



PC Occupancy Issues in Run 7

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for the PC Group

Pad Occupancy issue for the PC

- Events have been found the number of pad hits per packet is greater than the limit imposed on such hits – occurrences reported in Run5, but not Run6
- Limit set to be 2000 pads fired per packet out of a total of 2160
- In the Vanderbilt data production, runs 231932_0 and 230542_1 have such “PADOCCUPANCY” errors

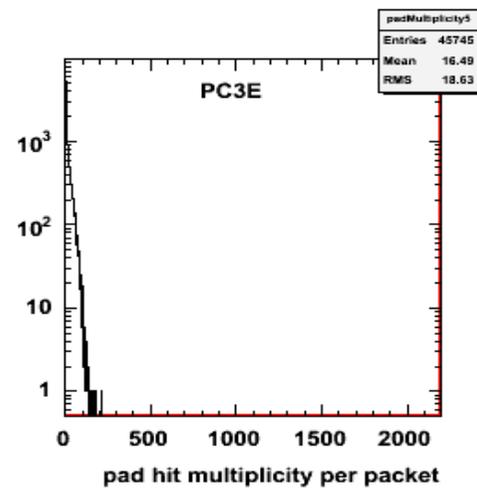
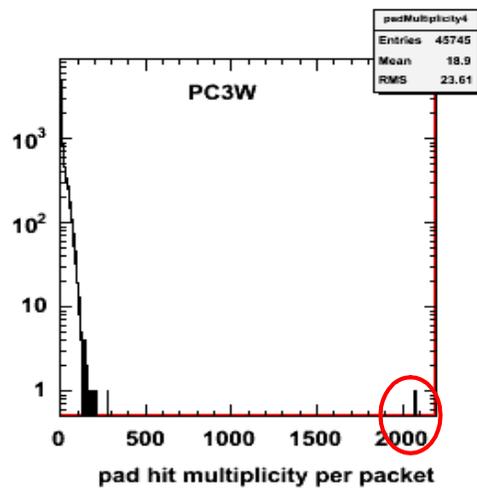
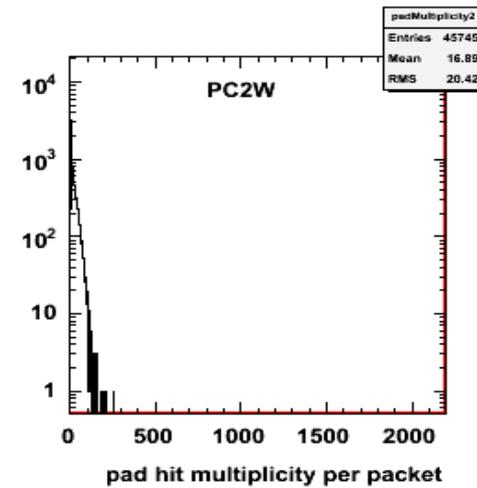
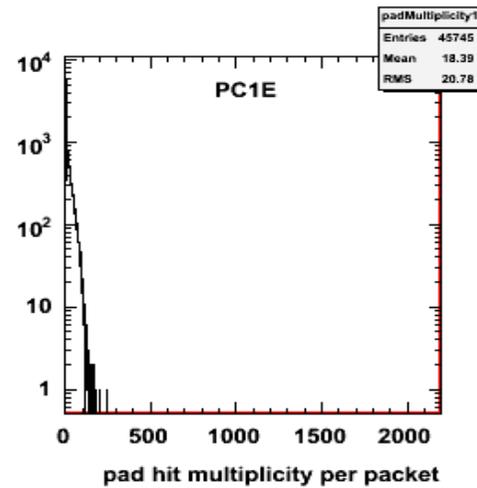
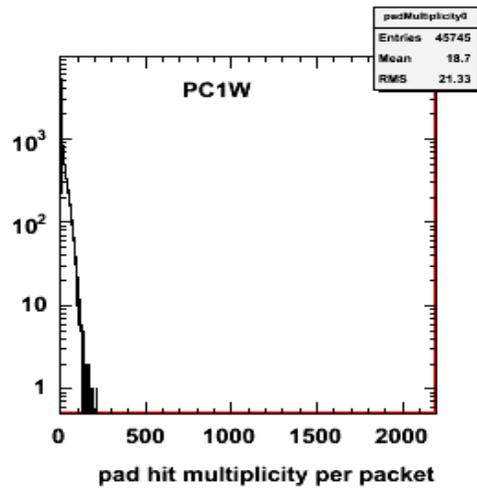
```
BadEvts=# select * from run07_production_a_02 where reason = 'PADOCCUPANCY';
```

run	segment	event	trigraw	triglive	trigscaled	crossing	reason	cvstag
231932	0	100627	67108925	67108925	4	45	PADOCCUPANCY	run07_production_A_02
230542	1	33668	201328701	201328701	4	119	PADOCCUPANCY	run07_production_A_02

(2 rows)

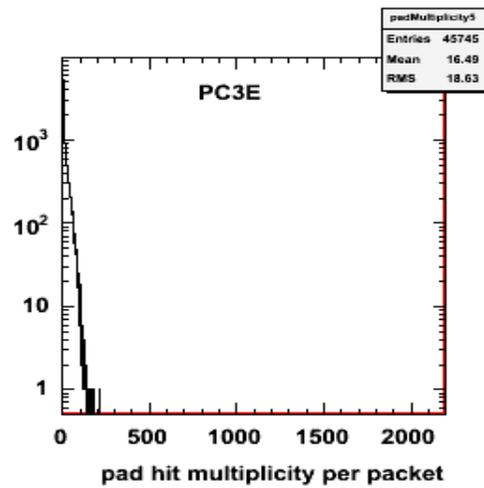
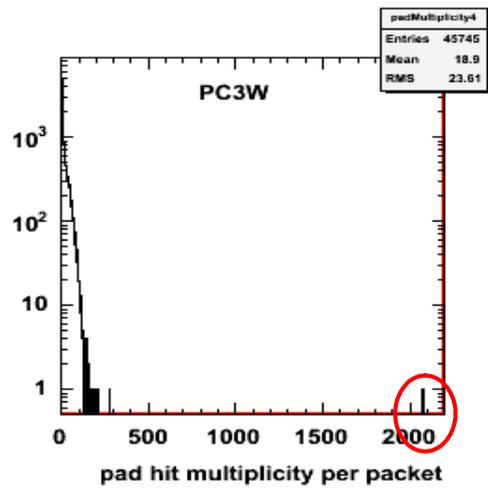
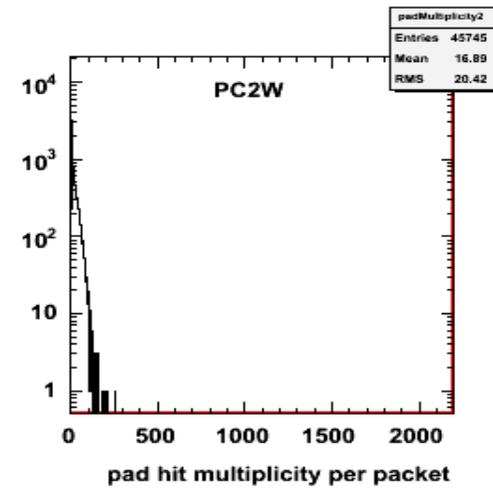
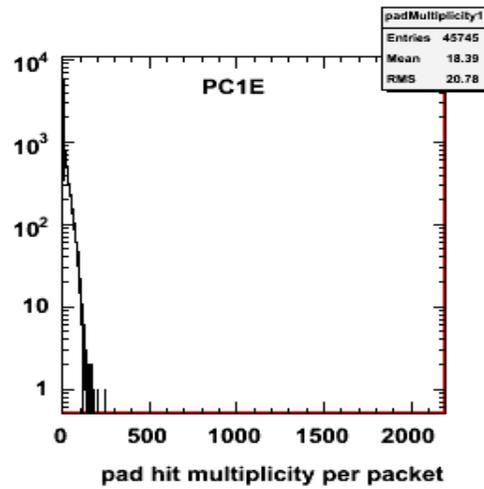
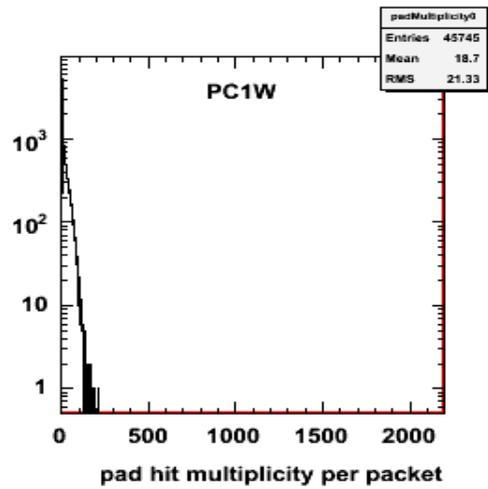
- This represents 2 events out of ~220M reconstructed at Vanderbilt, i.e $\sim 1 \times 10^{-6}$ % of events. Very rare occurrence

Closer look at run231932_0

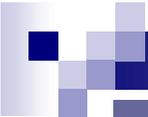


50K events

Closer look at run230542 1



120 K events



Observations

- Anders reported that packet 4076 seems to always exceed the pad limit in all the runs with the “overflow” problem
- Also, at 10 kHz lvl1 rate, 1-2% of the event happen while the ROCs send data, which is much more frequent than the “overflow” problem observed
- In the end, the limit of pads/packet has been put at 1500, which is well above the total number of hits (hot pads + real pad hits) and well below the maximum number of dead ROCs anywhere in the PC
- We will monitor the effect of the change of limit to 1500 during production before considering stricter cuts if need be