sPHENIX INTT - Geometry

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Clone event (INTT beam test 2021 @ ELPH)

File: BeamData_20211210-0302_0.root (run52)

Row	Instance	camac_adc	camac_tdc	INTT_even	adc	ampl	chip_id	fpga_id	module	chan_id	fem_id	bco	bco_full	event
17	48	*	*	1	3	0	21	0	1	103	1	67	65475	-1
17	49	*	*	1	1	0	21	0	5	101	8	67	65475	-1
17	50	*	*	1	0	0	21	0	5	100	8	67	65475	-1
17	51	*	*	1	3	0	21	0	6	98	8	67	65475	-1
17	52	*	*	1	3	0	21	0	1	103	1	68	65476	-1
17	53	*	*	1	1	0	21	0	5	101	8	68	65476	-1
17	54	*	*	1	0	0	21	0	5	100	8	68	65476	-1
17	55	*	*	1	3	0	21	0	6	98	8	68	65476	-1

The pairs are identical! only the timing information is different!

- They are in the same "trigger event"

- The two groups have identical content except the bco and bco_full

  - Are they clone event ? or just coincidence ?

  - Not quite sure, so currently we use 5 BCO difference cut

Clone event

- Runs checked: 9/10 ZF runs except run 20866 (no event_base file)
  - 20864, 20867, 20868, 20869, 20878, 20880, 20881, 20883, 20885
- File directory : /sphenix/tg/tg01/commissioning/INTT/root_files
- Files used: beam_inttX-000YYYYY-0000_event_base.root
- Procedures
  - Compare the number of hits across 5 bco_fulls
  - If fNhitses are found to be identical in these two events, check the distribution of chan_id
  - If the chan_id distributions are found to be identical and
    - fNhits > 1
    - StdDev of dist. != 0 && Mean of dist. != 0 → Reject the event with only chan_0 fired
    - (fNhits - # of fired chan_id zero) > 10 → Reject the event with so less portion of the rest chan fired
    - → Perform the further check

Among these 9 runs x 8 files = 72 files, no event was found that fully passed the criteria
→ No clone event found