

T1439 data analysis

Yorito Yamaguchi

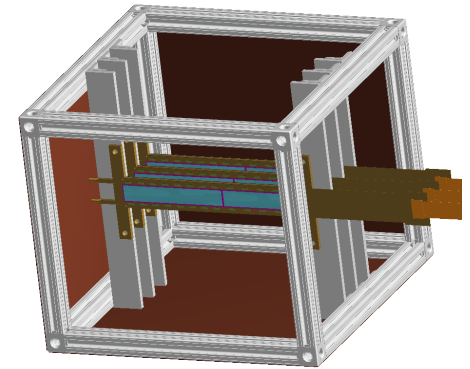
INTT meeting

Nov. 1st, 2018

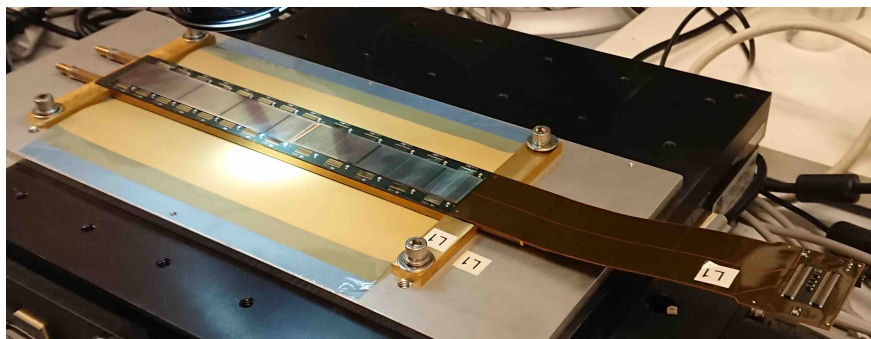
T1439 overview

- Beam time: Mar.6-9 (4days, 17:00-9:00)
- Test beams at MT6 test area
 - ✓ Spill length = 4.2sec, spill repeat rate = 1min
 - ✓ Averaged DAQ rate = 4kHz
- Tested INTT modules
 - ✓ 2x13 segmented sensors (16-20mm x 10mm)
 - ✓ 200 μ m-thick Si sensor for L123 layers
 - ✓ 3 telescope ladders
 - ✓ 2cm-gap between sensors

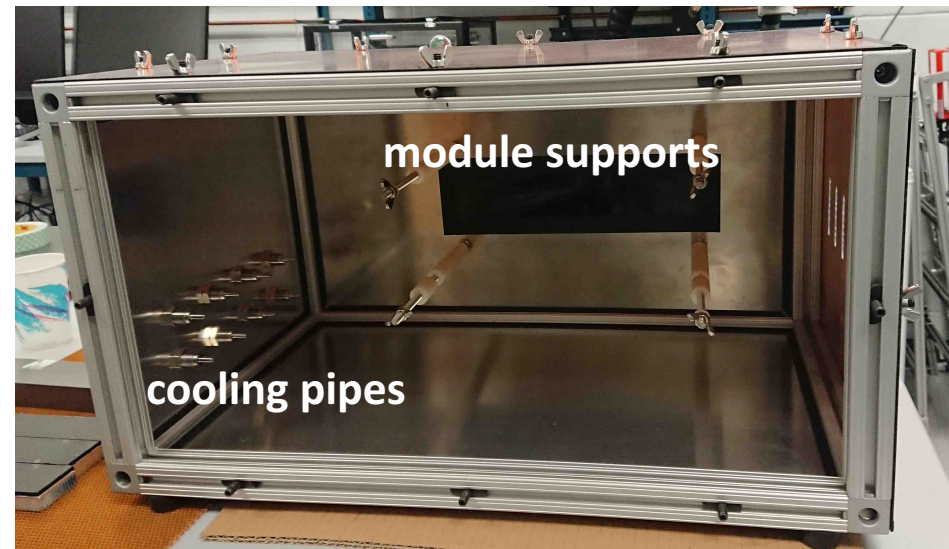
INTT telescope setup



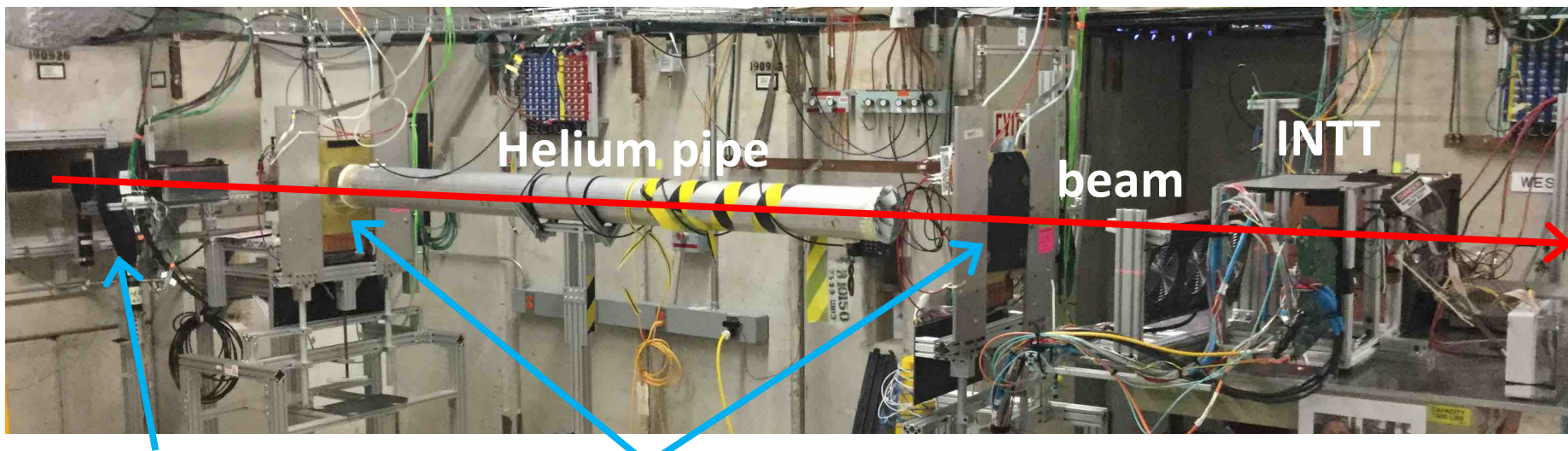
L1 ladder



Test box inside

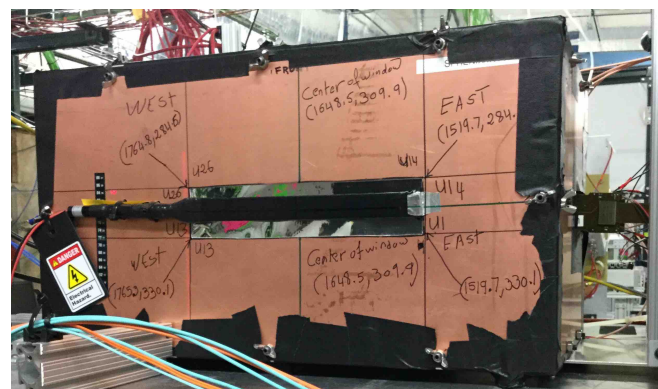


INTT Test setup

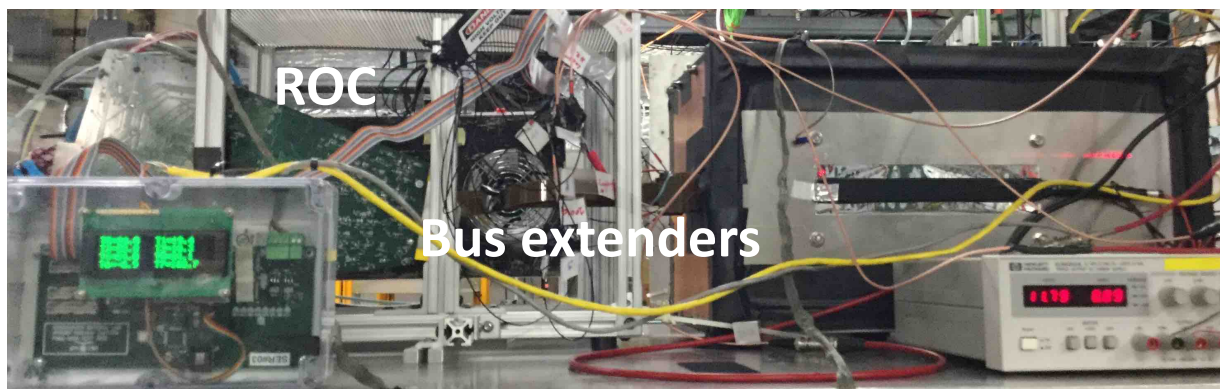


Scintillation Counter
(trigger)

MWPCs
(beam monitor)



INTT box (Front)

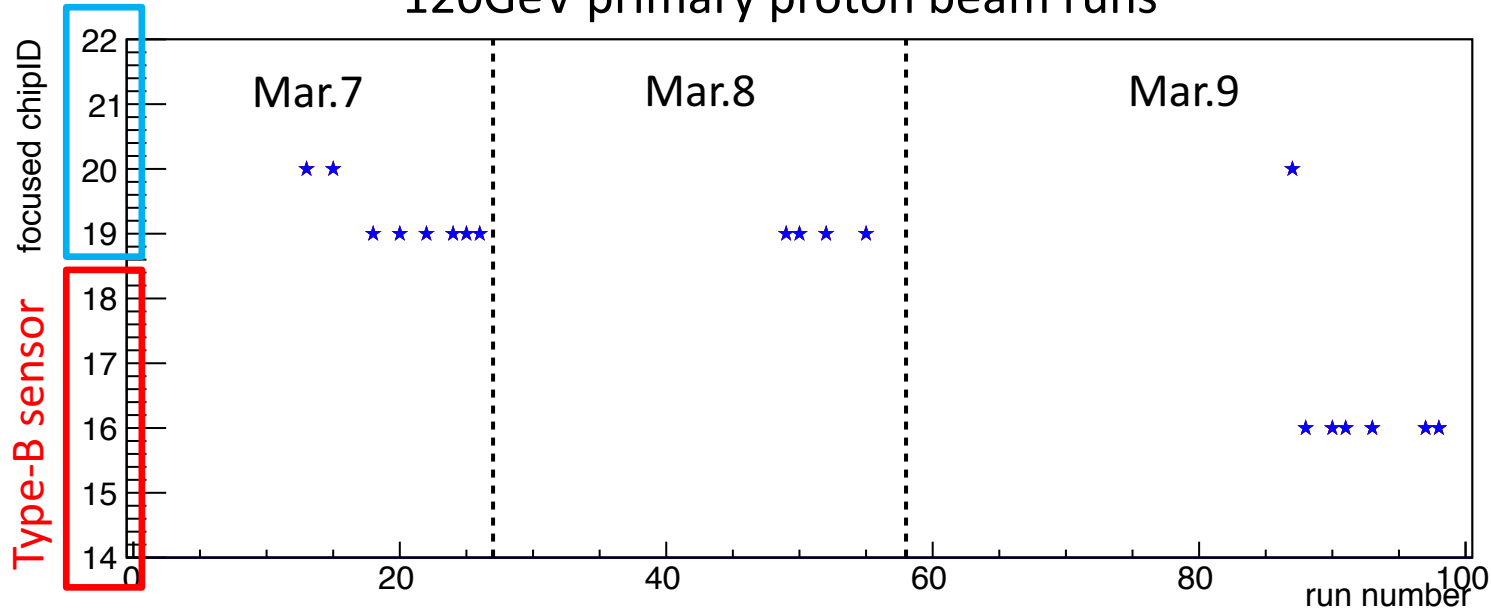


INTT box (Back)

Beam-focused sensors

Type-A sensor

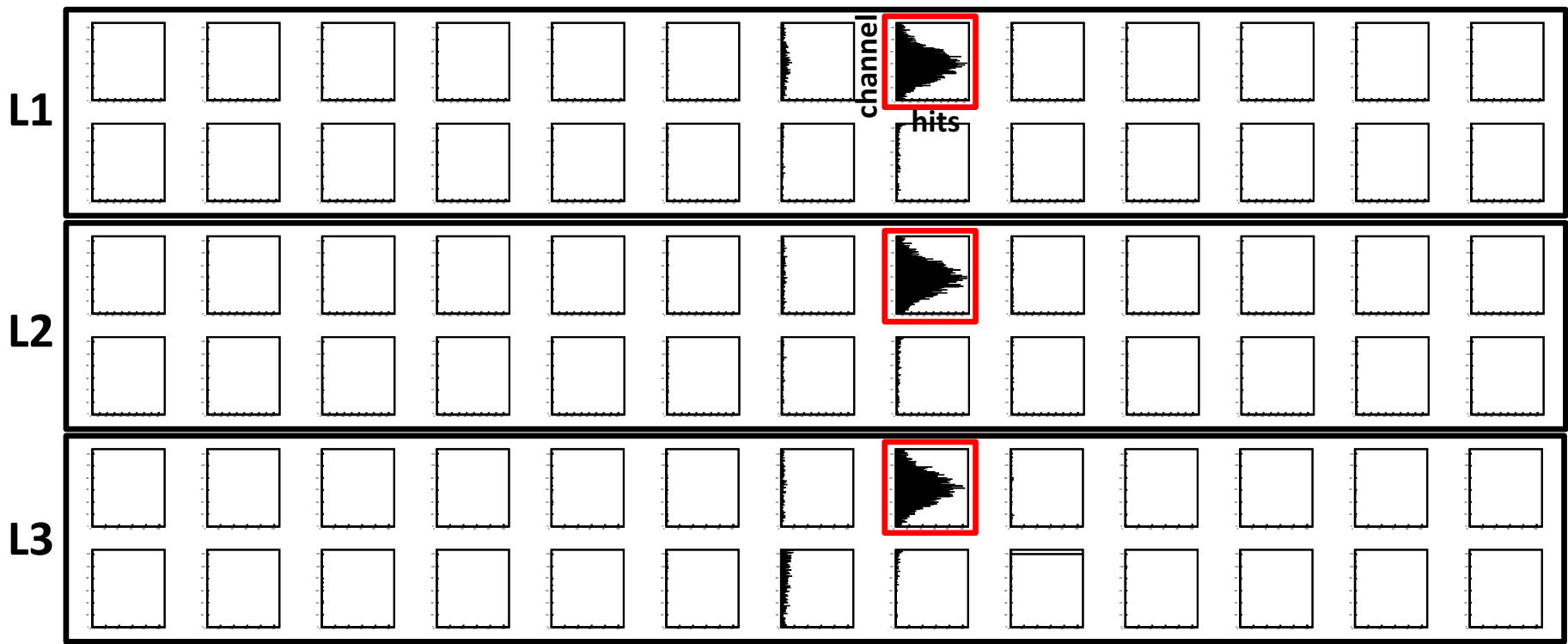
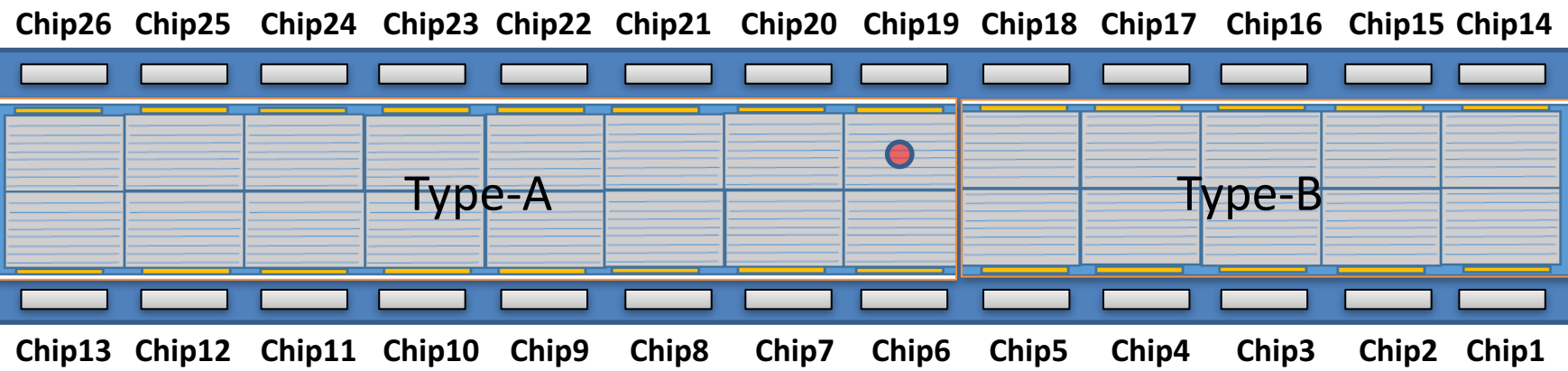
120GeV primary proton beam runs



- Scan of sensors by horizontally moving the table
 - ✓ #19 & 20 in Type-A sensor (2x8)
 - ✓ #16 in Type-B sensor (2x5)
- Beam conditions: particles, energy, beam spot size, ...
 1. 120GeV proton, beam size = 6mm → **Being analyzed**
 2. 10GeV $e^- + \pi^-$, beam size = 13mm → Not yet analyzed
 3. 1. & 2. with lead bricks → Not yet analyzed

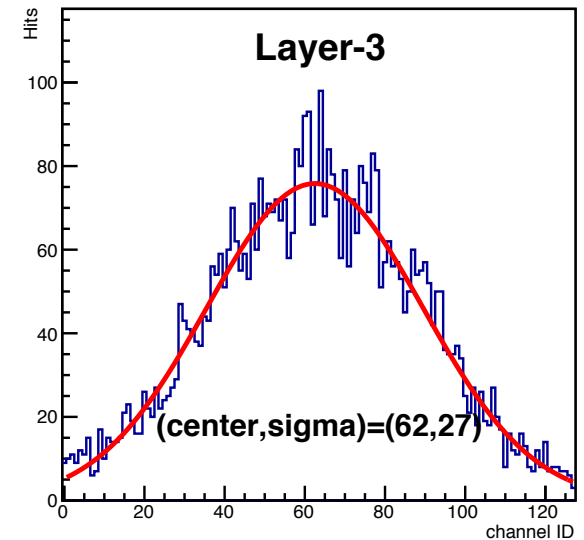
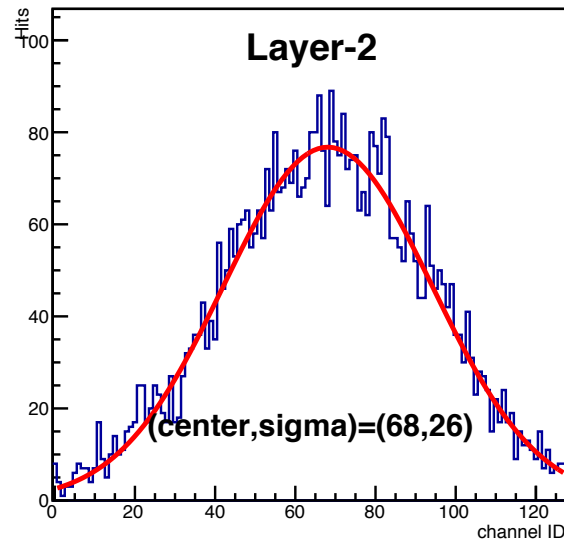
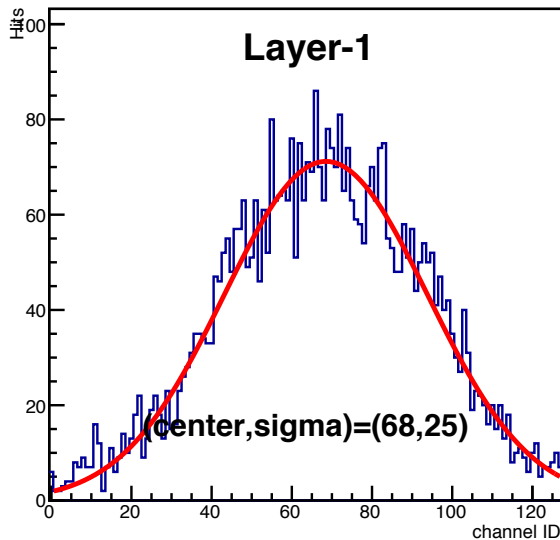
Good data: Run-52

● Beam focused position



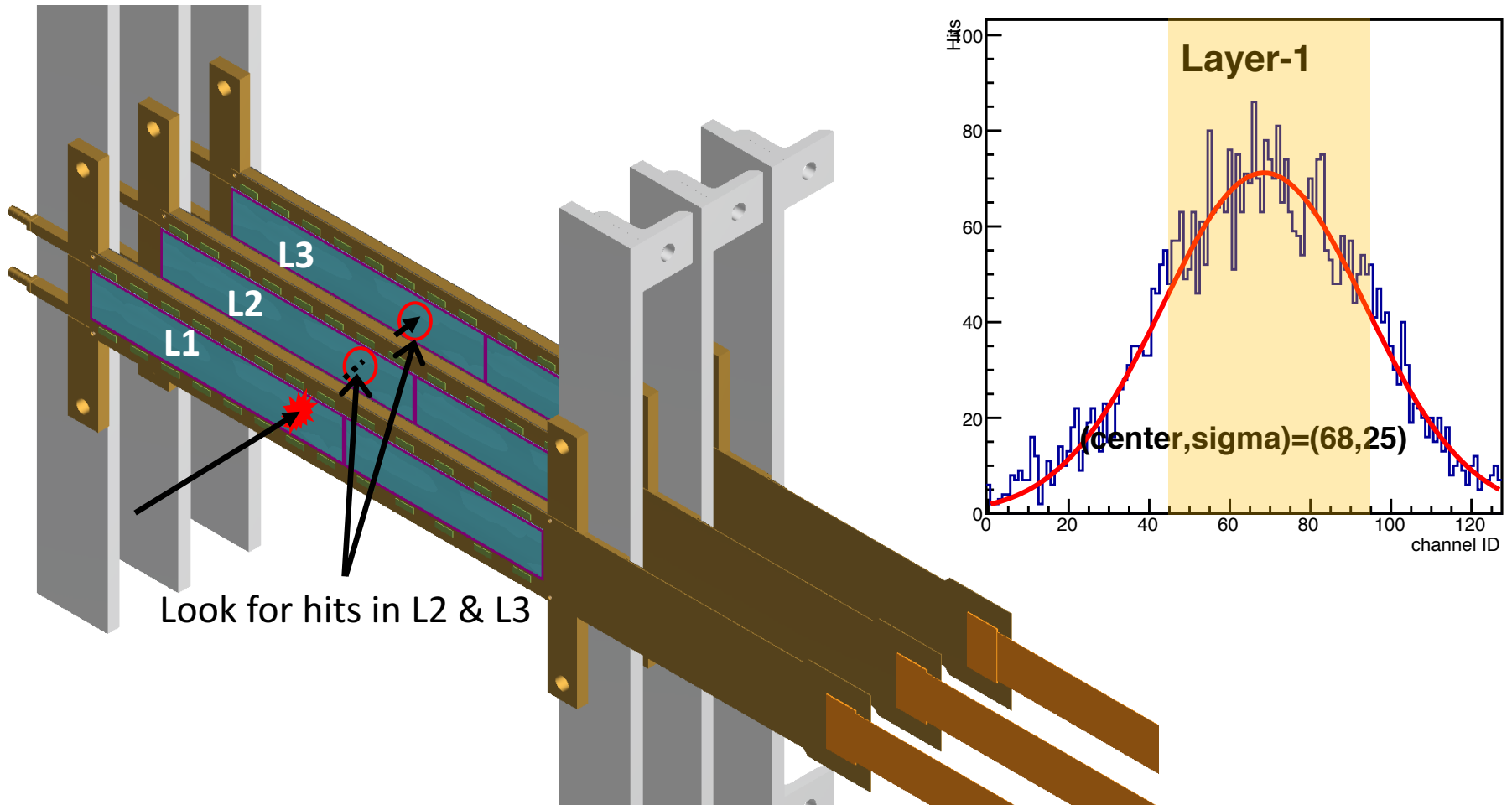
Beam center and spot size

Run-52 : Chip19



- Beam center and spot size for each layer by a Gaussian fit
 - ✓ Supposing straight beams in most of events, the difference in the beam center results from misalignment of layers.
 - ✓ L2、L3のL1に対するずれはRun-by-Runで補正

Definition of Track hits

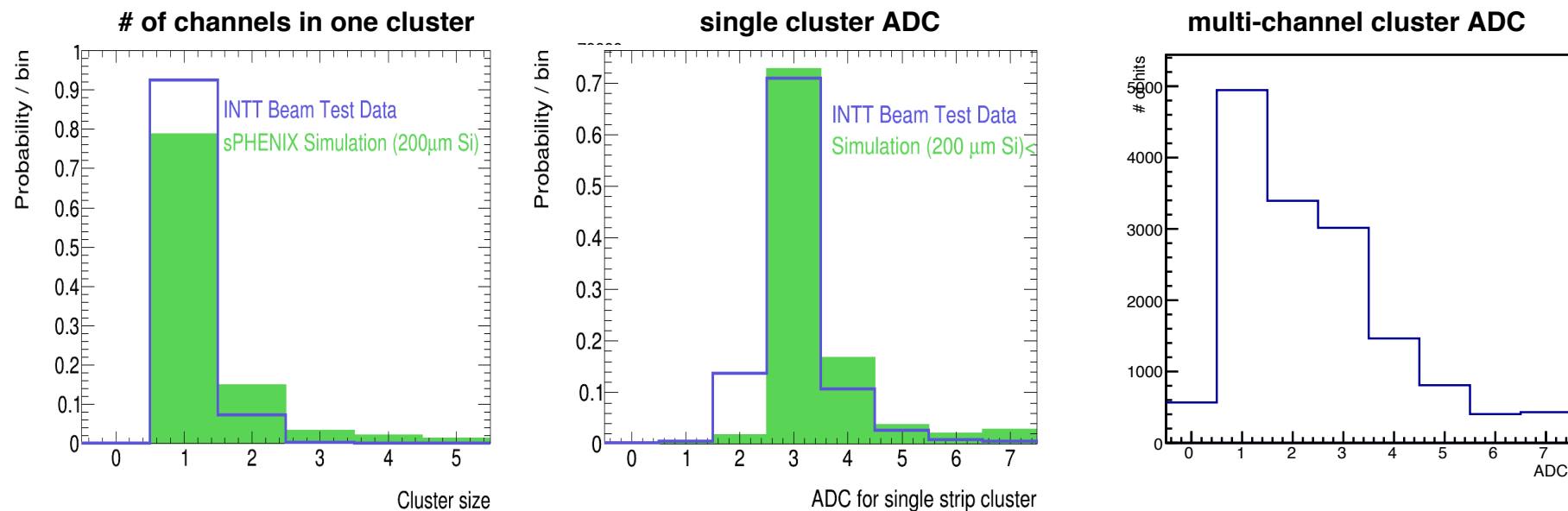


- L1のBeam center $\pm 1\sigma$ の範囲にあるヒット \rightarrow Good Track Event
- L2, L3にL1 hitと同じ位置 ± 1 チャンネルにヒット \rightarrow Track Hits

Clustering

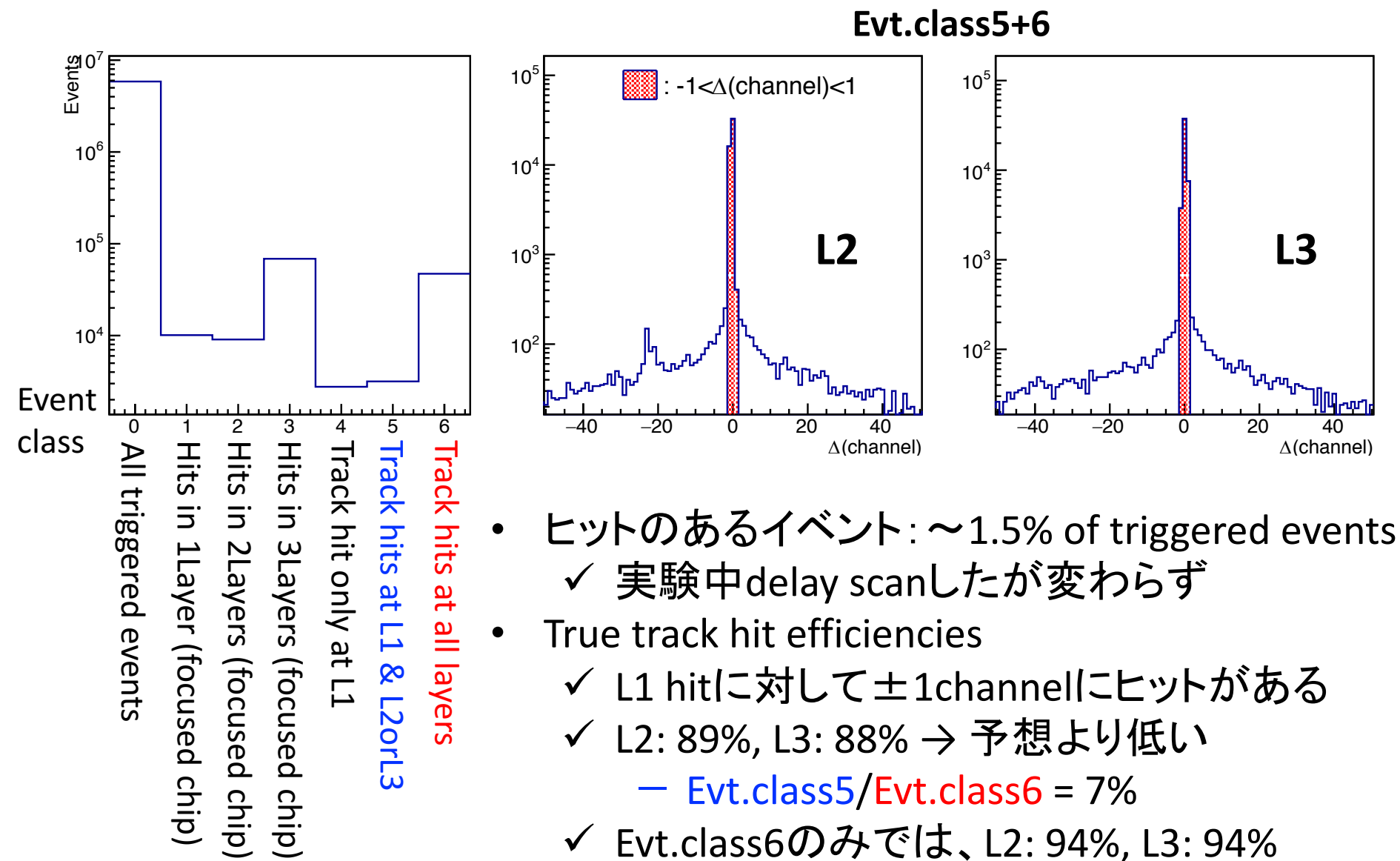
- クラスターの定義
 - ✓ 隣り合うチャンネルにヒットがある
 - a. Yes: Multi-channel cluster
→ 最もADCの値が大きいチャンネルがヒットポジション
 - b. No: Single-channel cluster

L2, L3の結果 for Track Hits



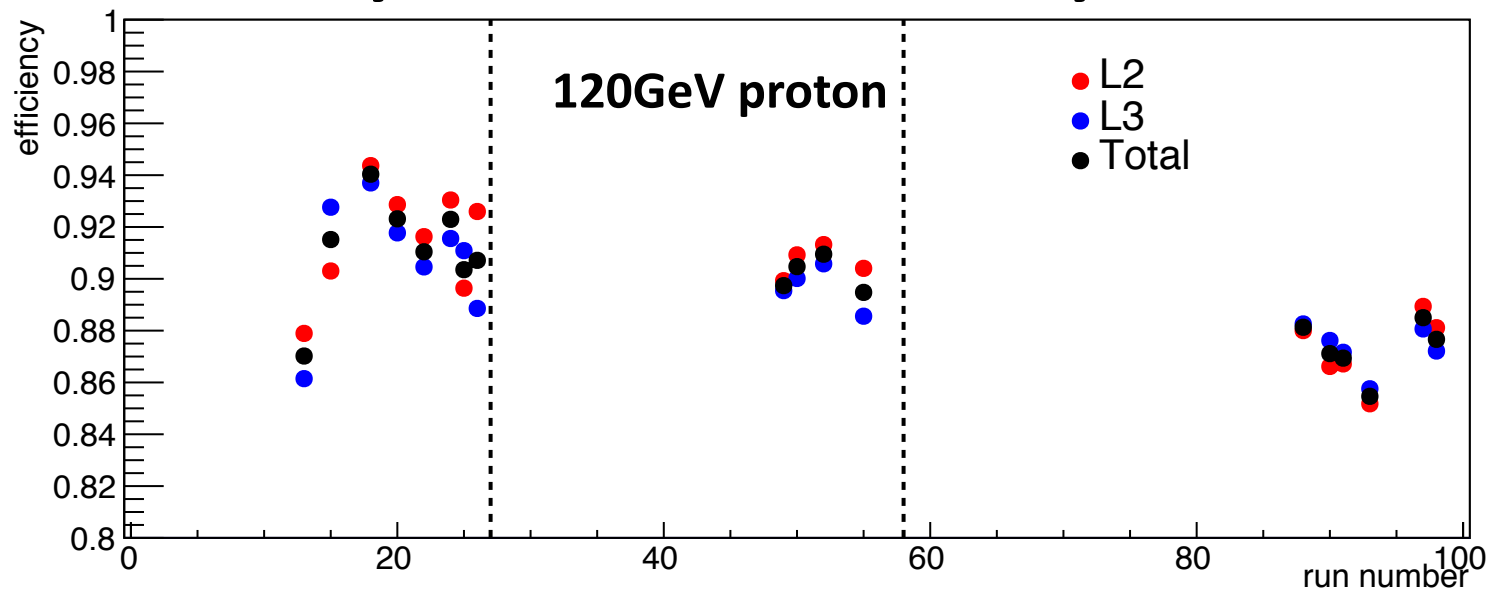
- sPHENIX G4 simulationと比較(Done by Jin)
 - ✓ ノイズの影響、斜め入射トラックによる違い → Reasonable

Hit position at L2,3 w.r.t L1 hit



Run-by-Run efficiency

Evt.class5+6



Evt.class6

