y: Layer ID (0 for inner or 1 for outer)
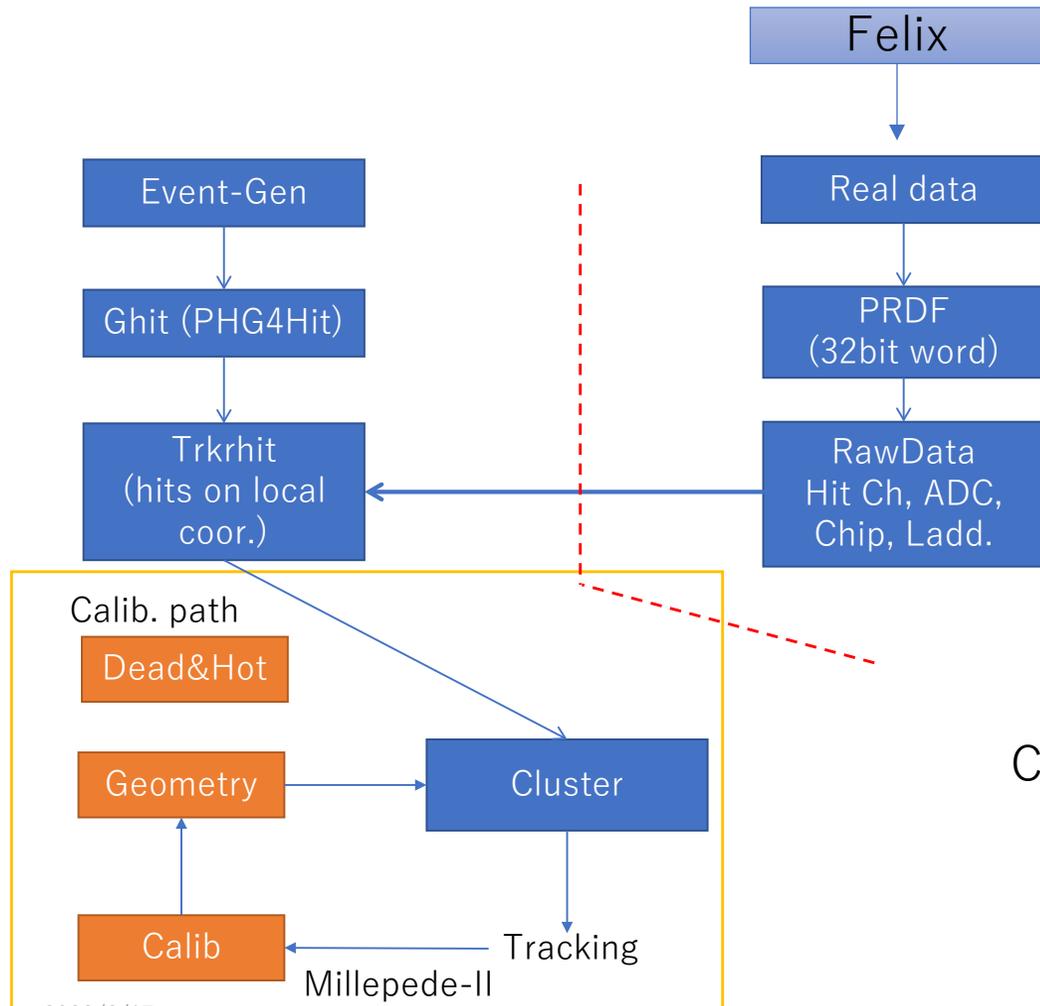 zz: Ladder ID (from 0 to 15)

Proposed Packet-ID Assignment

Ladder	South	North	Ladder	South	North
B0L000	3001	3501	B0L100	3101	3601
B0L001	3002	3502	B0L101	3102	3602
B0L002	3003	3503	B0L102	3103	3603
B0L003	3004	3504	B0L103	3104	3604
B0L004	3005	3505	B0L104	3105	3605
B0L005	3006	3506	B0L105	3106	3606
B0L006	3007	3507	B0L106	3107	3607
B0L007	3008	3508	B0L107	3108	3608
B0L008	3009	3509	B0L108	3109	3609
B0L009	3010	3510	B0L109	3110	3610
B0L010	3011	3511	B0L110	3111	3611
B0L011	3012	3512	B0L111	3112	3612
Ladder	South	North	Ladder	South	North
B1L000	3201	3701	B1L100	3301	3801
B1L001	3202	3702	B1L101	3302	3802
B1L002	3203	3703	B1L102	3303	3803
B1L003	3204	3704	B1L103	3304	3804
B1L004	3205	3705	B1L104	3305	3805
B1L005	3206	3706	B1L105	3306	3806
B1L006	3207	3707	B1L106	3307	3807
B1L007	3208	3708	B1L107	3308	3808
B1L008	3209	3709	B1L108	3309	3809
B1L009	3210	3710	B1L109	3310	3810
B1L010	3211	3711	B1L110	3311	3811
B1L011	3212	3712	B1L111	3312	3812
B1L012	3213	3713	B1L112	3313	3813
B1L013	3214	3714	B1L113	3314	3814
B1L014	3215	3715	B1L114	3315	3815
BLL015	3216	3716	BLL115	3316	3816

Online/Semi-online Tasks

Felix

Packet-ID assignment at Felix (Raul)

Event-Gen

Real data

Ghit (PHG4Hit)

PRDF
(32bit word)

Trkrhit
(hits on local coor.)

RawData
Hit Ch, ADC,
Chip, Ladd.

Calib. path

Dead&Hot

Geometry

Cluster

Calib

Tracking

Millepede-II

2022/6/17

Barrels Configuration in sPHENIX

Notation: B_xL_{yzz}
- x: Barrel ID (0 for inner or 1 for outer)
- y: Layer ID (0 for inner or 1 for outer)
- zz: Ladder ID (from 0 to 15)

Ladder	South	North	L
B0L000	3001	3501	B
B0L001	3002	3502	B
B0L002	3003	3503	B
B0L003	3004	3504	B
B0L004	3005	3505	B
B0L005	3006	3506	B
B0L006	3007	3507	B
B0L007	3008	3508	B
B0L008	3009	3509	B
B0L009	3010	3510	B
B0L010	3011	3511	B
B0L011	3012	3512	B
Ladder	**South**	**North**	**L**
B1L000	3201	3701	B
B1L001	3202	3702	B
B1L002	3203	3703	B
B1L003	3204	3704	B
B1L004	3205	3705	B
B1L005	3206	3706	B
B1L006	3207	3707	B
B1L007	3208	3708	B
B1L008	3209	3709	B
B1L009	3210	3710	B
B1L010	3211	3711	B
B1L011	3212	3712	B
B1L012	3213	3713	B
B1L013	3214	3714	B
B1L014	3215	3715	B
BLL015	3216	3716	B

Coordinate conversion (Purdue)

Code to map, e.g. *chip ID and channel ID*, into the variables needed for offline reconstruction. according to the already established numbering convention in the reco software:
- layer: layer index 0-3, i.e. 4 layers
- ladder_phi: ladder index in each layer (0-11)@B0L0, (0-11)@B0L1, (0-15)@B1L0, (0-15)@B1L1
- ladder_z: sensor index in each ladder 0-4, i.e. 4 sensors:
- type-B(idx:1) == type-A(idx:0) == (origin) == type-A(idx:2) == type-B(idx:3)
- strip_z: strip index along Z in each sensor, i.e. (0-7), (0-4), (0-7), (0-4)
- strip_phi: strip index along phi in each sensor, i.e. (0-255)

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❖ For FVTX, the raw information are packet ID, chip ID and channel in chip, i.e. direct output from unpacker , which can be mapped to strip_z and ladder IDs (from Jing Huang).

❖ We can do things in the same way, i.e.
  • Raul pack , e.g. *chip ID and channel ID*, into the raw data.
  • Unpacker unpack the raw data into, e.g. *chip ID and channel ID*
  • Code to map, e.g. *chip ID and channel ID*, into the variables needed for offline reconstruction. according to the already established numbering convention in the reco software:
    o layer: layer index 0-3, i.e. 4 layers
    o ladder_phi: ladder index in each layer (0-11)@B0L0, (0-11)@B0L1, (0-15)@B1L0, (0-15)@B1L1
    o ladder_z: sensor index in each ladder 0-4, i.e. 4 sensors:
    o type-B(idx:1) == type-A(idx:0) == (origin) == type-A(idx:2) == type-B(idx:3)
    o strip_z: strip index along Z in each sensor, i.e. (0-7), (0-4), (0-7), (0-4)
    o strip_phi: strip index along phi in each sensor, i.e. (0-255)

❖ Joseph contacted Martin (on vacation till 07/04). He is now trying to figure out the spatial location of each channel to prepare for the mapping using Fun4all.