

Chip Saturation Study

軽い現状報告

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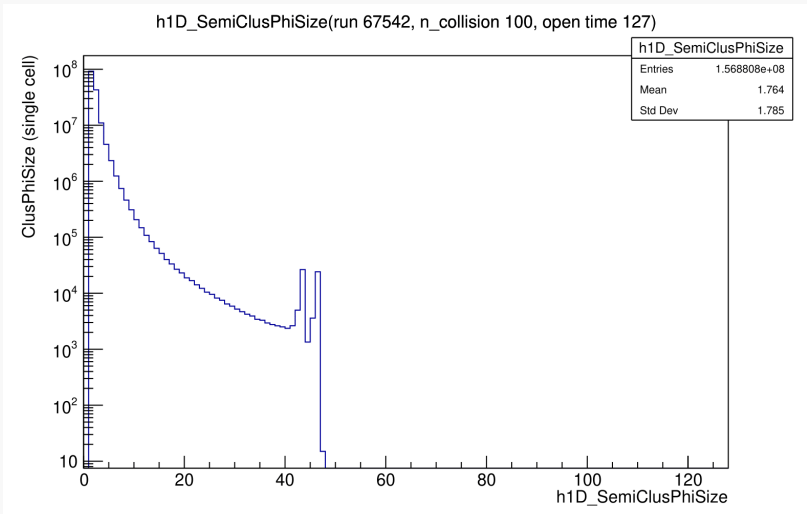
Scan of n_collision and open time

- We took a scan data for chip saturation study.

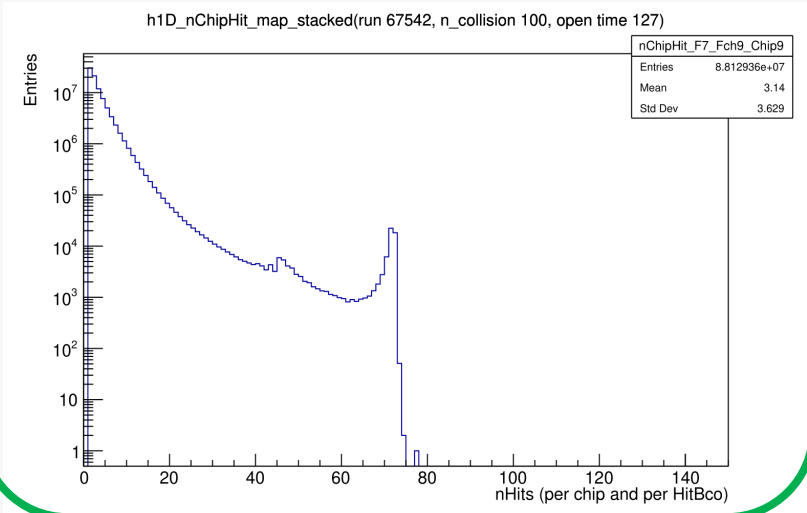
Date/Time	Run#	Run Type	Mag	Link	Duration (min)	DAC0	L1 Delay	n_coll	open time
2025/6/15 13:09	67542	beam	On	plot	5 min	35	108	100	127
2025/6/15 13:16	67544	beam	On	plot	5 min	35	108	100	110
2025/6/15 13:22	67545	beam	On	plot	5 min	35	108	100	90
2025/6/15 13:27	67546	beam	On	plot	5 min	35	108	100	80
2025/6/15 13:33	67547	beam	On	plot	5 min	35	108	100	60
2025/6/15 13:39	67548	beam	On	plot	5 min	35	108	100	40
2025/6/15 13:45	67549	beam	On	plot	5 min	35	108	100	25
2025/6/15 13:51	67550	beam	On	plot	5 min	35	108	2	127
2025/6/15 13:59	67552	beam	On	plot	5 min	35	108	2	110
2025/6/15 14:04	67553	beam	On	plot	5 min	35	108	2	90
2025/6/15 14:10	67554	beam	On	plot	5 min	35	108	2	80
2025/6/15 14:16	67555	beam	On	plot	5 min	35	108	2	60
2025/6/15 14:22	67556	beam	On	plot	5 min	35	108	2	40
2025/6/15 14:28	67557	beam	On	plot	5 min	35	108	2	25
2025/6/15 14:34	67558	beam	On	plot	5 min	35	108	50	127
2025/6/15 14:40	67559	beam	On	plot	5 min	35	108	50	110
2025/6/15 14:46	67560	beam	On	plot	5 min	35	108	50	90
2025/6/15 14:59	67563	beam	On	plot	5 min	35	108	50	60
2025/6/15 15:06	67564	beam	On	plot	5 min	35	108	50	40
2025/6/15 15:10	67565	beam	On	plot	5 min	35	108	50	25
2025/6/15 15:16	67566	beam	On	plot	5 min	35	108	50	80

Plots produced by the Cheng-Wei's module

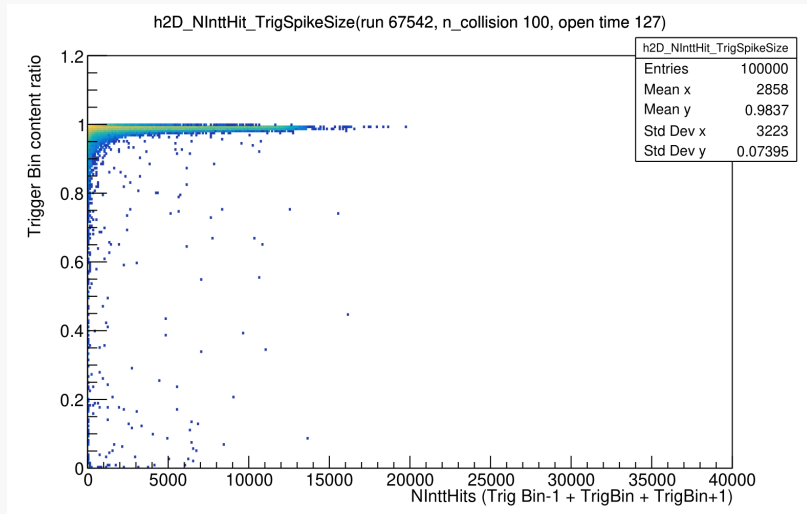
Cluster ϕ size For this study



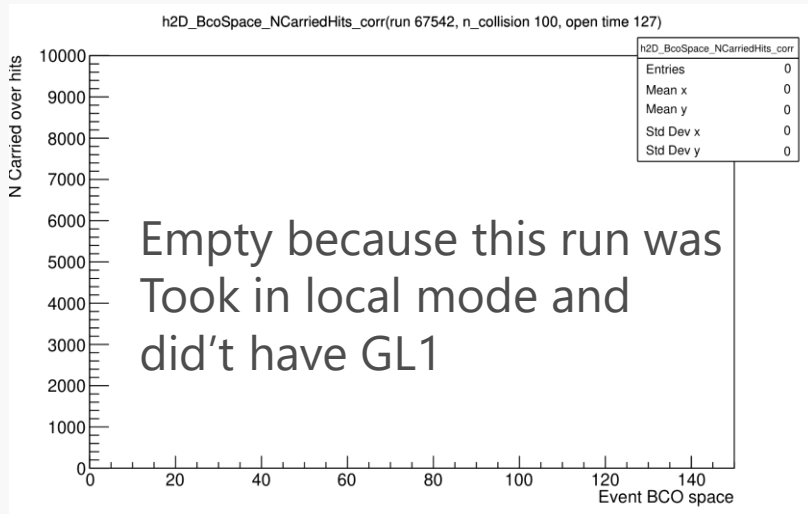
#hits per chip



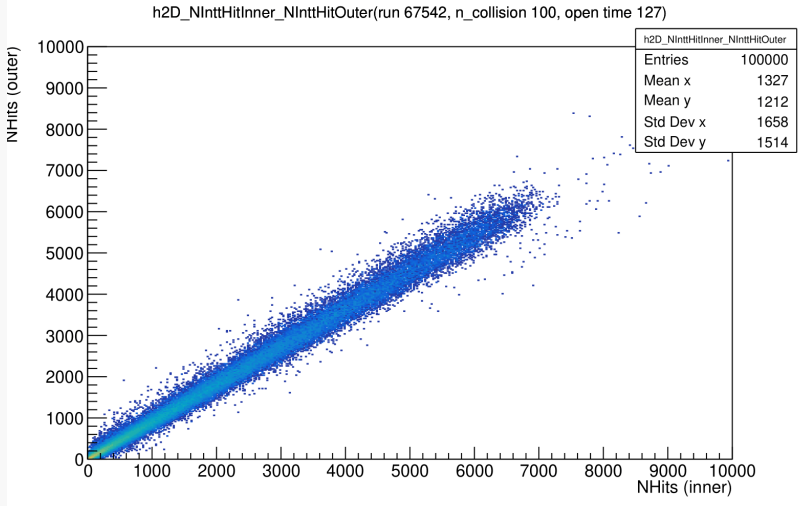
$N_{\text{trigger}} / (N_{\text{pre}} + N_{\text{trigger}} + N_{\text{next}})$



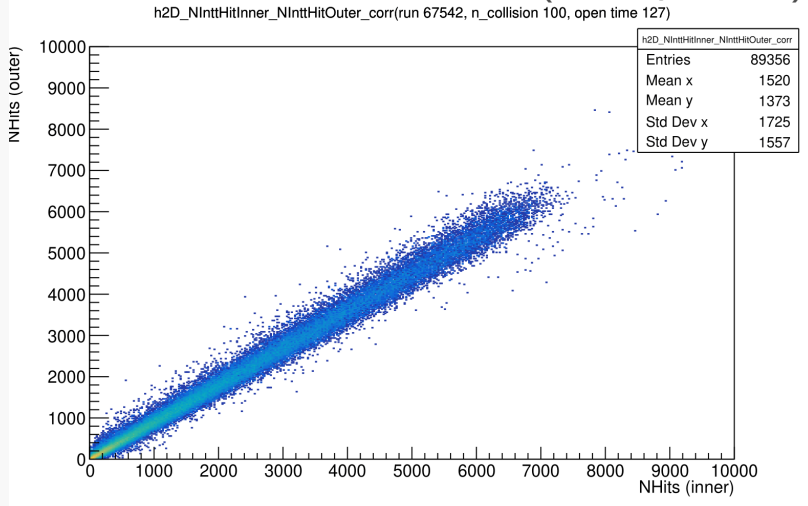
#Carried-over-hit



INTT raw hit correlation (inner/outer)

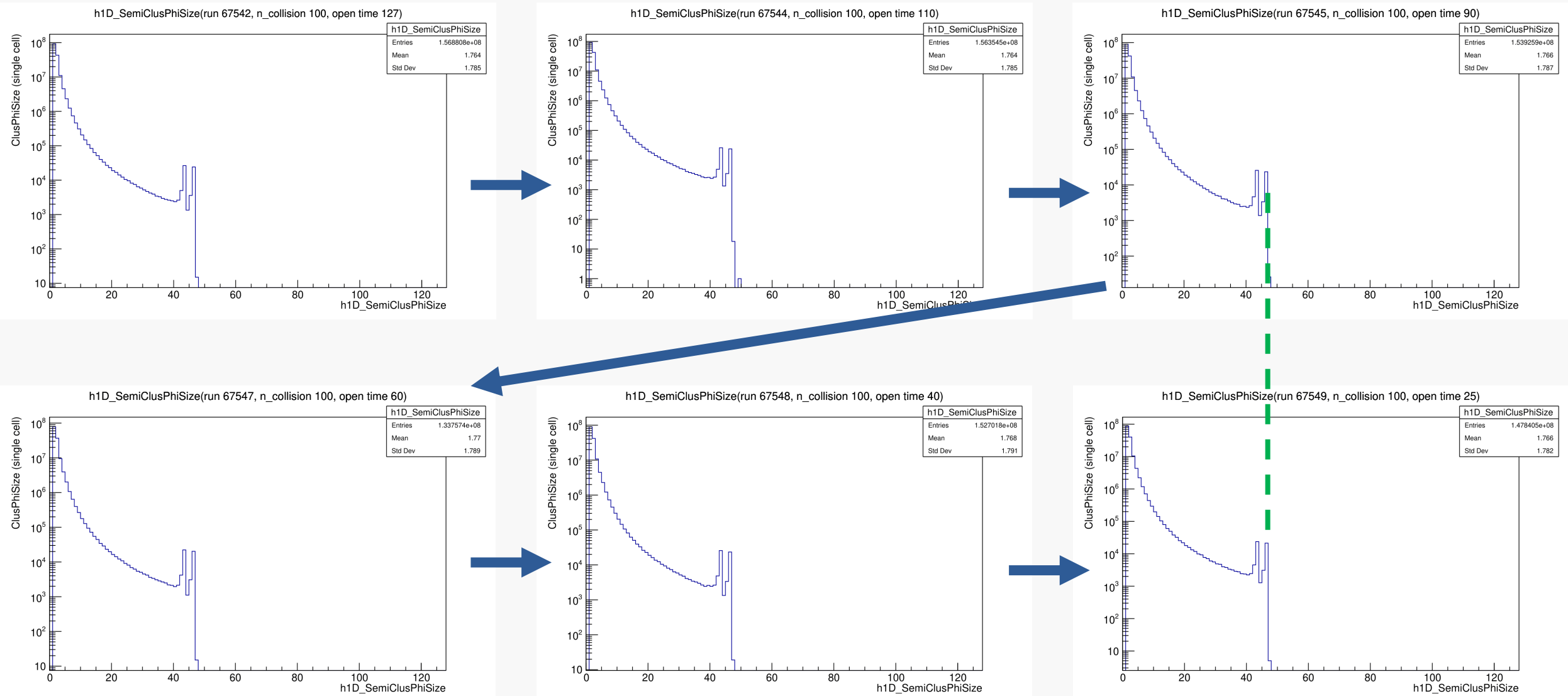


INTT raw hit correlation (inner/outer)



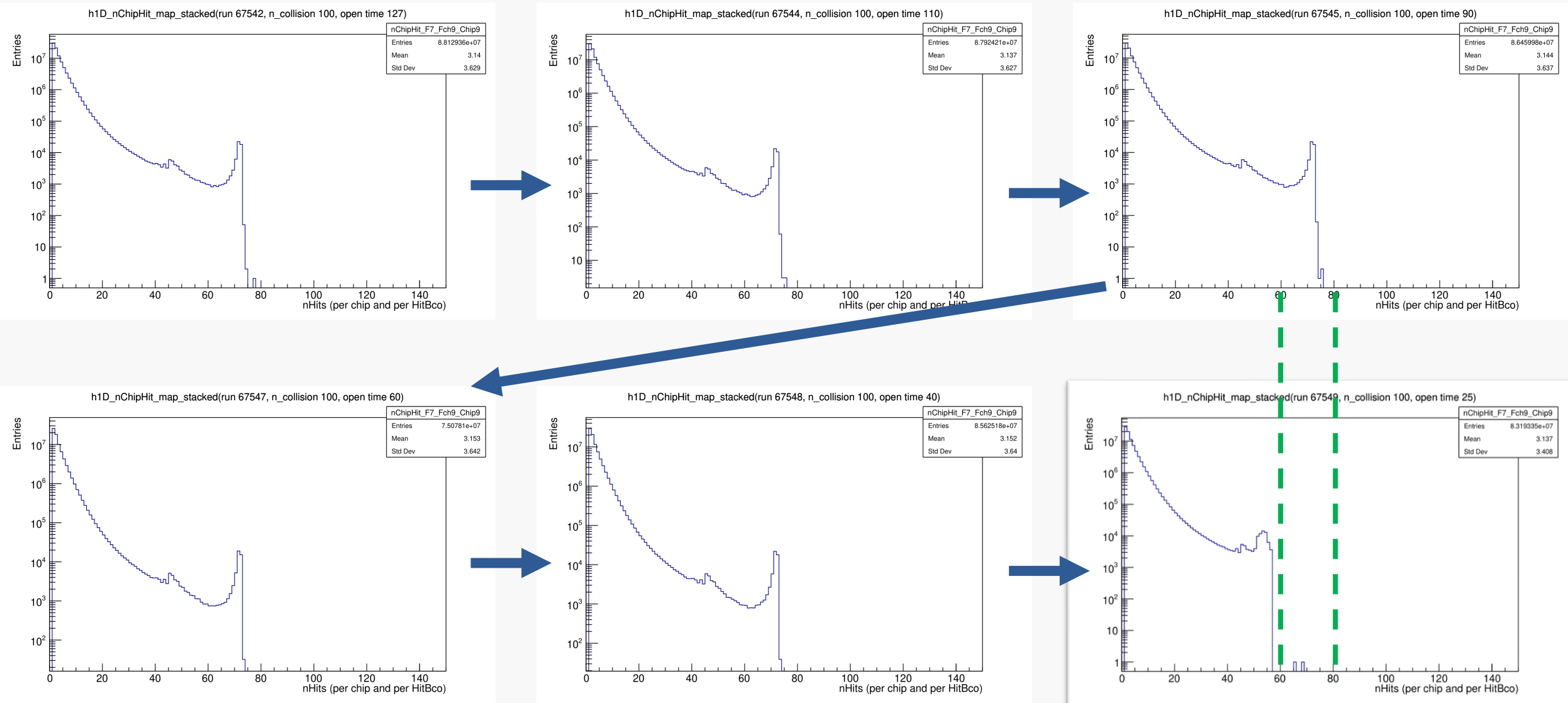
n_collision=**100**, open time=127,110,90,~~80~~,60,40,25

● No change in semi cluster ϕ size



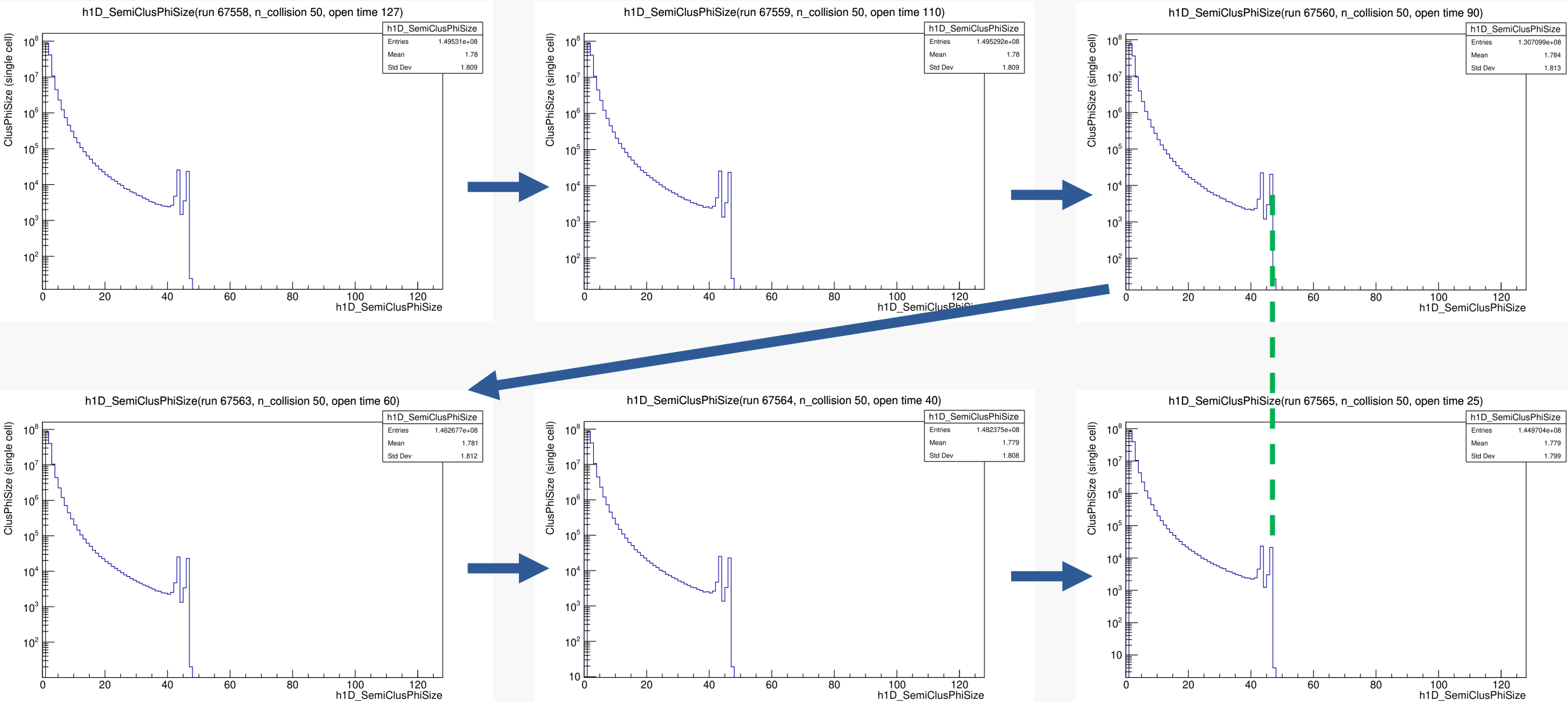
n_collision=**100**, open time=127,110,90,~~80~~,60,40,25

● A change in #hits when open_time=25



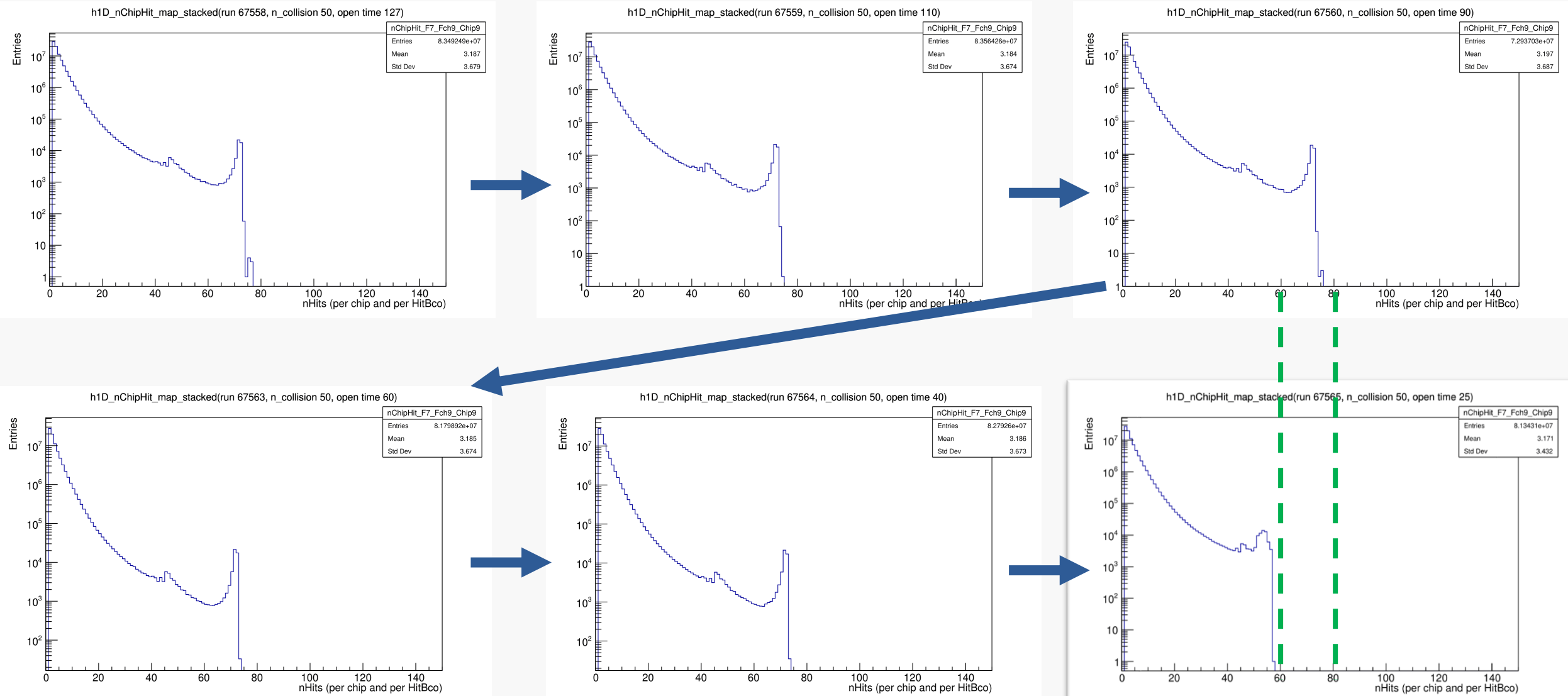
$n_{\text{collision}}=50$, open time=127,110,90,80,60,40,25

● Again, no change in semi cluster ϕ size



n_collision=50, open time=127,110,90,80,60,40,25

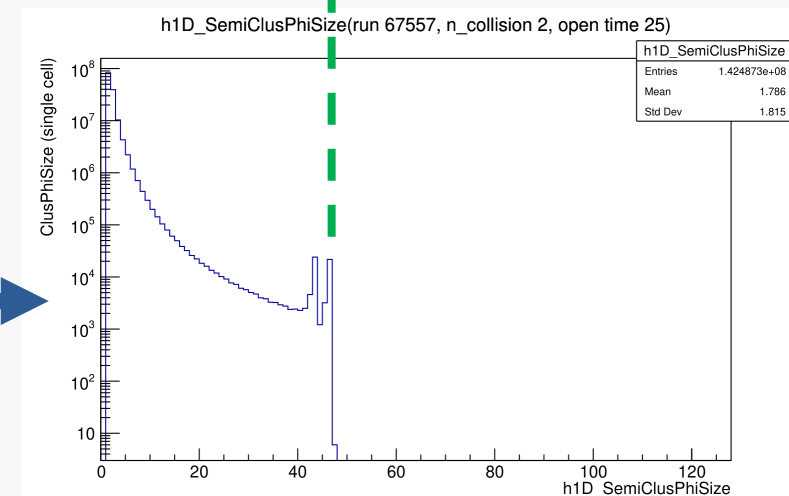
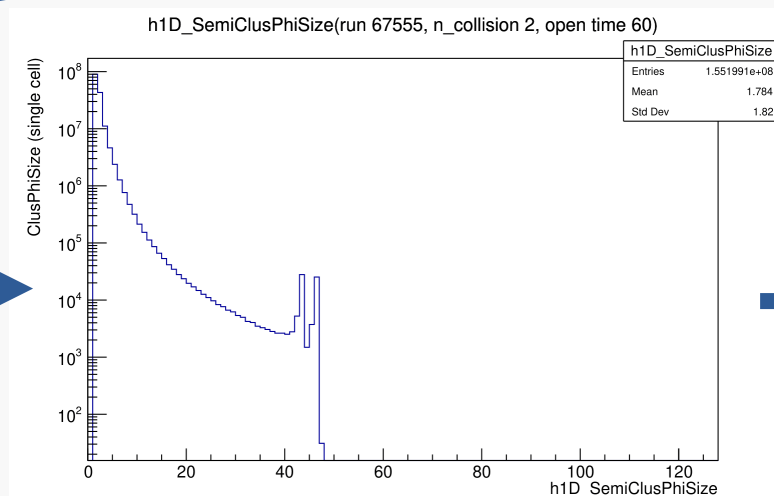
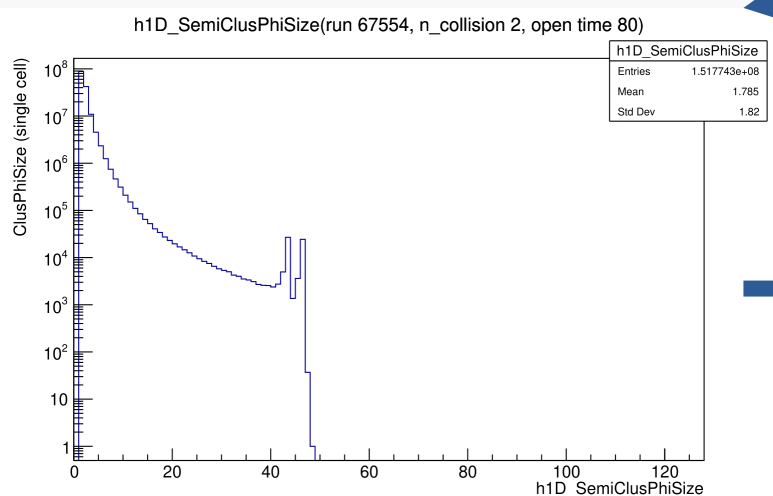
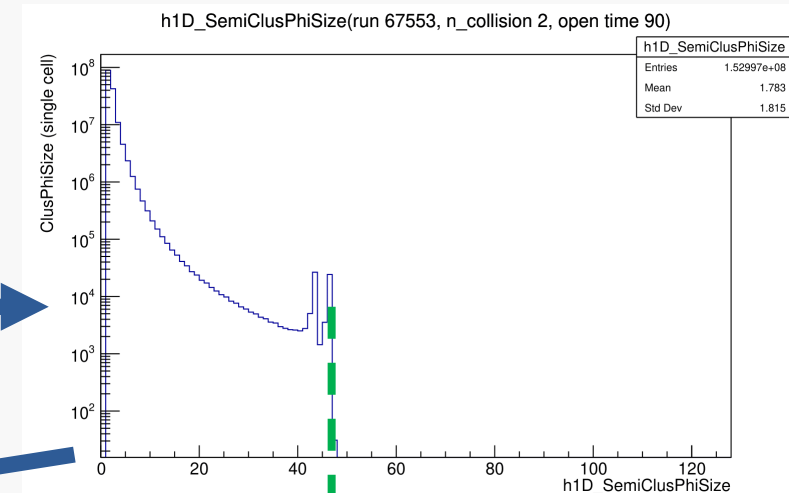
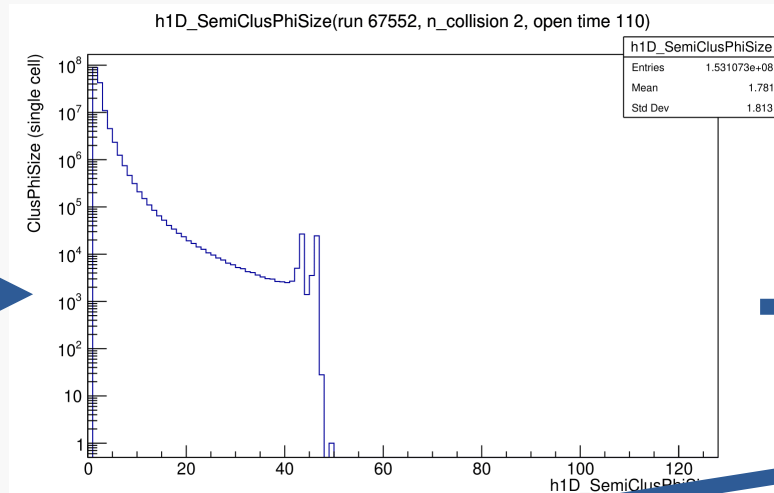
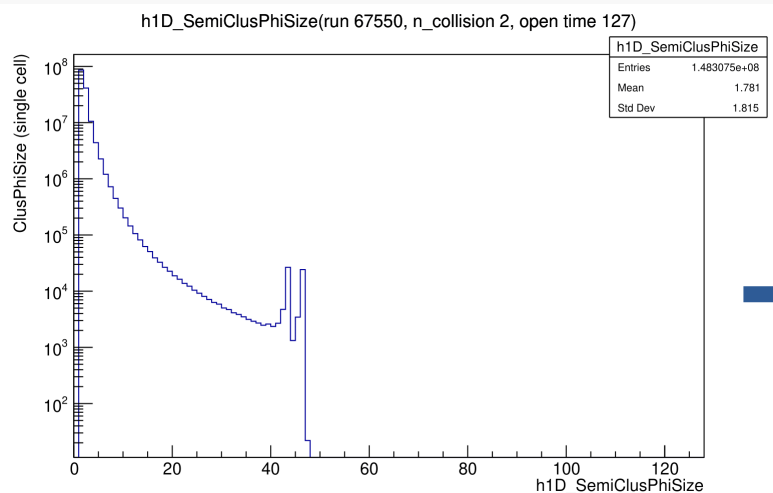
● Again, a change in #hits when open_time=25



$n_{\text{collision}}=2$, open time=127,110,90,80,60,40,25

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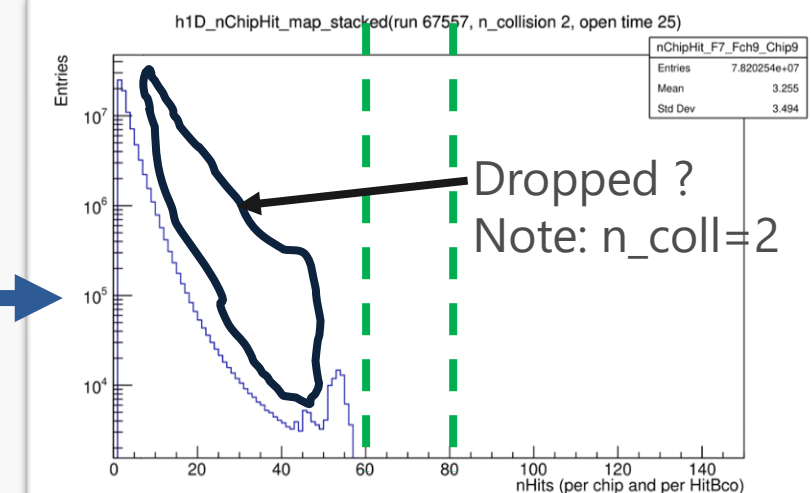
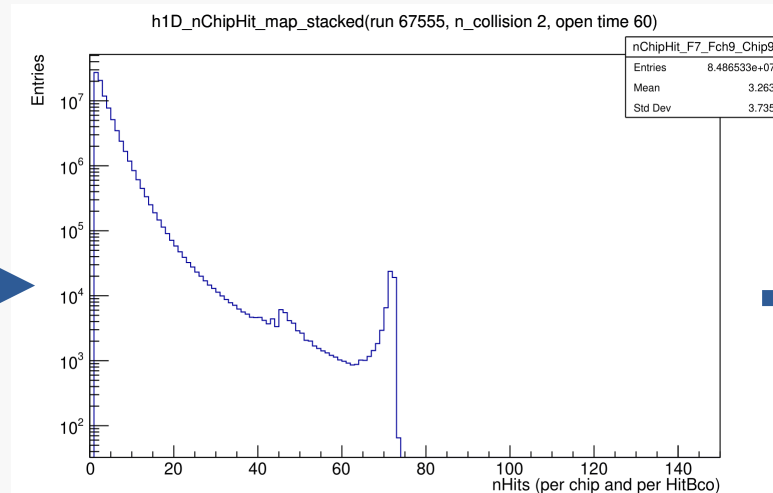
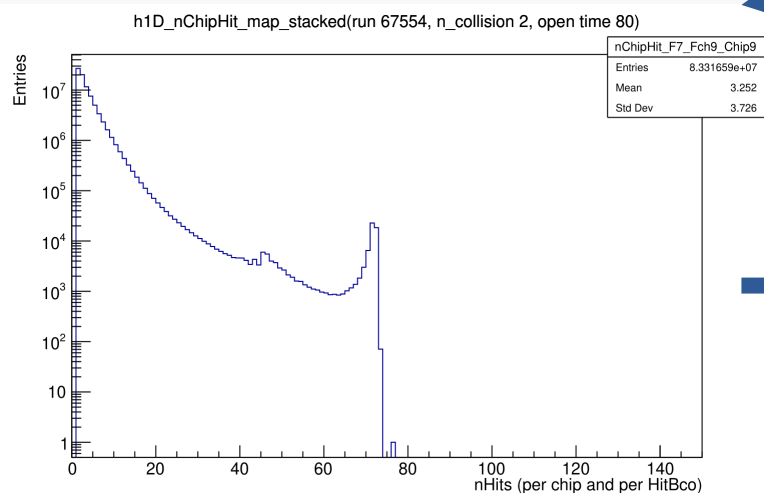
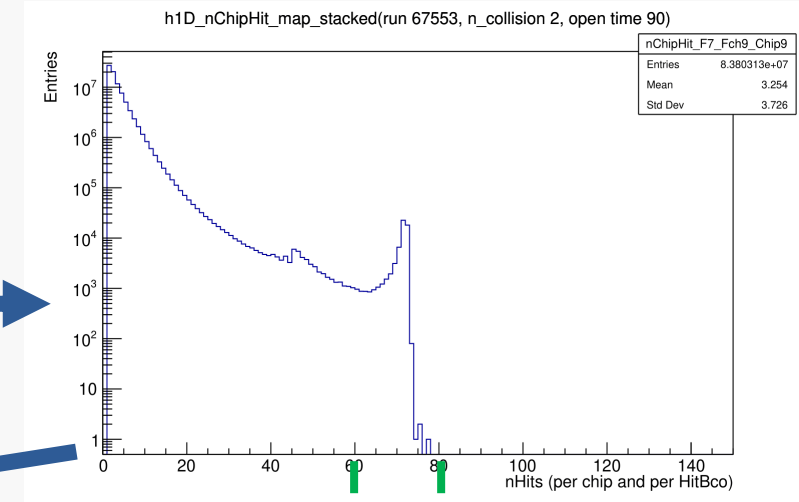
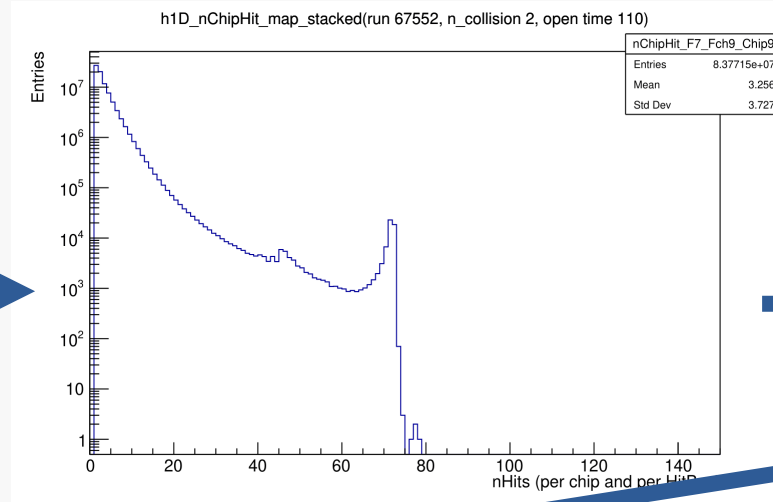
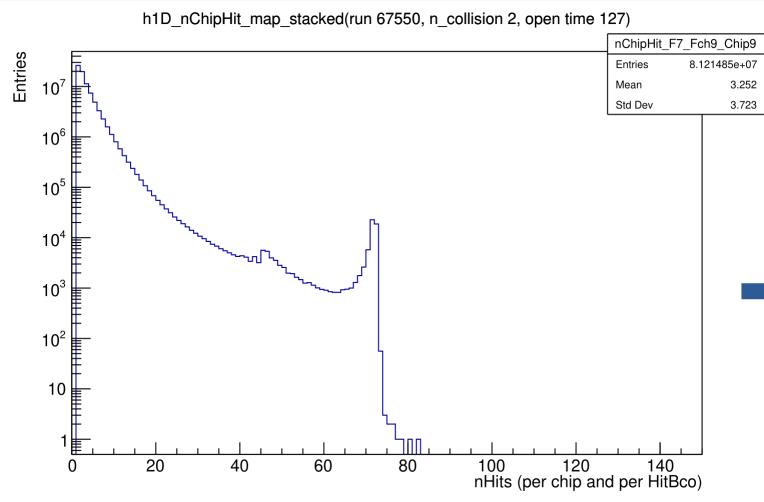
- Again, no change in semi cluster ϕ size



$n_{\text{collision}}=2$, open time=127,110,90,80,60,40,25

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- This time, some changes in #hits when open_time=25



- **Visual check of plots was done.**
Things we found so far are;
 - Semi cluster ϕ size does not depend on either parameters.
 - #hits basically does not depend on open_time (an exception: open_time=25).
Setting open_time=25 leads to a stronger saturation.
- **More detailed/careful analysis is needed**
 - Axis range should be fixed to see more in detail.
 - ,or a quantitative check is needed.