IST calibration
Bad Chips base on latest Cosmic runs

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Latest Cosmic runs study

- 39 Cosmic runs from Day-79(15079040) to Day-109 (15109017)
  - Day 83 starts from 15083002 with 5 Time bins(TB5 to TB8 are removed)
  - Day 98 starts from 15098042 with 4 Time bins(TB0 is removed)
- TRG setup : CosmicLocalClock
- Full List of runs at : http://www4.rcf.bnl.gov/~babakabi/public_html/plots/BCC/Cosmic1/list.C
- Full Plots at : http://www4.rcf.bnl.gov/~babakabi/public_html/plots/BCC/Cosmic1/
- Good chip == 5< Cmnoise cut <16 (as was used in Comsic Runs Day32 through40)

List of the bad chips vs TBs (List with Cut on 50% failed)

The TB0/1 seems OK the suspected Chips would be marked in all Runs Bad. But there is an issue in time bins 2/3 that Chips rae not marked as bad In all runs ???

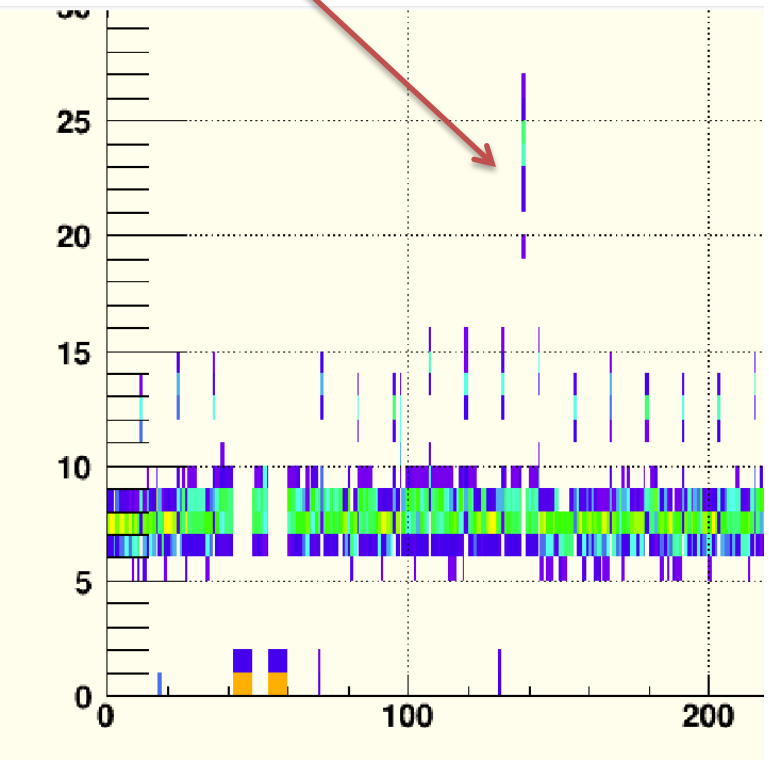
Differences in marked chips in Different runs

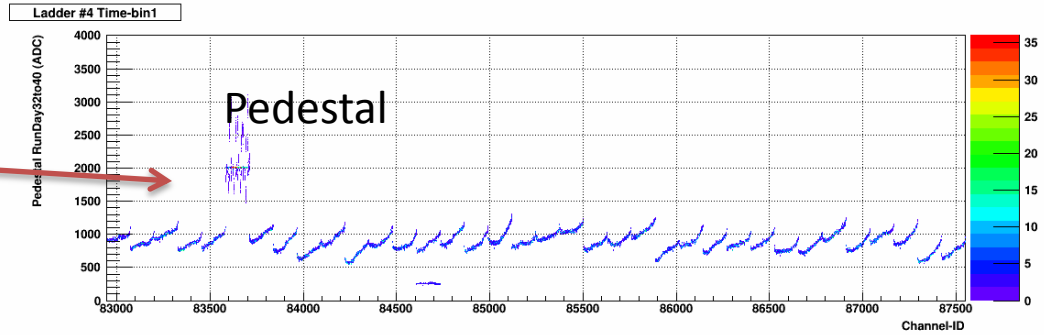
Except Chip ID 578 all are bad, reason comes in next slides

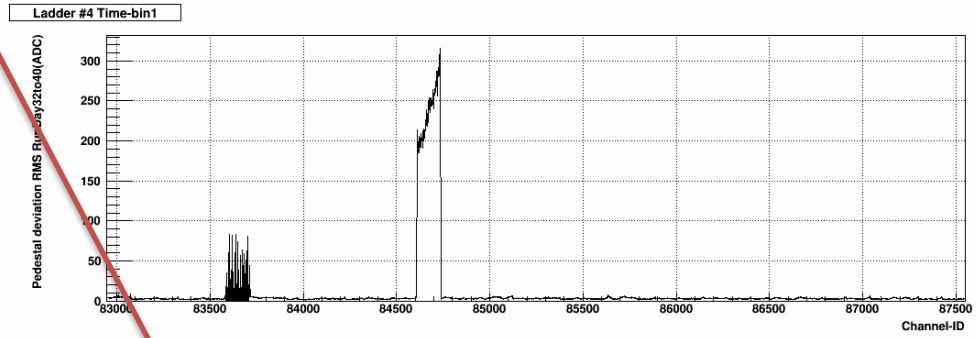
TB0			TB1			TB2			TB3		
APVeID	ladder	#failed	APVeID	ladder	#failed	APVeID	ladder	#failed	APVeID	ladder	#failed
42	2	39	42	2	39	42	2	31	42	2	28
43	2	39	43	2	39	43	2	33	43	2	27
44	2	39	44	2	39	44	2	30	44	2	32
45	2	39	45	2	39	45	2	31	45	2	31
46	2	39	46	2	39	46	2	34	46	2	30
47	2	39	47	2	39	47	2	32	47	2	32
54	2	39	54	2	39	54	2	32	54	2	28
55	2	39	55	2	39	55	2	31	55	2	30
56	2	39	56	2	39	56	2	31	56	2	30
57	2	39	57	2	39	57	2	33	57	2	31
58	2	39	58	2	39	58	2	31	58	2	32
59	2	39	59	2	39	59	2	32	59	2	32
138	4	39	138	4	38	330	10	32	138	4	37
330	10	39	330	10	39	566	16	38	330	10	32
566	16	39	566	16	39	567	16	37	566	16	38
567	16	39	567	16	39	708	20	31	567	16	38
578	17	27	708	20	39	709	20	32	578	17	21
708	20	39	709	20	39	710	20	32	708	20	32
709	20	39	710	20	39	711	20	35	709	20	32
710	20	39	711	20	39	712	20	33	710	20	33
711	20	39	712	20	39	713	20	33	711	20	33
712	20	39	713	20	39	714	20	32	712	20	31
713	20	39	714	20	39	715	20	30	713	20	33
714	20	39	715	20	39	716	20	31	714	20	34
715	20	39	716	20	39	717	20	34	715	20	29
716	20	39	717	20	39	718	20	32	716	20	34
717	20	39	718	20	39	719	20	33	717	20	31
718	20	39	719	20	39	754	21	36	718	20	30
719	20	39	754	21	39	825	23	32	719	20	33
754	21	39	825	23	39	844	24	39	754	21	35
825	23	39	844	24	39				825	23	29
844	24	39							844	24	39

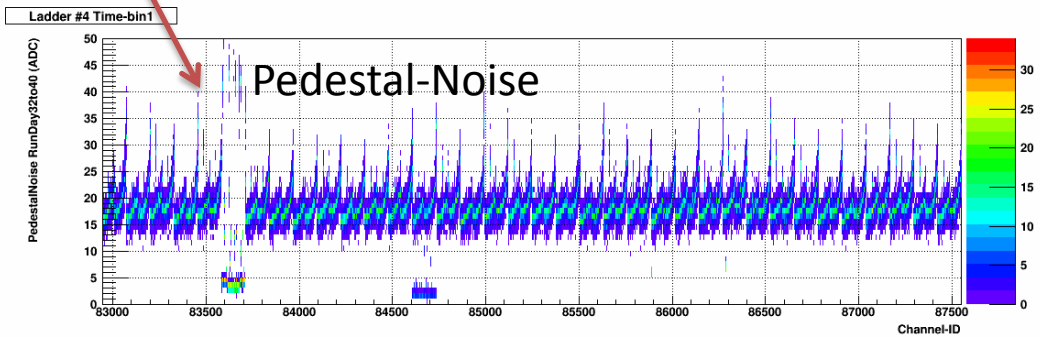
RDO	ARM	Apv	APVeID	ladder
5	3	5	138	4

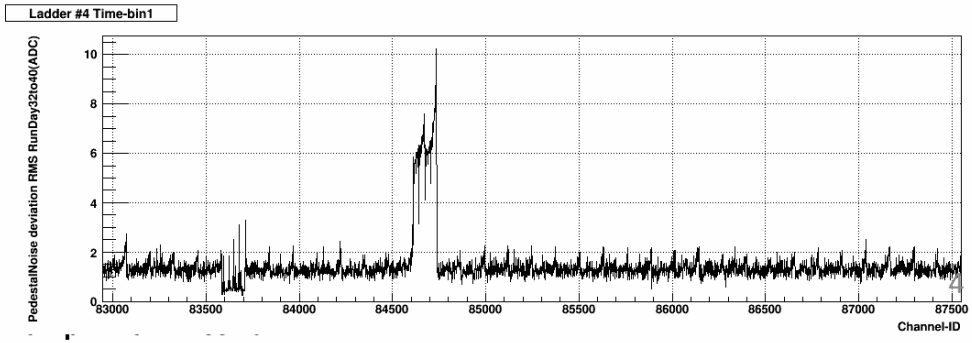
High CM-noise





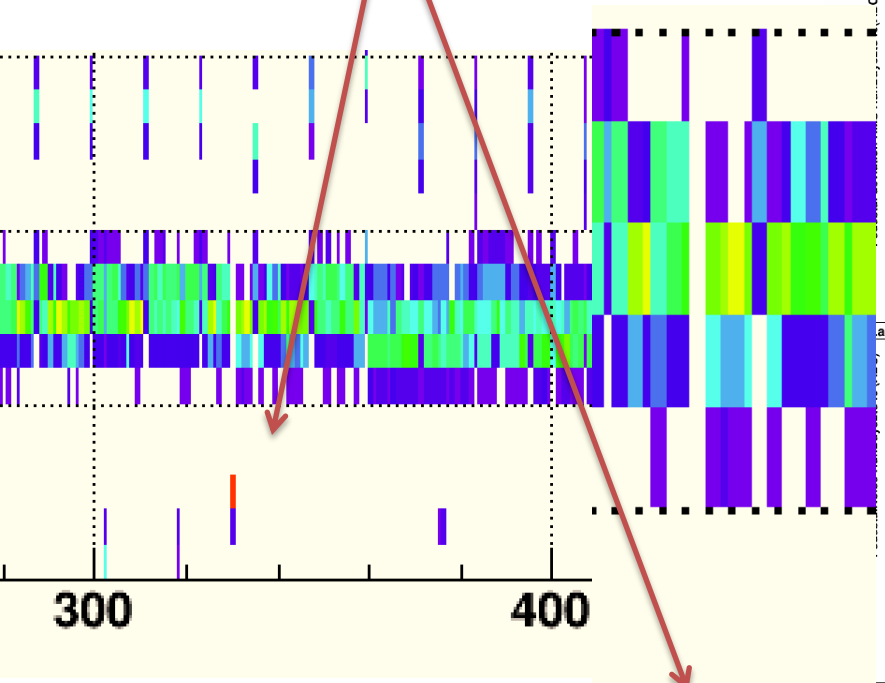


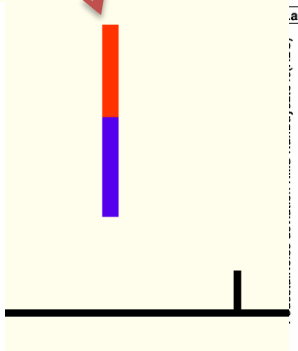


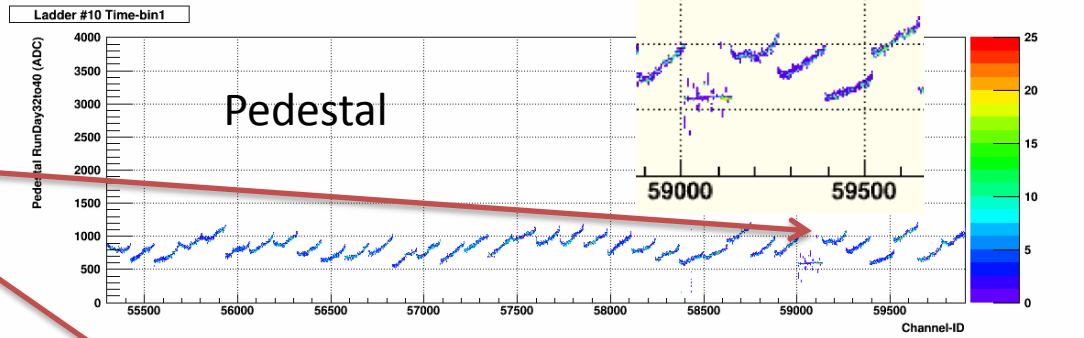


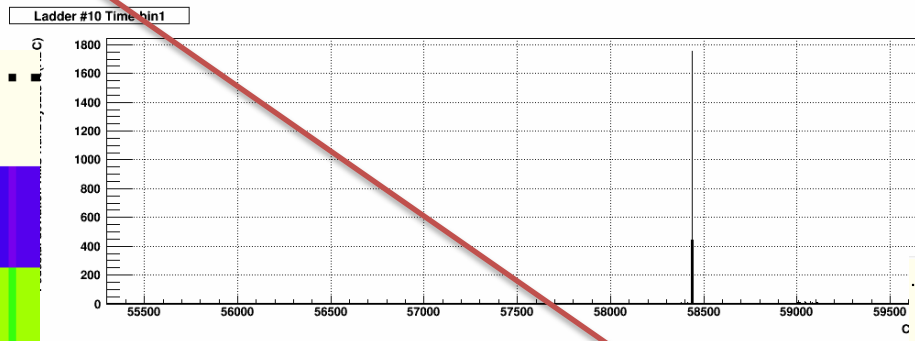
RDO	ARM	Apv	APVeID	ladder
4	1	5	330	10

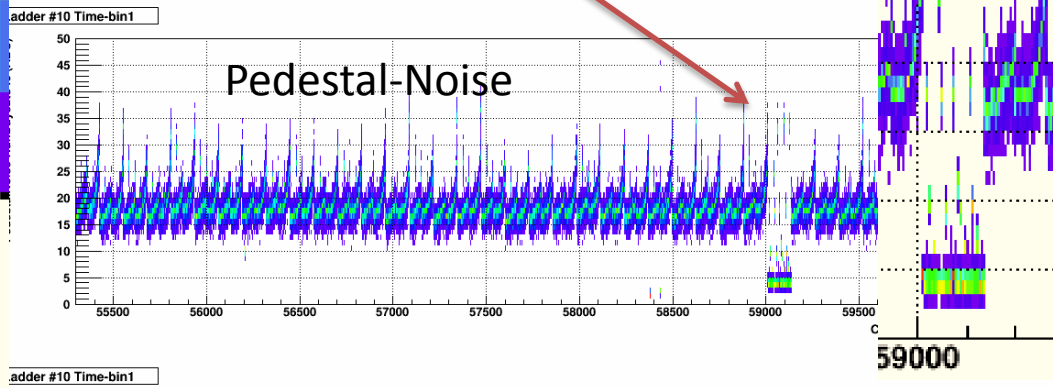
Low CM-noise

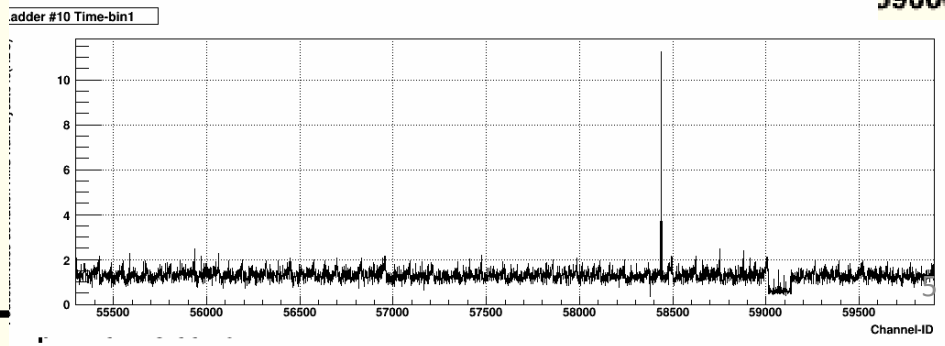






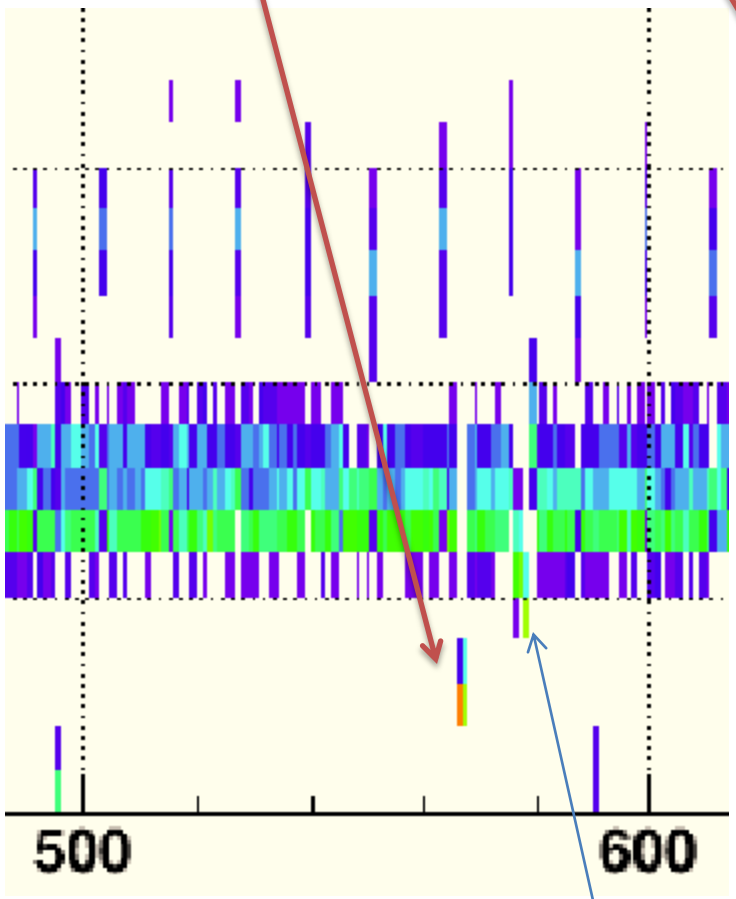




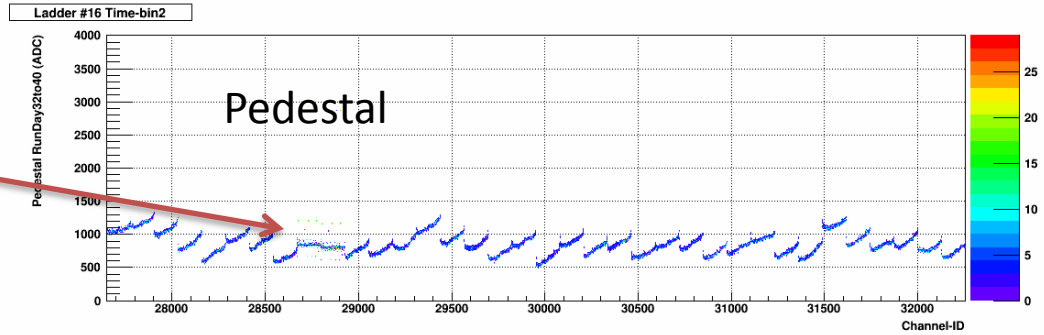


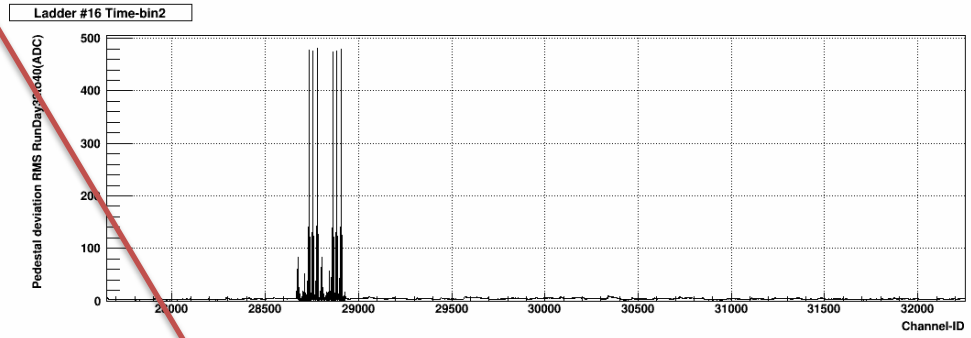
RDO	ARM	Apv	APVeID	ladder
2	3	9	566	16
2	3	8	567	16

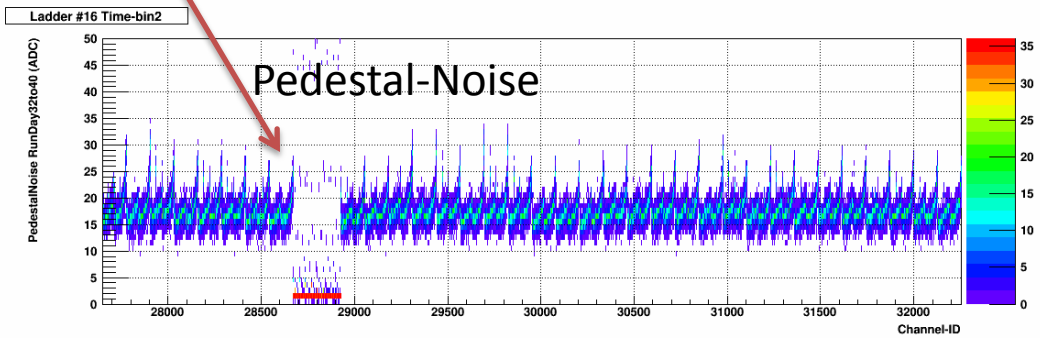
Low CM-noise (566/567)

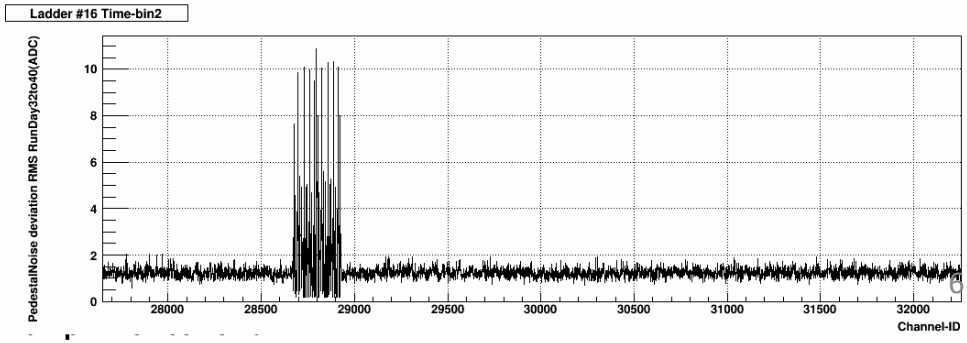


Chip 578



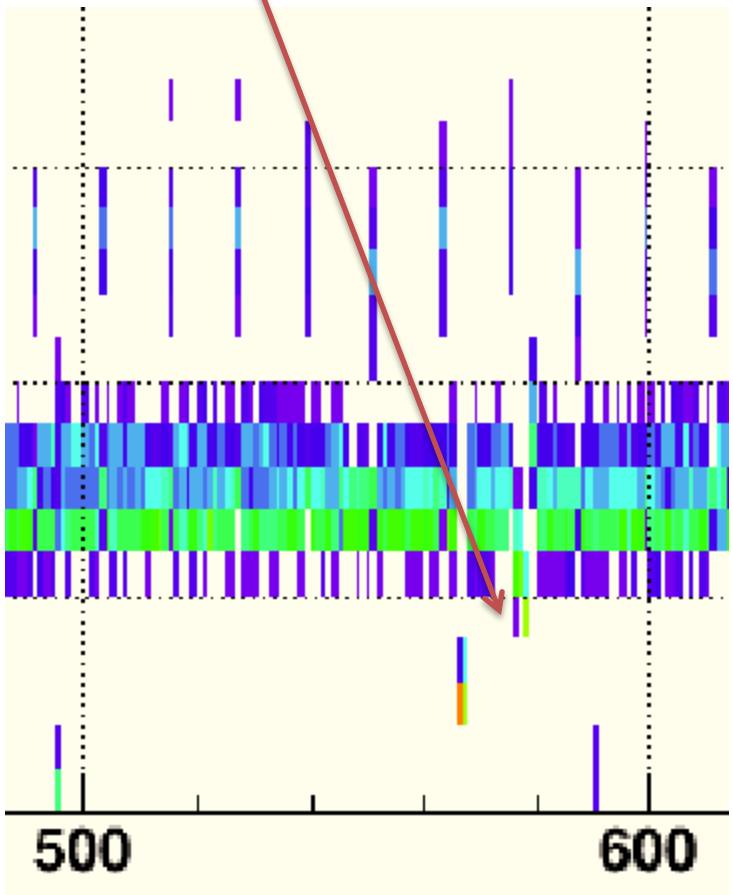




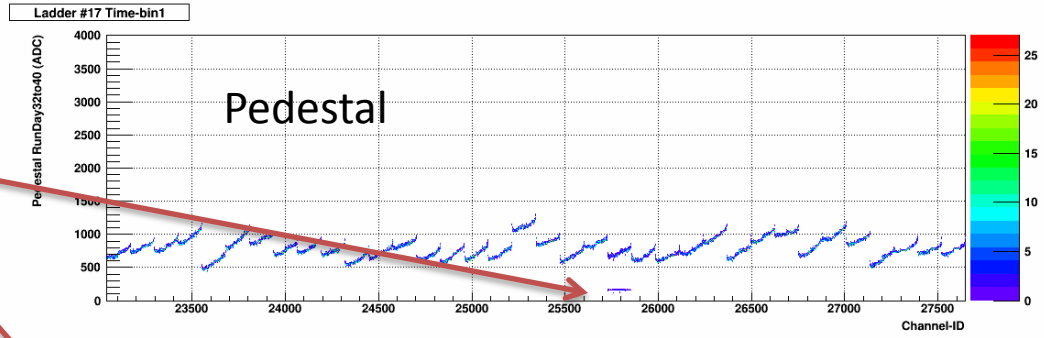


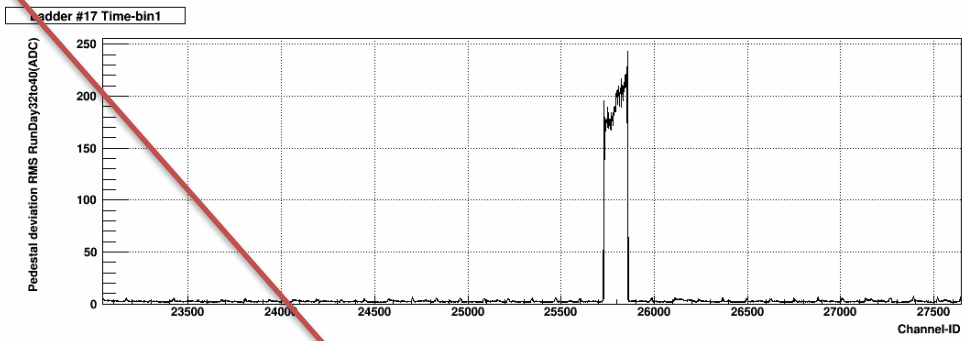
RDO	ARM	Apv	APVeID	ladder
2	2	21	578	17

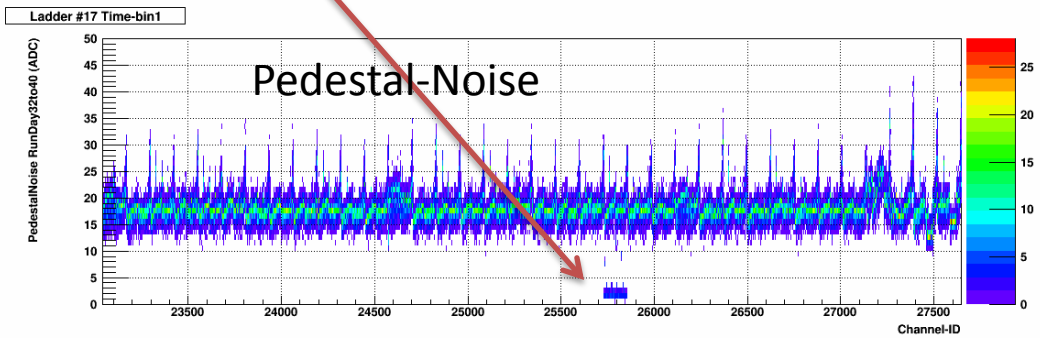
Low CM-noise (578)

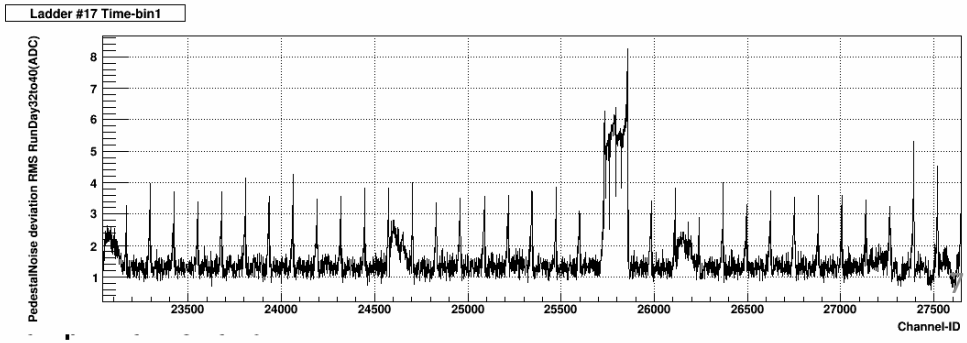


This chip is not permanently bad
But fails frequantly

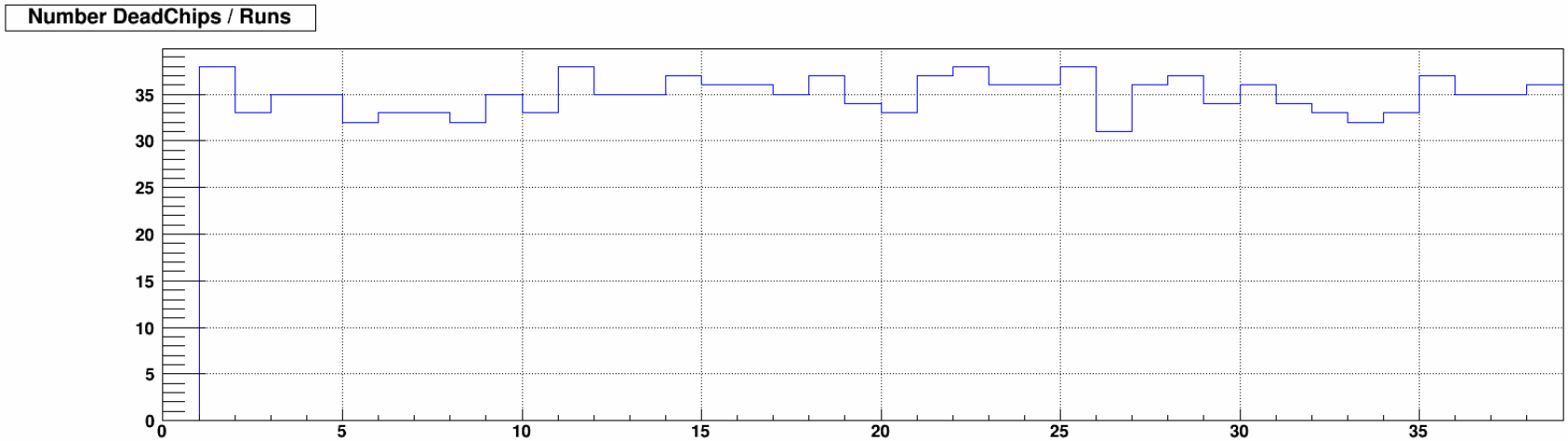


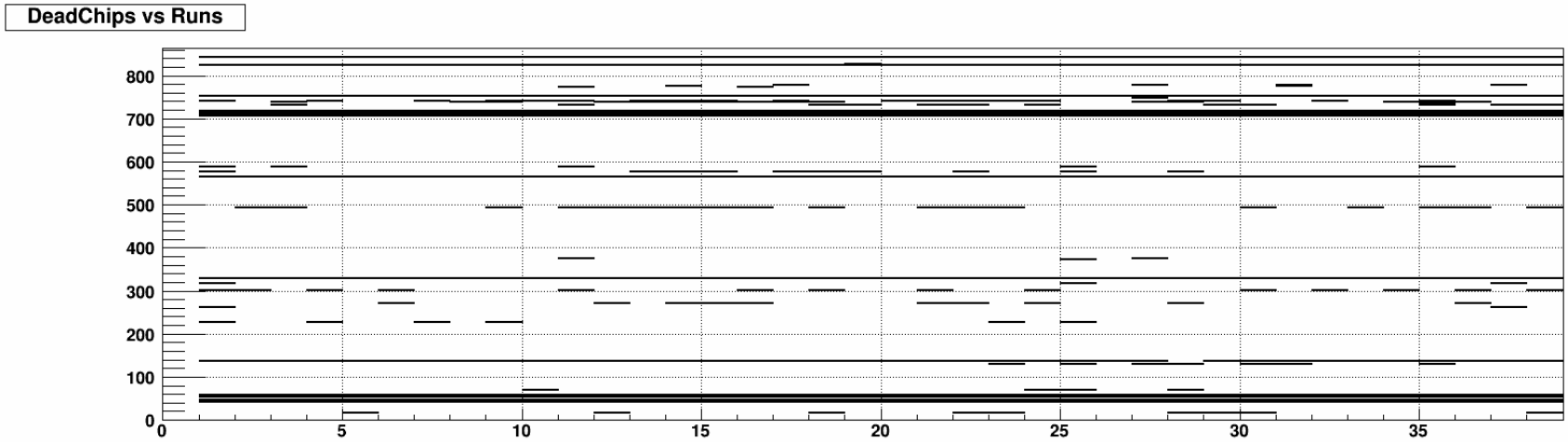






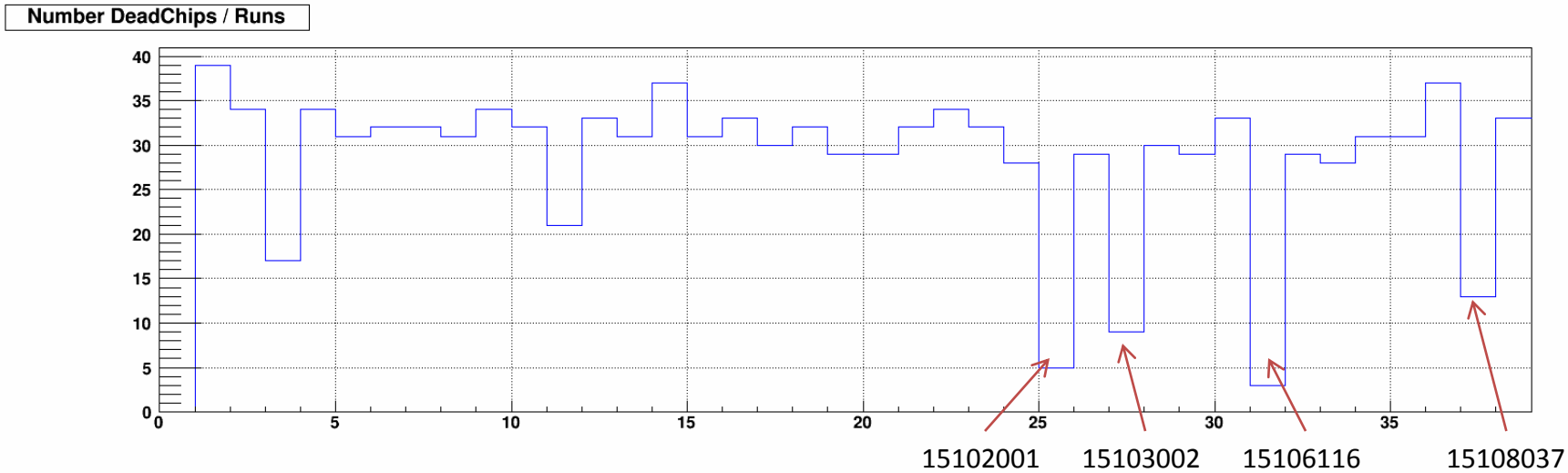
Bad chips vs Runs TB1

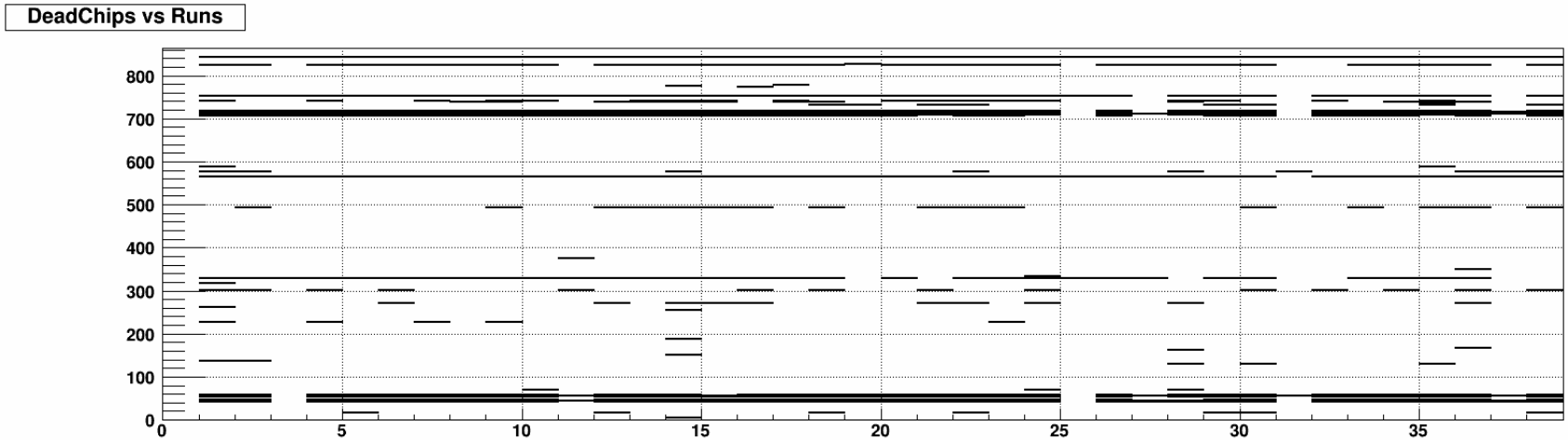




The failure rate and spectrum seems normal

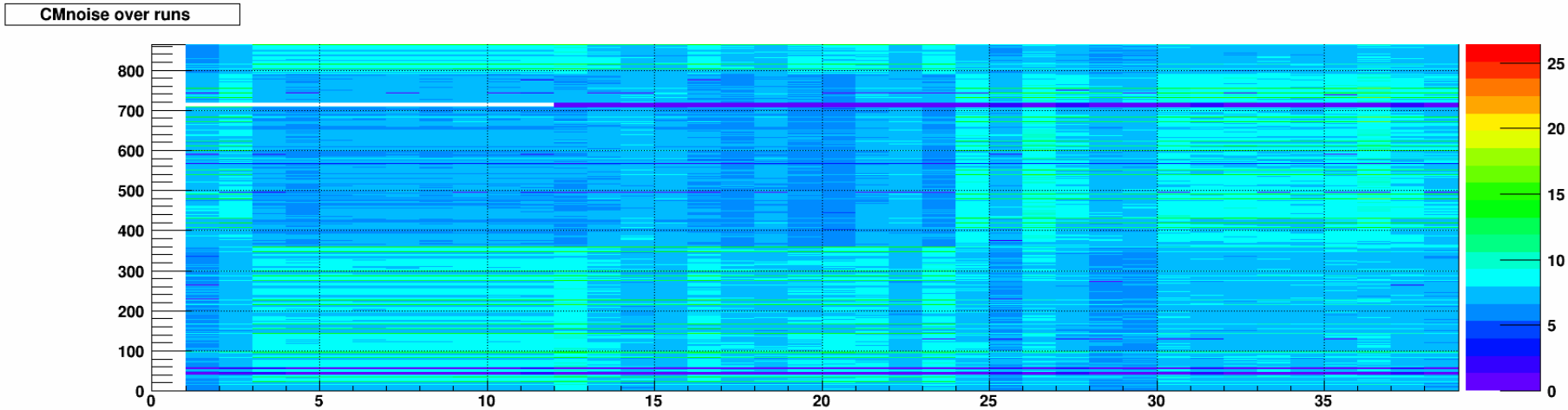
Bad chips vs Runs TB2

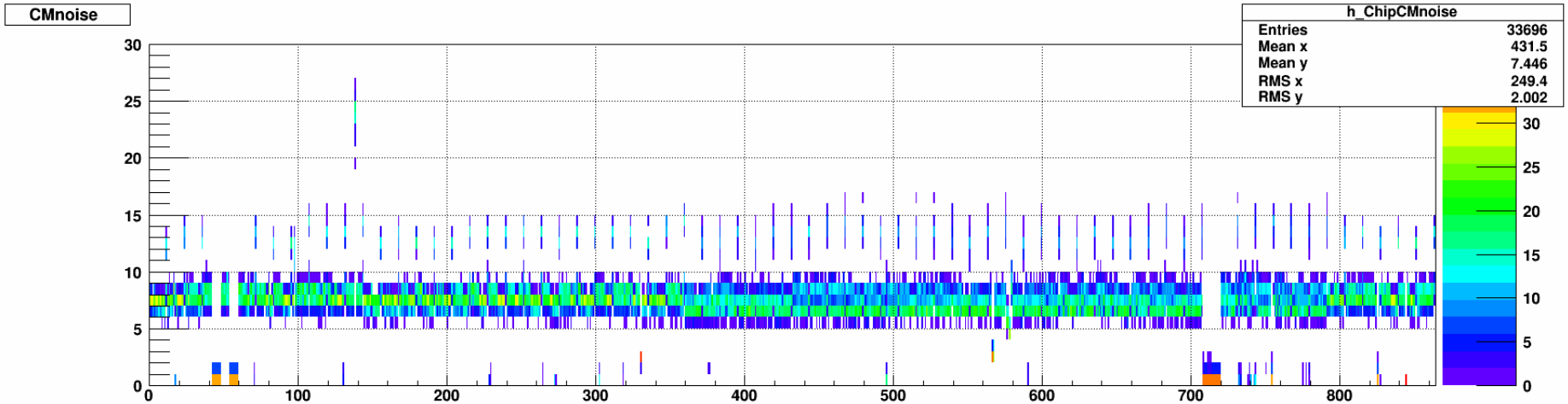




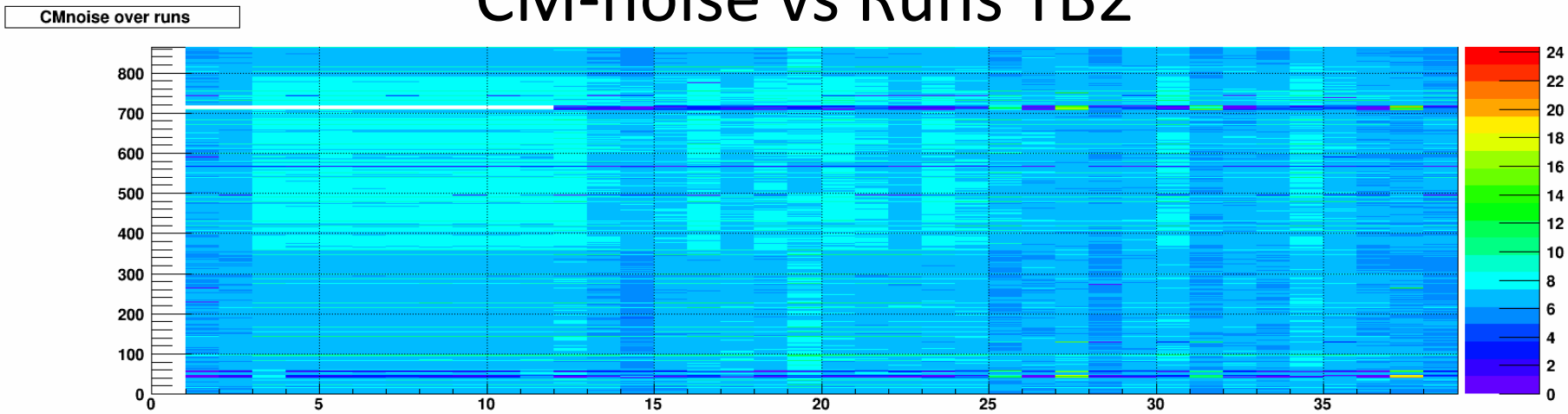
The failure rate Does **NOT** seem normal. Why in some runs we have very little failed chips ? We have the same odd behavior at TB3 too. Is this related to changing to 4 time bins from run 15098042?

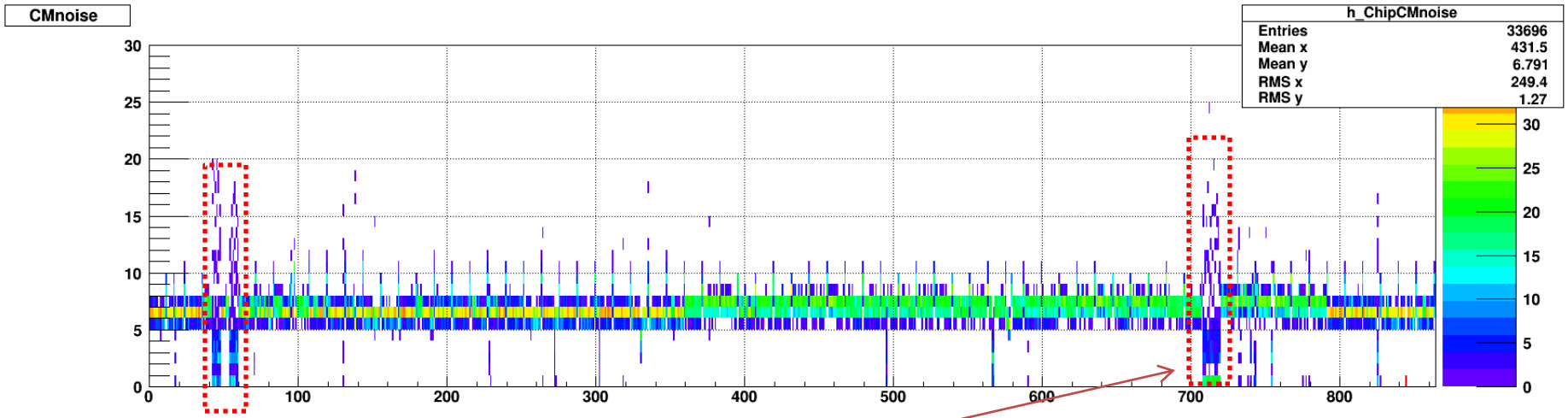
CM-noise vs Runs TB1





CM-noise vs Runs TB2





Odd issue in CM-Noise value in bad chips

CM-Noise comparison of several runs

Problematic run

Good Chips

Bad Chips

RUN		15102001	RUN		15106116	RUN		15106125	RUN		15088052	RUN		15091010
eChipID	TB	CMnoise	eChipID	TB	CMnoise	eChipID	TB	CMnoise	eChipID	TB	CMnoise	eChipID	TB	CMnoise
8	0	6.1739	8	0	7.39565	8	0	6.99385	8	0	7.58241	8	0	7.62645
8	1	6.62787	8	1	6.99072	8	1	6.81488	8	1	6.99084	8	1	6.9791
8	2	5.75713	8	2	6.31524	8	2	5.74695	8	2	6.54318	8	2	6.43667
8	3	8.06916	8	3	7.47329	8	3	8.29616	8	3	6.11092	8	3	5.99395
11	0	7.93768	11	0	7.94604	11	0	8.52345	11	0	12.39612	11	0	12.53748
11	1	10.43145	11	1	7.35333	11	1	8.48126	11	1	8.30328	11	1	8.34036
11	2	7.31066	11	2	6.33964	11	2	6.37275	11	2	8.61268	11	2	8.48983
11	3	13.68155	11	3	12.37557	11	3	13.19001	11	3	6.8851	11	3	6.8172
42	0	1.62018	42	0	1.49681	42	0	0.5268	43	0	0.53276	43	0	0.56222
42	1	1.64832	42	1	1.55763	42	1	0.48171	43	1	0.52015	43	1	0.57643
42	2	11.57139	42	2	11.23404	42	2	0.80704	43	2	2.2055	43	2	2.92147
42	3	14.63445	42	3	10.88821	42	3	0.58637	43	3	2.21108	43	3	2.79206
46	0	1.85822	46	0	1.52145	46	0	0.35092	46	0	0.47253	46	0	0.4692
46	1	1.78324	46	1	1.55832	46	1	0.40264	46	1	0.47223	46	1	0.47406
46	2	9.45065	46	2	11.14705	46	2	2.6947	46	2	3.63556	46	2	3.5249
46	3	9.33992	46	3	9.96002	46	3	3.65407	46	3	3.42297	46	3	3.39836
107	0	8.63758	117	0	8.07192	117	0	8.06417	117	0	8.63832	117	0	8.687
107	1	10.81365	117	1	7.90546	117	1	7.64859	117	1	7.8113	117	1	7.82283
107	2	7.54507	117	2	7.10444	117	2	6.69647	117	2	7.23587	117	2	7.20667
107	3	16.11694	117	3	8.75174	117	3	8.96973	117	3	6.70067	117	3	6.65411
717	0	1.65213	717	0	1.35693	717	0	0.54313	717	0	0	717	0	0.58646
717	1	1.65034	717	1	1.4449	717	1	0.58655	717	1	0	717	1	0.5779
717	2	6.67675	717	2	12.96913	717	2	0.791	717	2	0	717	2	2.97293
717	3	12.63718	717	3	7.63971	717	3	4.76363	717	3	0	717	3	3.99875
718	0	1.67275	718	0	1.67599	718	0	0.46835	718	0	0	718	0	0.5204
718	1	1.65853	718	1	1.61144	718	1	0.43599	718	1	0	718	1	0.51017
718	2	9.54948	718	2	13.60014	718	2	3.69309	718	2	0	718	2	2.61081
718	3	9.43399	718	3	11.11194	718	3	2.6221	718	3	0	718	3	3.25573

CM-noise values for good/bad chips for runs mentioned in slide 9. Time Bins 2/3 has strangely high CM-noise but they are ok in TB0/1 . This issue causing confusion to estimate bad chips for TB2/3.

Conclusion

- List of bad chips at : http://www4.rcf.bnl.gov/~babakabi/public_html/plots/BCC/Cosmic1/Badchips.csv
- Chips are checked one by one and the reason why failed
- Investigating why TB2/3 has such strange behavior
- Finalizing the list bad channel then poplutae tot data base

Back Up slides