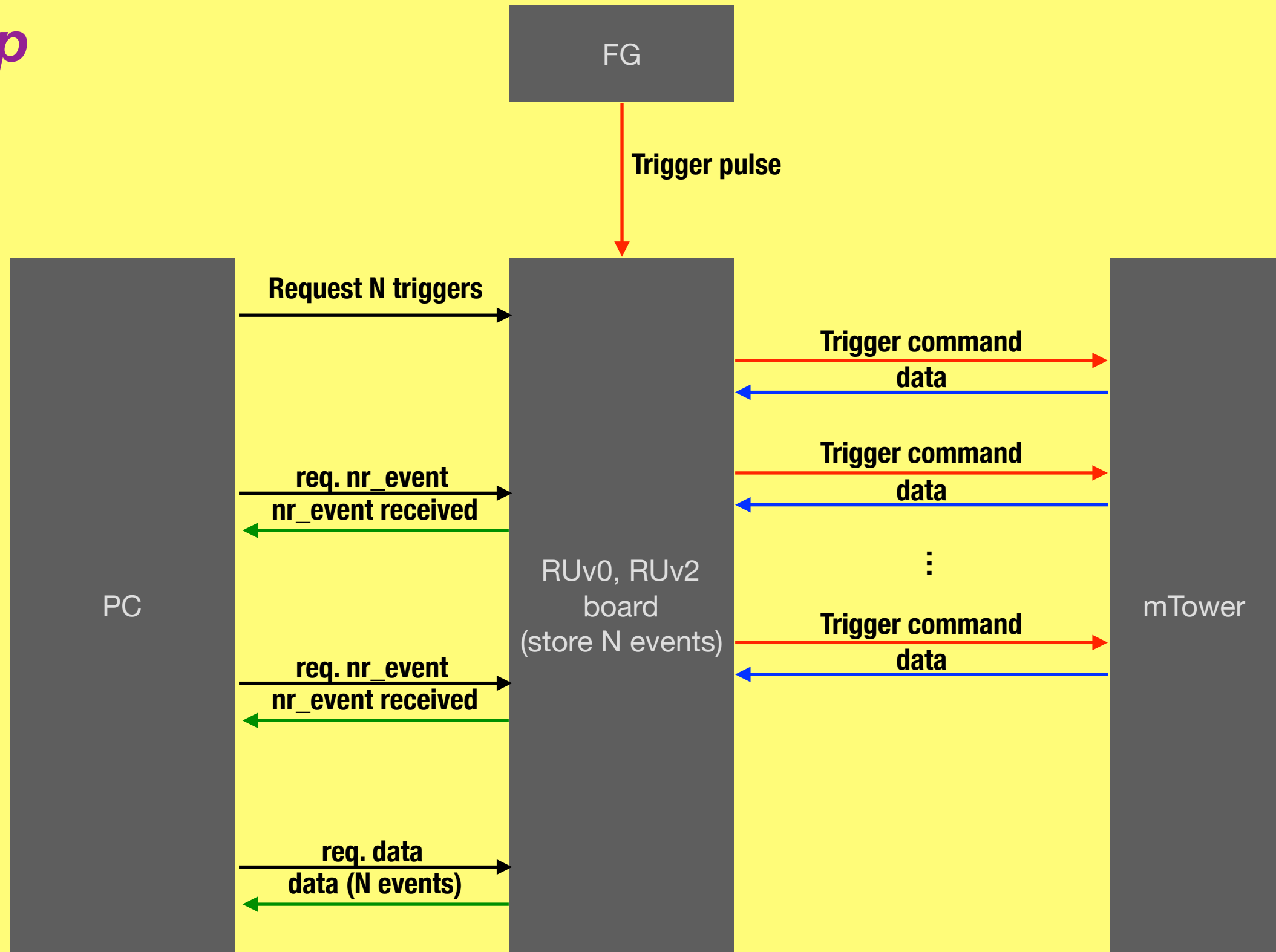


mTower datasize scan

Hiroki Yokoyama

14/10/2019

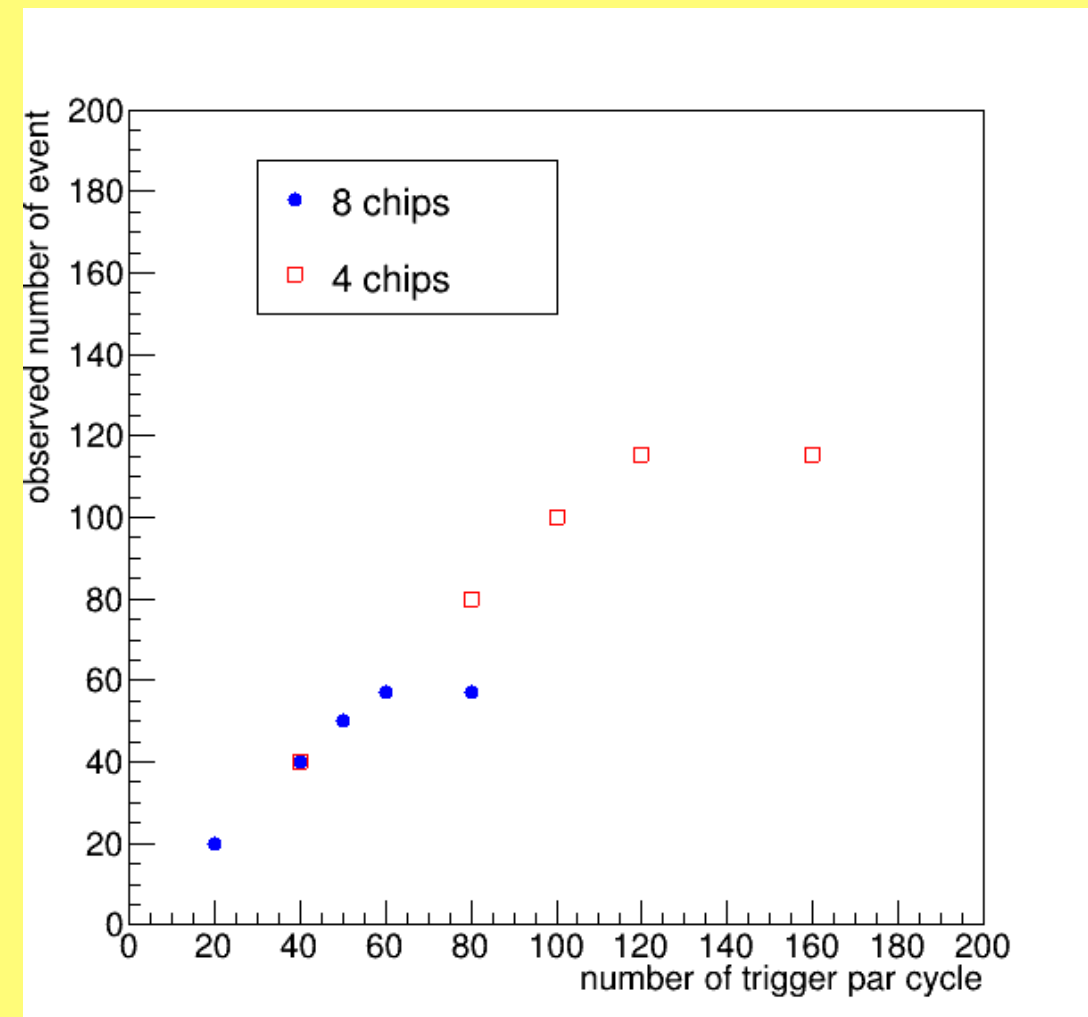
setup



How much is the buffer size in RUv2 FPGA?

data-size scan

- ☑ analog pulse injection test
 - ▶ unmask all pixels
 - ▶ charge injection for Region0 (32*512 pixels ~ 3.1% occ.)
 - ▶ 8(4) chips for data taking
 - ▶ scan “nr_triggers par cycle”
- ☑ $N^{\text{ev}}_{\text{obs}}$ saturate at $N^{\text{trig}} = 57$ for 8 chips (114 for 4 chips)



pixel scan

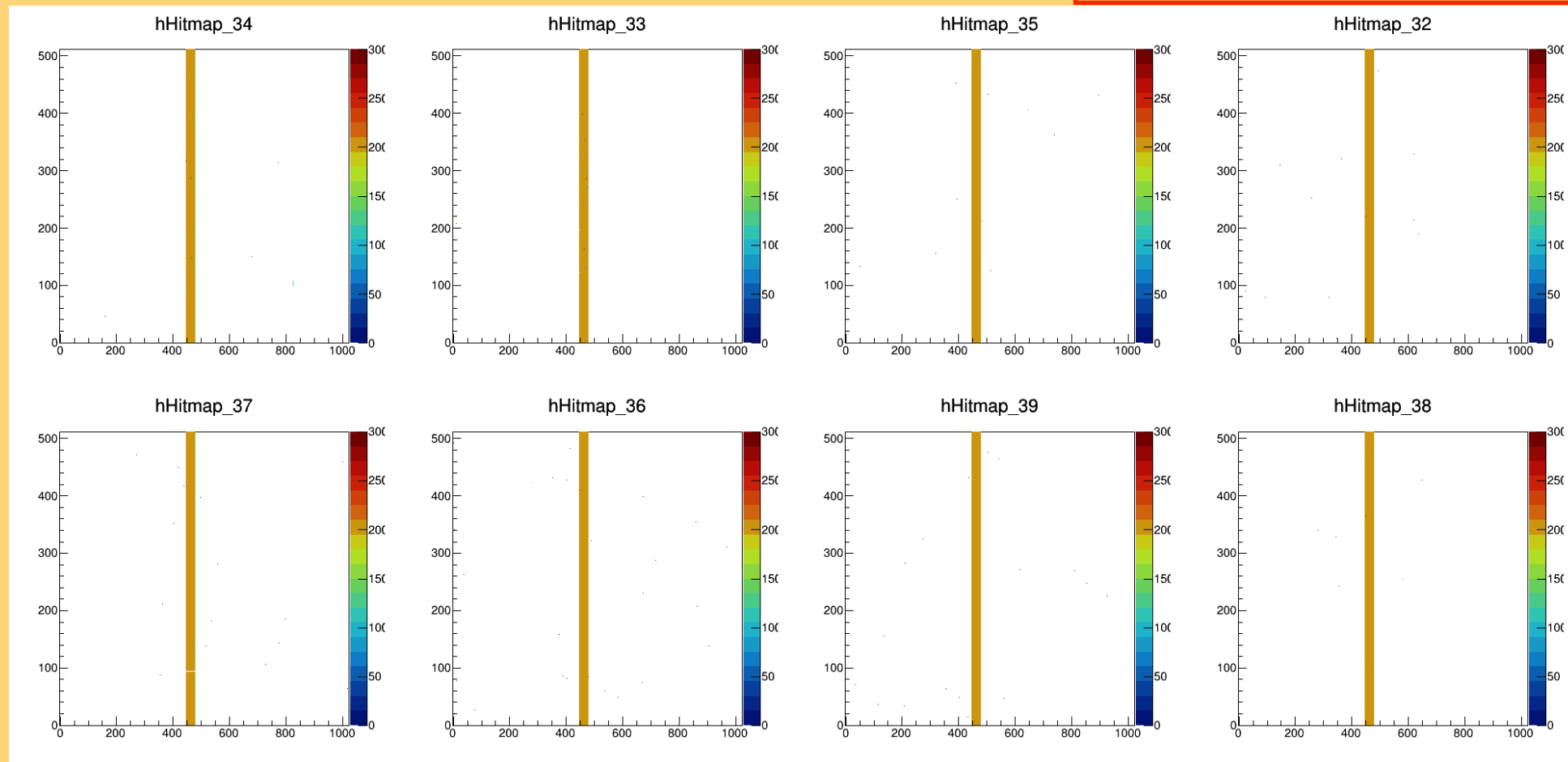
☑ scanning all pixels

- ▶ to identify dead/hot pixel

☑ charge injection test

- ▶ 8 chips for data taking (module_id: 9, 3, 8, 1, Tower_id: 3)
- ▶ charge injection for each one region from 0 to 31 (32*512 pixels)
- ▶ unmask all pixels
- ▶ 20 triggers/cycle (*10 cycles)

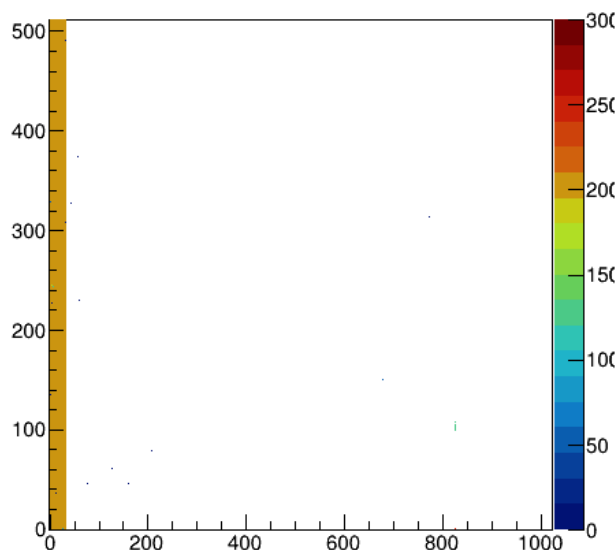
charge inj. for Region14



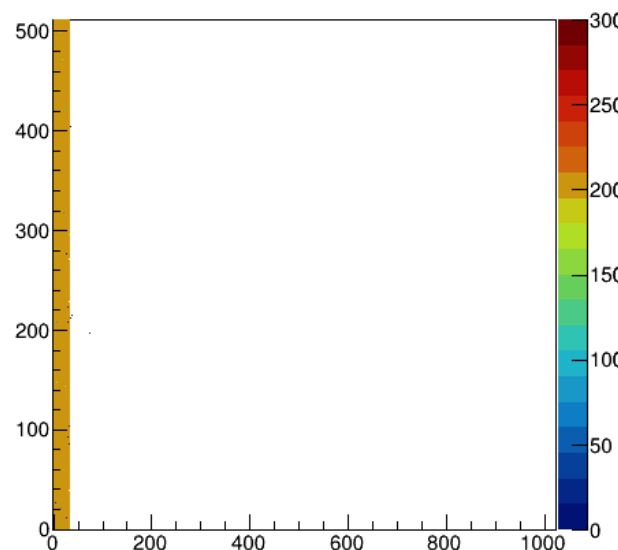
hitmap sample

▶ region = 0

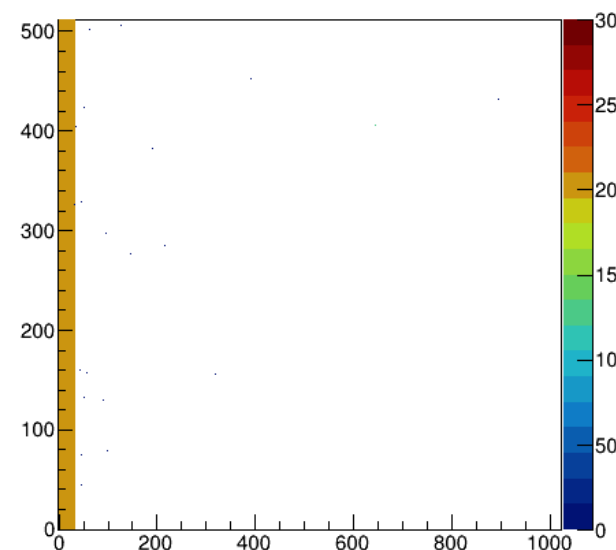
hHitmap_34



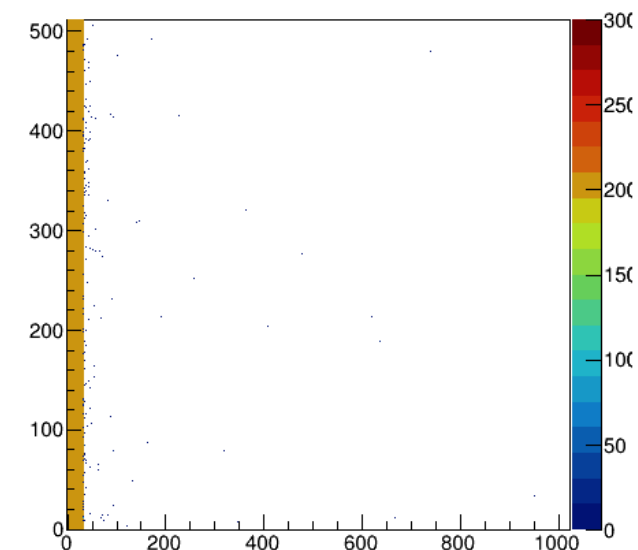
hHitmap_33



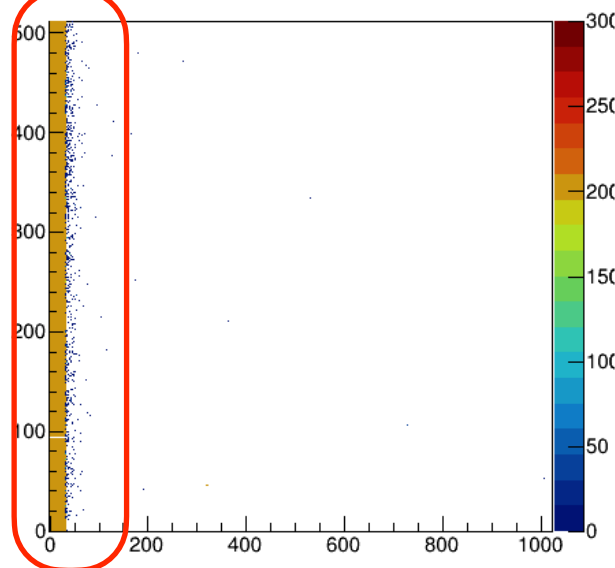
hHitmap_35



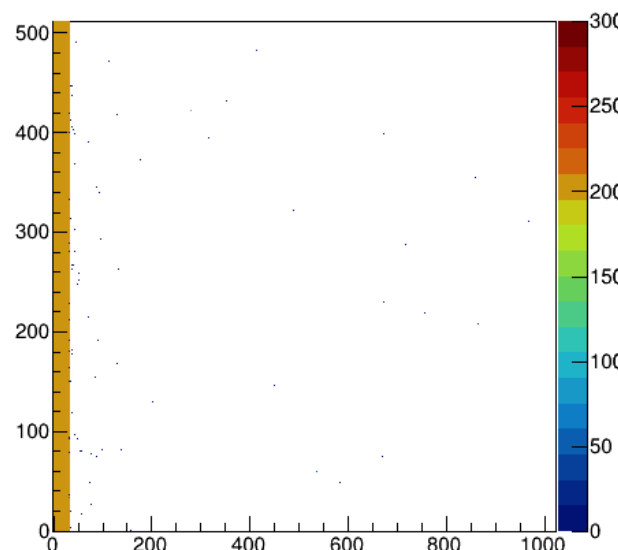
hHitmap_32



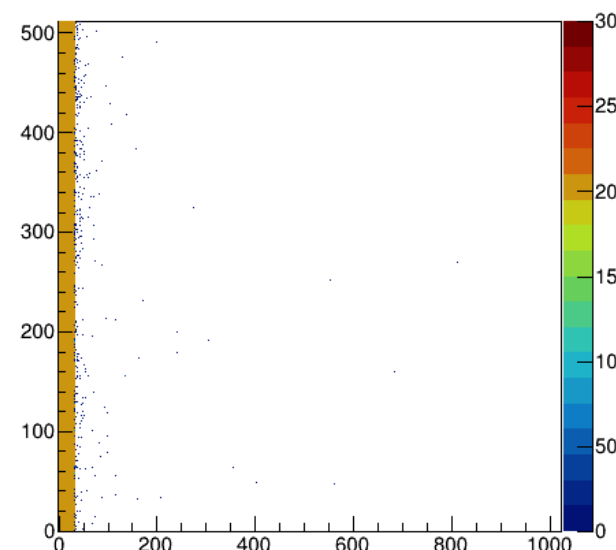
hHitmap_37



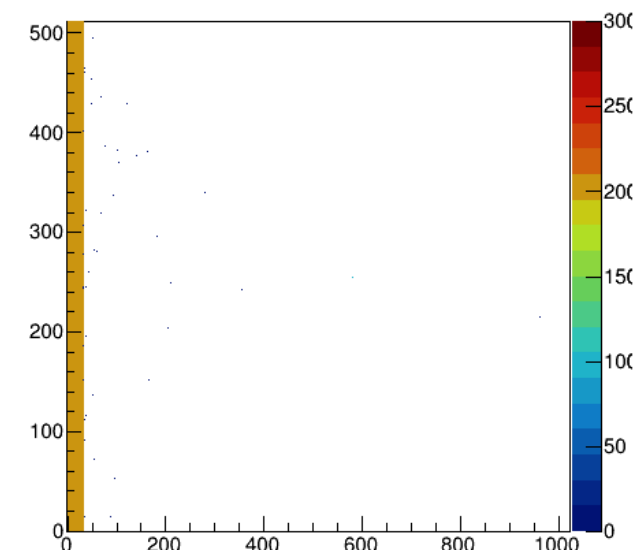
hHitmap_36



hHitmap_39



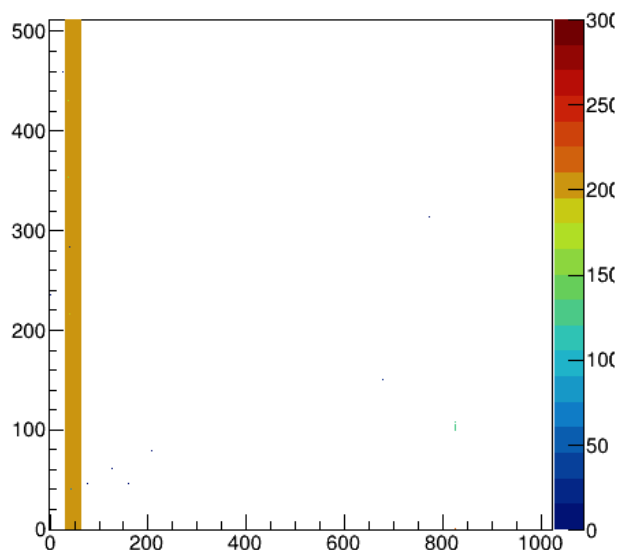
hHitmap_38



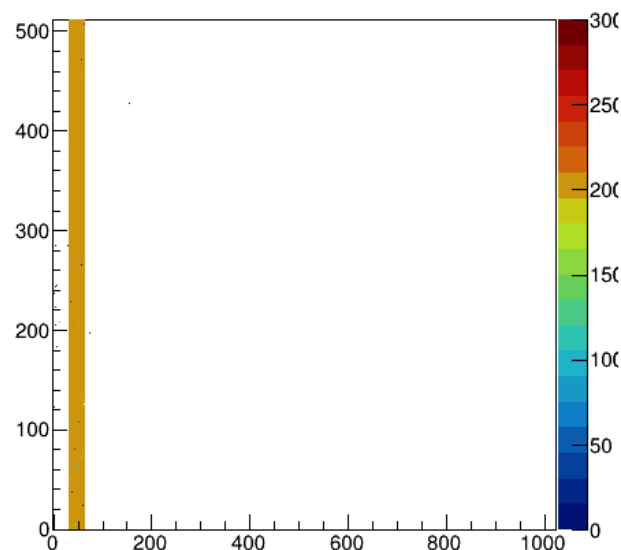
hitmap sample

▶ region = 1

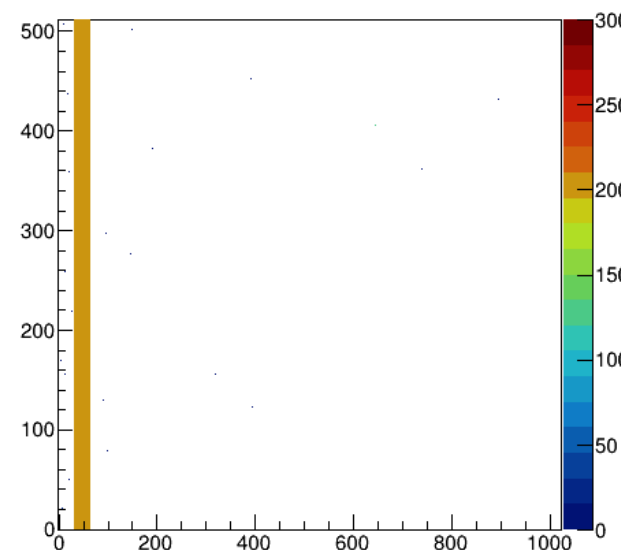
hHitmap_34



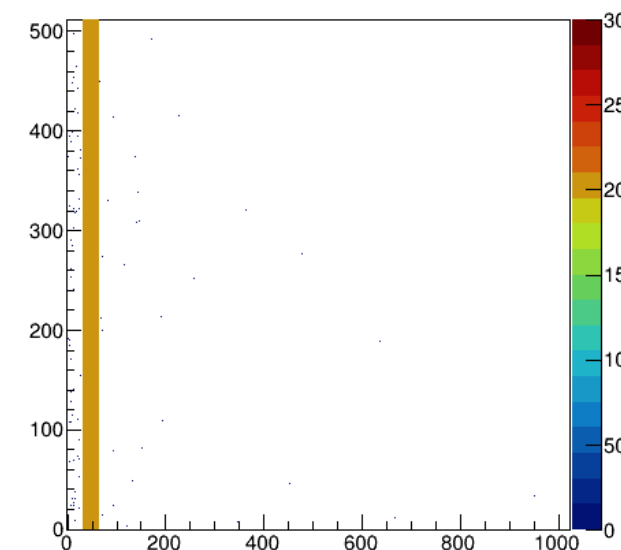
hHitmap_33



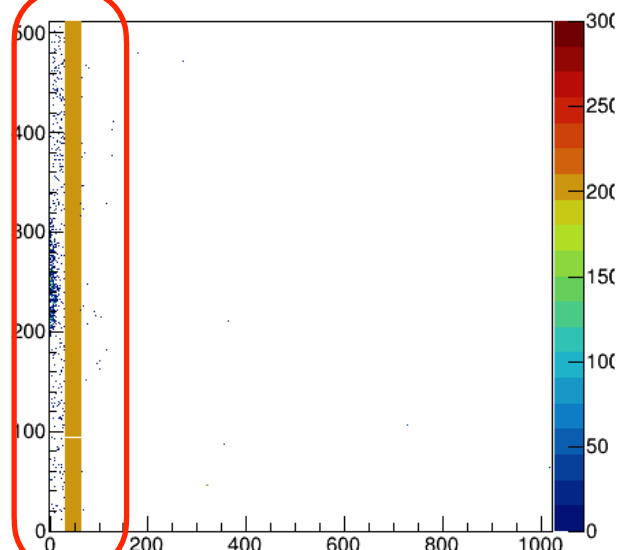
hHitmap_35



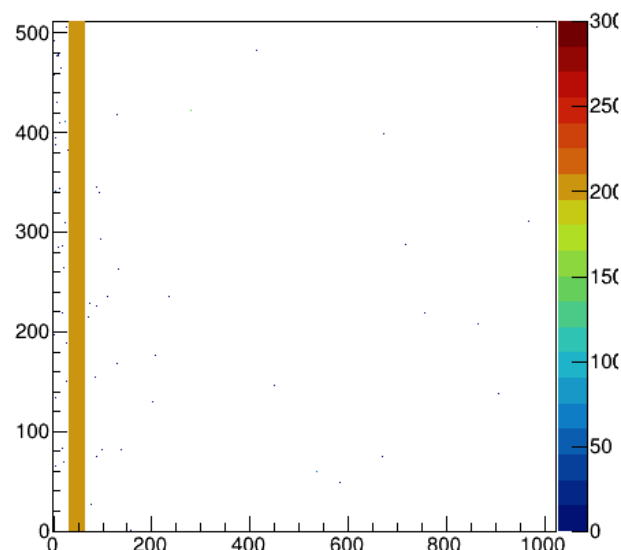
hHitmap_32



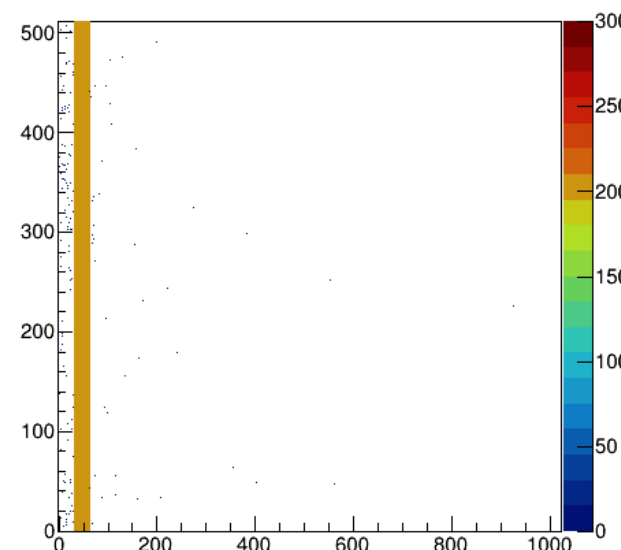
hHitmap_37



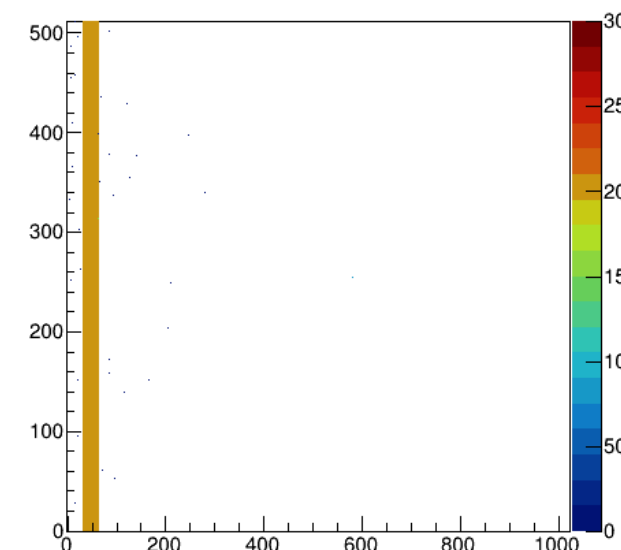
hHitmap_36



hHitmap_39



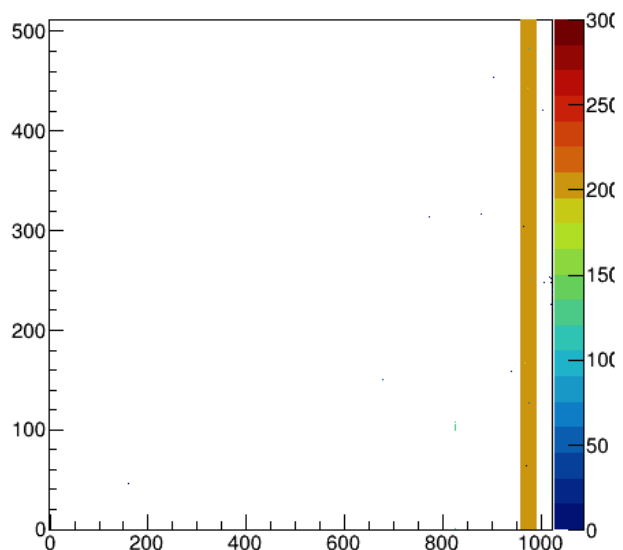
hHitmap_38



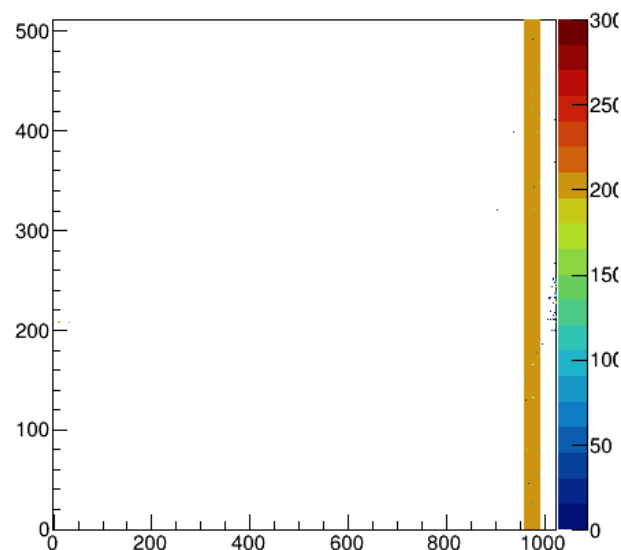
hitmap sample

▶ region = 30

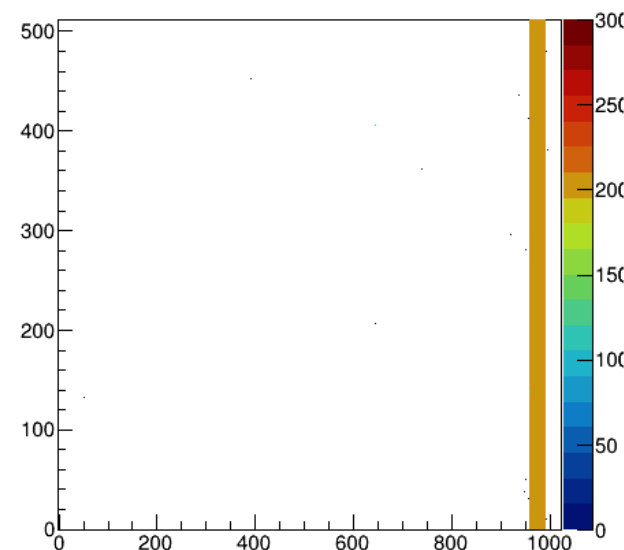
hHitmap_34



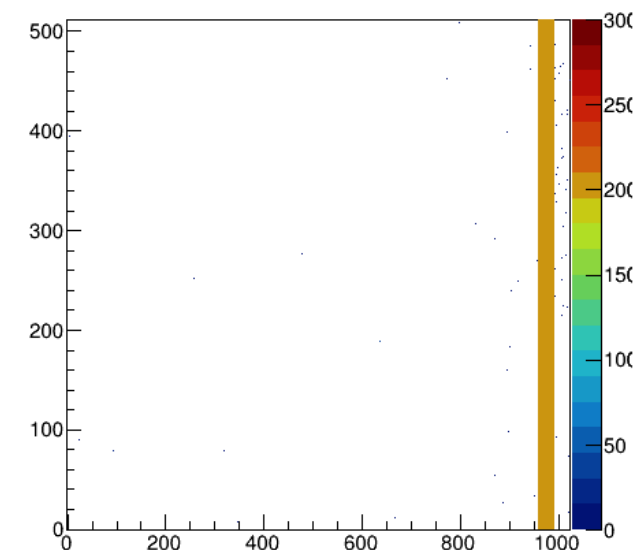
hHitmap_33



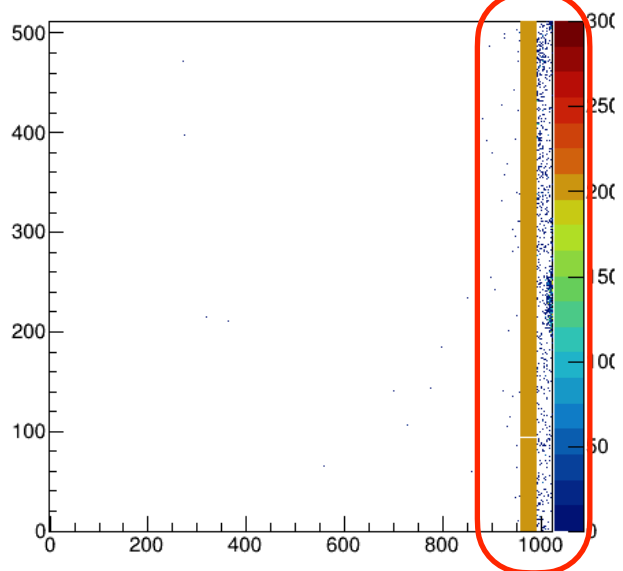
hHitmap_35



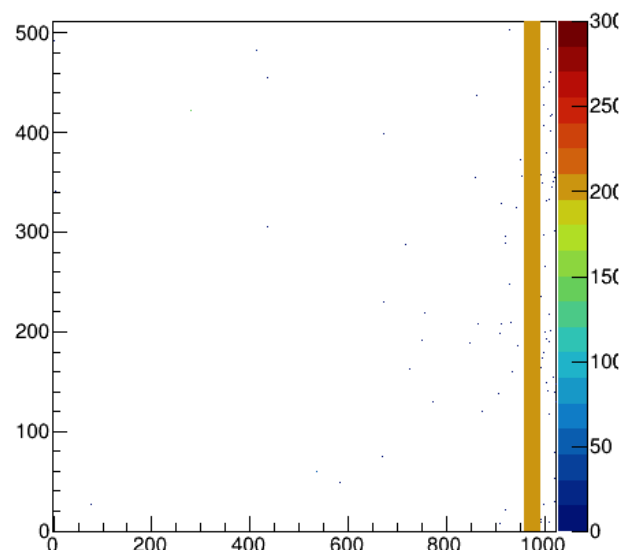
hHitmap_32



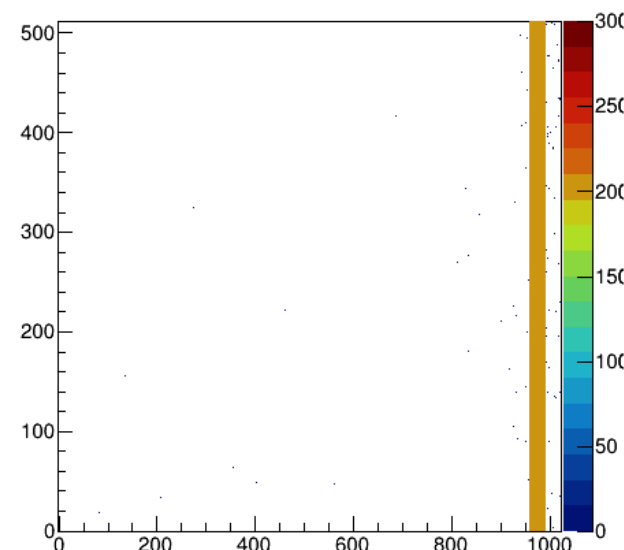
hHitmap_37



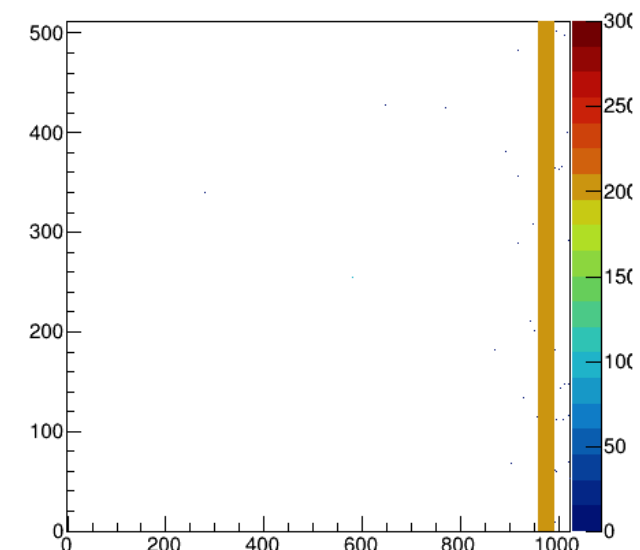
hHitmap_36



hHitmap_39

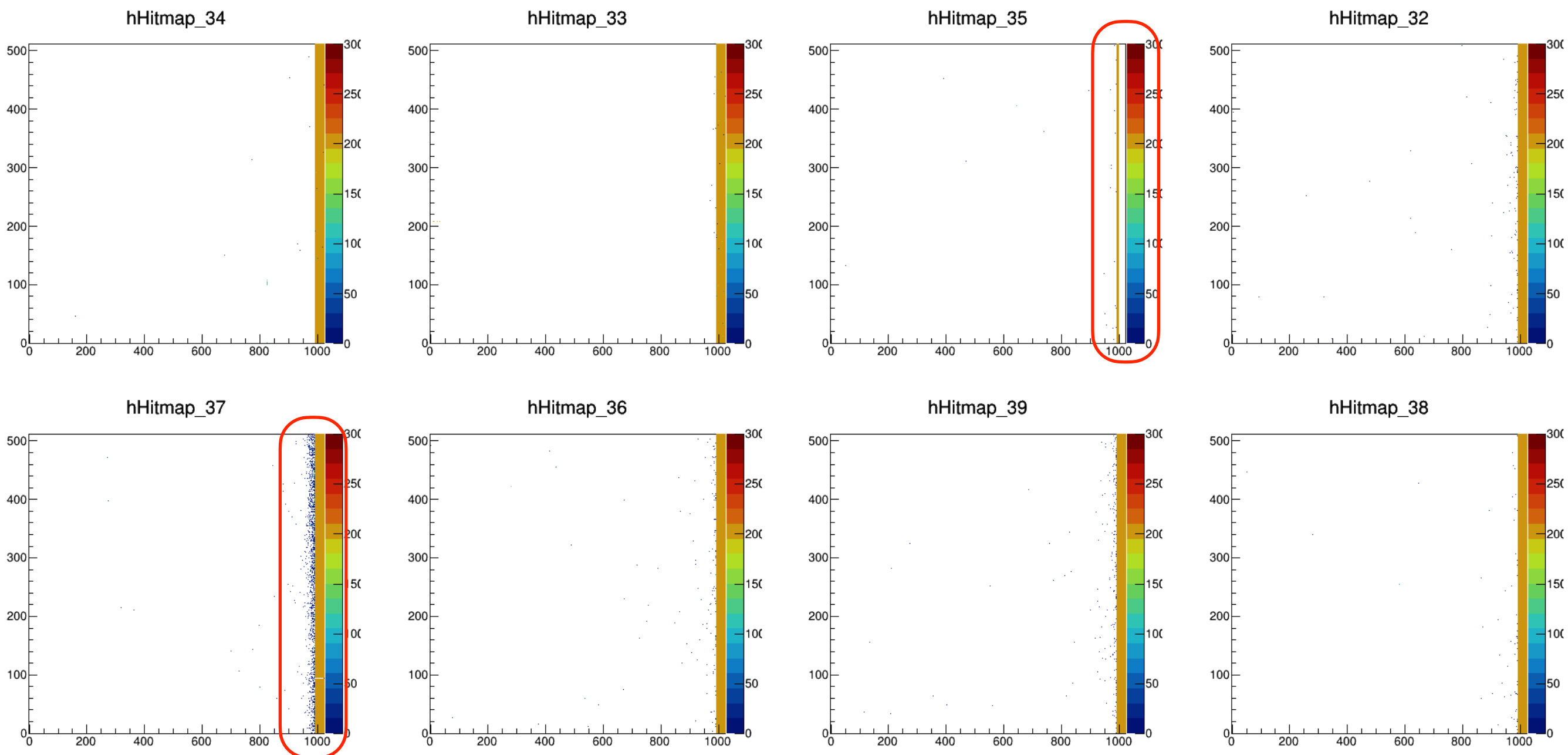


hHitmap_38



hitmap sample

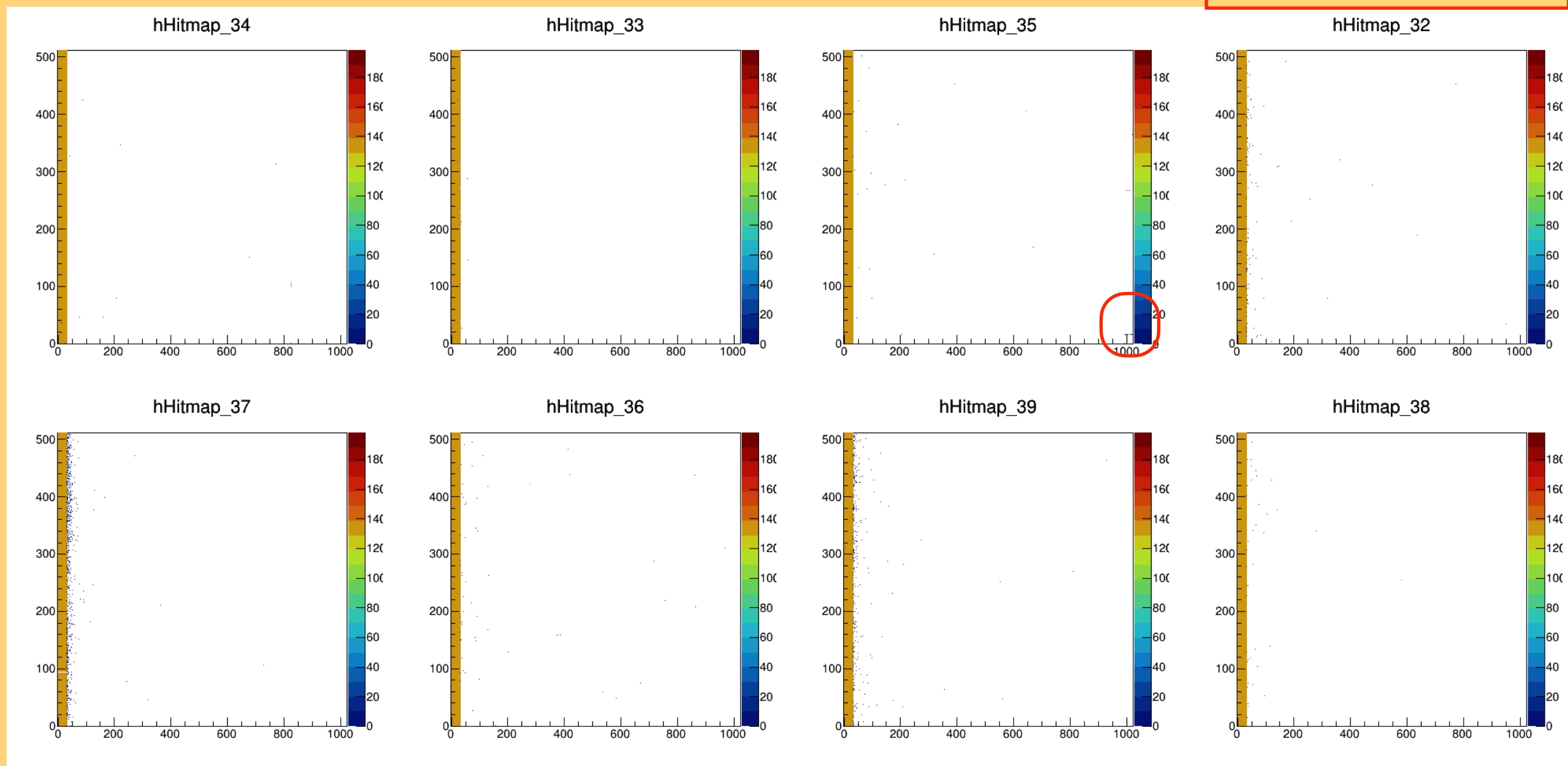
▶ region = 31



bad pixel?

- ☑ pixel mask of “chip 2 - region 31” causes thousands of unexpected hits in the masked area...
- ▶ it occupy the data-buffer on the board, and reduce number of events saved in the end.

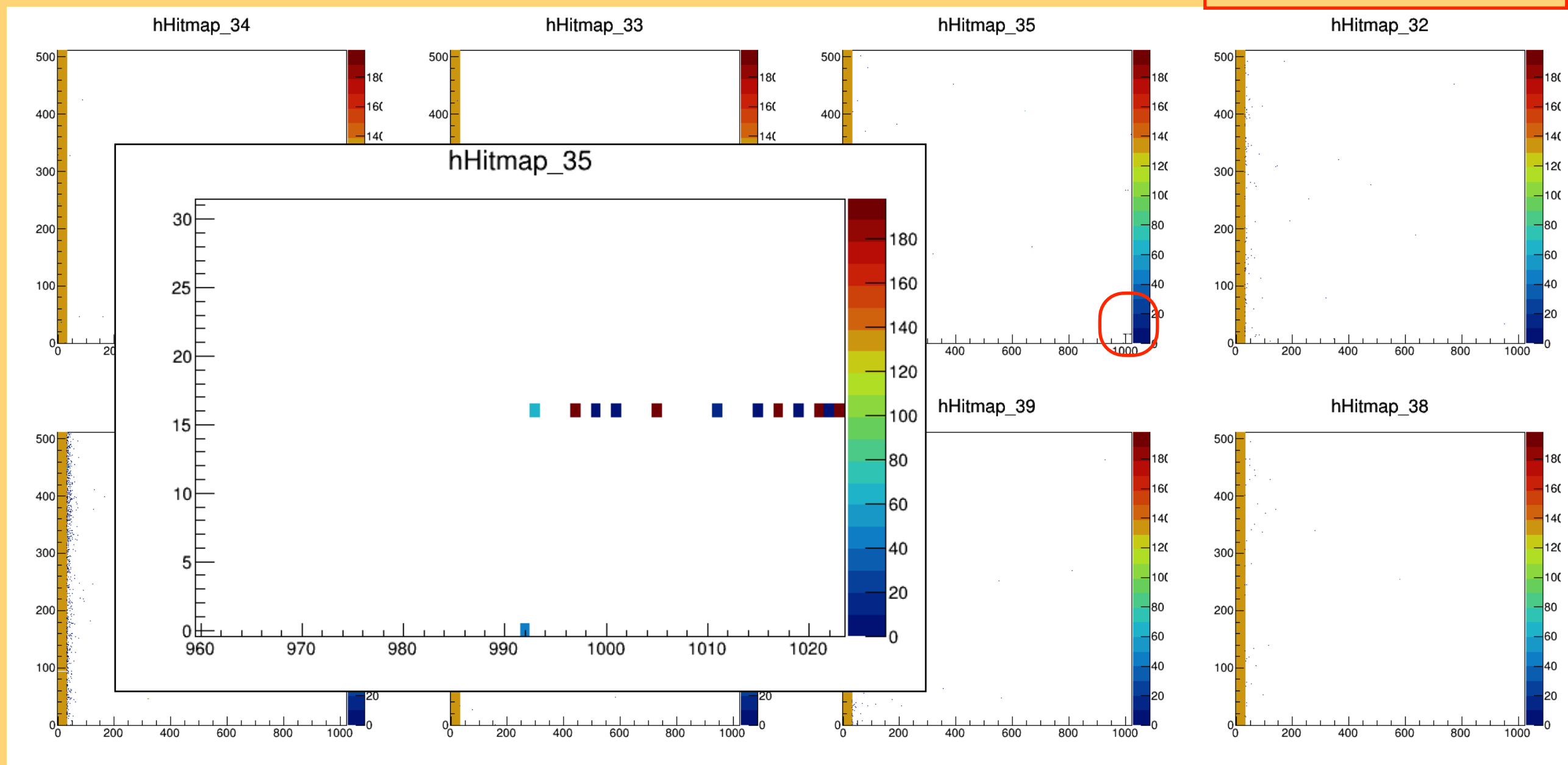
charge inj. for Region0



bad pixel?

- ☑ pixel mask of “chip 2 - region 31” causes thousands of unexpected hits in the masked area...
- ▶ it occupy the data-buffer on the board, and reduce number of events saved in the end.

charge inj. for Region0



todo

- ☑ pixel scan for the other four modules (tower2, module 10,11,12 and 13)
 - ▶ the results in this slide are given by tower3, module 9, 3, 8 and 1.
- ☑ How much the analog parameter setting (e.g. ITHR, VCASN, IDB) improve the hitmap? (weird grass appeared only for chg. inj. around the edge)
- ☑ investigate “chip2-region31 problem”
- ☑ prepare for the data taking with 8(12) modules