Laser commissioning, DetDiag news

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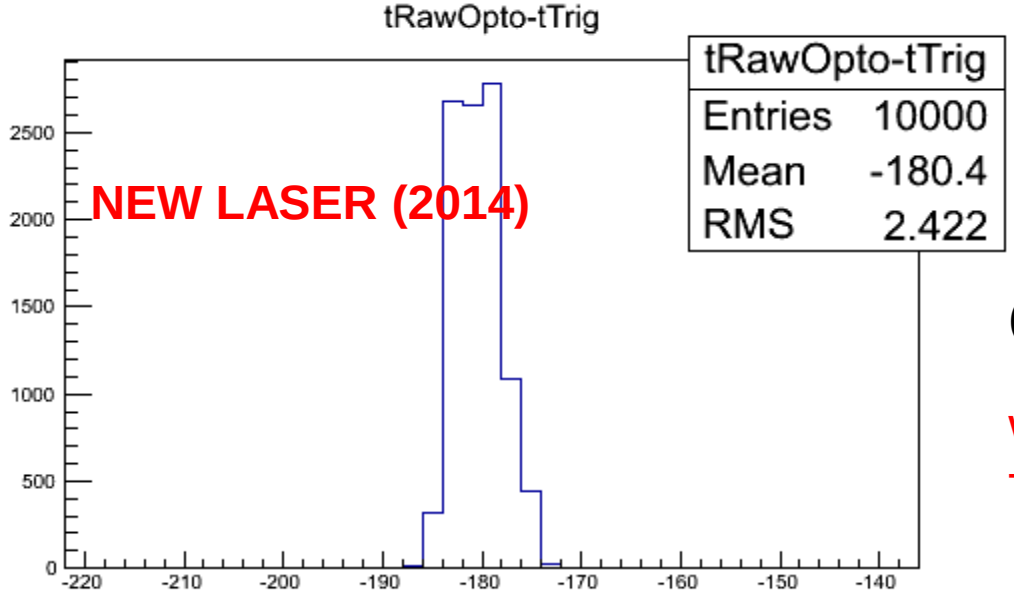
Hcal Operation meeting
Sept. 1, 2014

Overview

- Laser commissioning (HF RADDAM)
- DetDiag news
- Health runs discussion

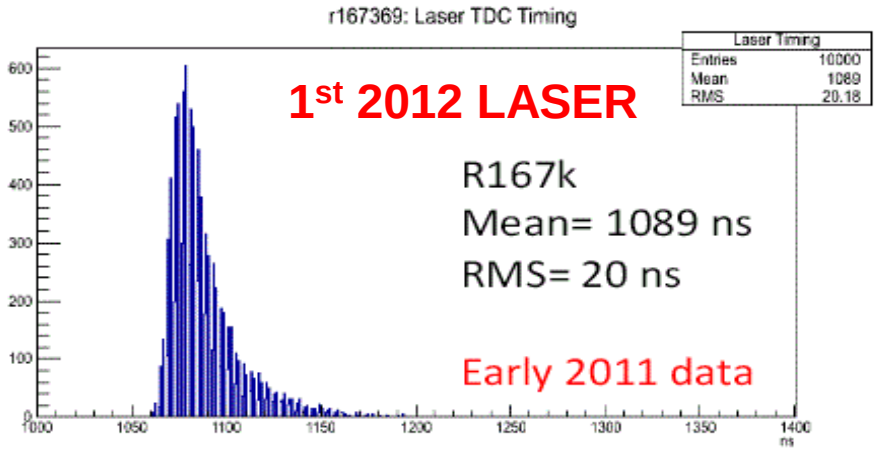
Laser timing (TDC)

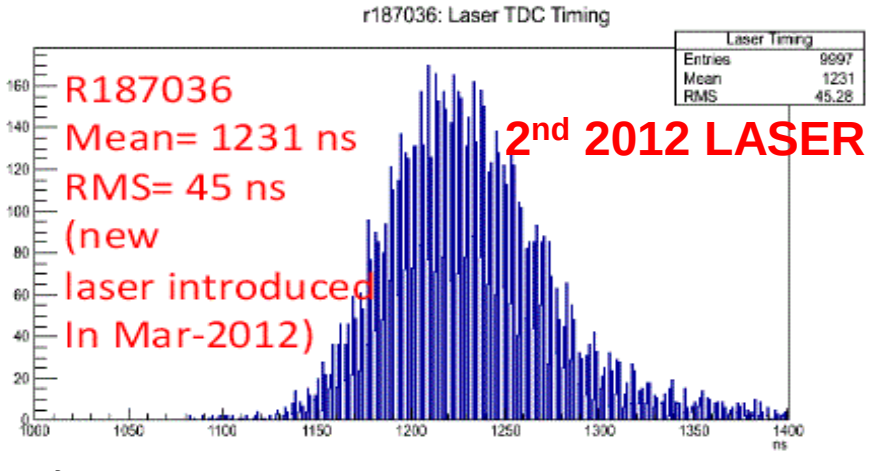


New laser have jitter 2.4 ns

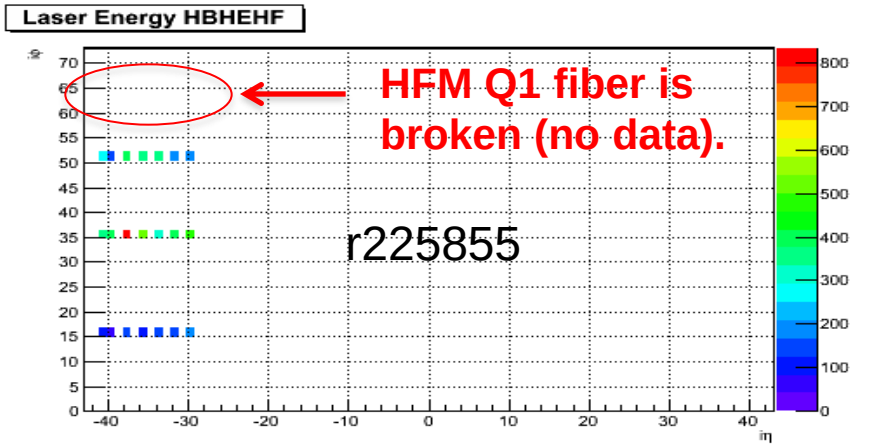
(Old laser had unstable timing and jitter)

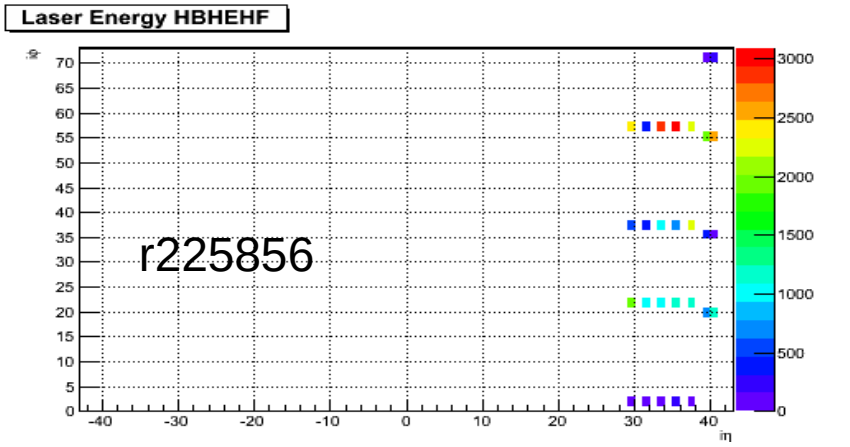
We need to take data periodically
To monitor a stability of the new laser

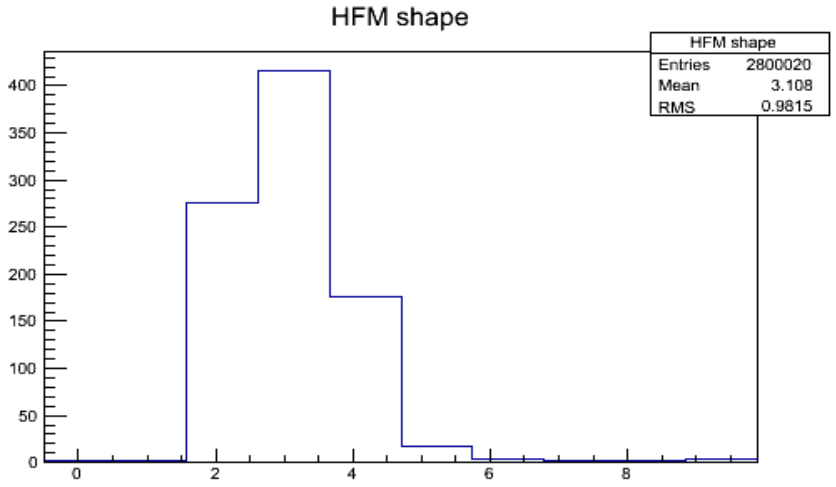


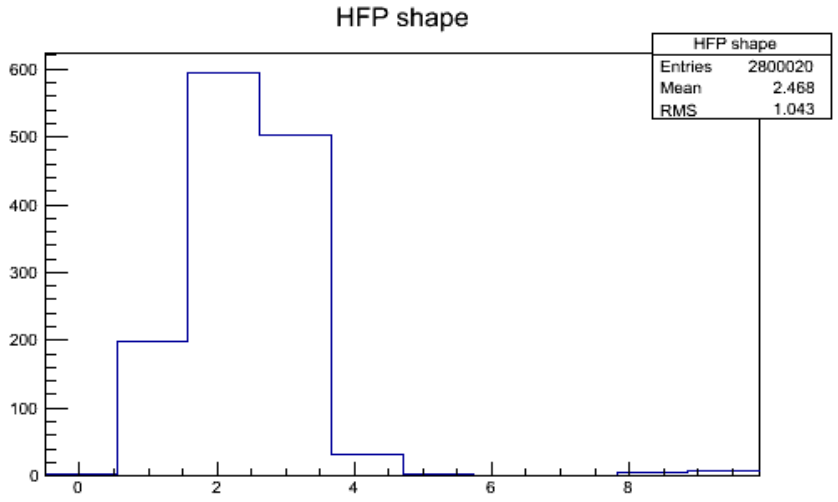


HF Raddam data (1)









HFM and HFM have different timing with the same delay settings

HF Raddam data (2)

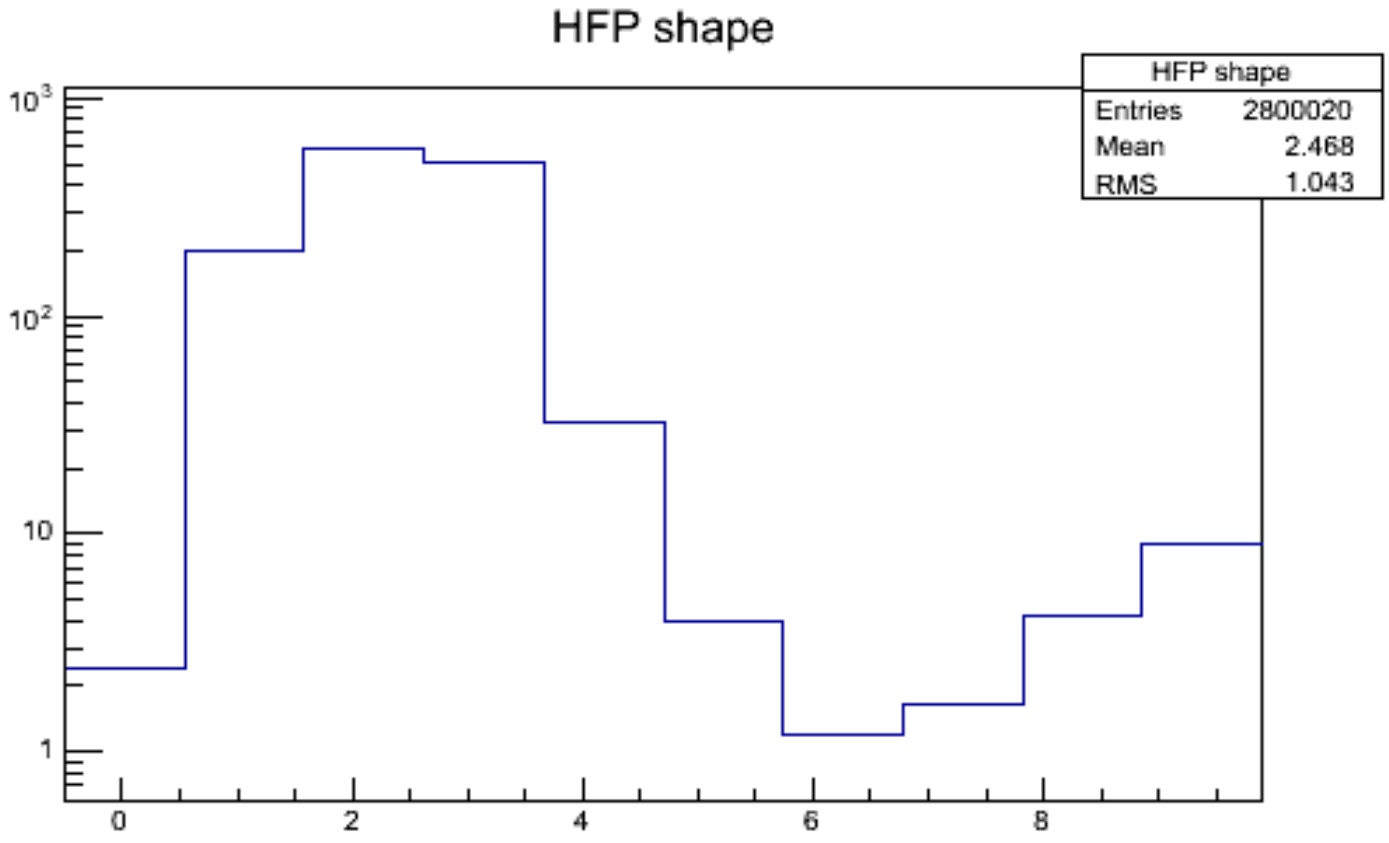
R225855, HFM

Eta	phi	D	TS: 0	1	2	3	4	5	6	7	8	9
-30	35	1	0	2	1260	1184	210	21	0	0	0	6
-30	71	1	4	4	2	2	2	2	4	4	2	0
-32	15	1	4	4	312	292	120	0	0	0	4	4
-32	51	1	2	4	484	334	100	8	2	4	4	8
-34	35	1	4	2	710	747	104	23	10	0	2	17
-34	71	1	2	6	4	4	0	2	2	4	4	4
-36	15	1	2	4	224	157	64	0	0	0	4	2
-36	51	1	2	2	460	1260	210	36	2	8	0	8
-38	35	1	2	2	2234	2110	312	0	0	0	0	0
-38	71	1	2	4	4	4	0	0	0	4	2	4
-40	15	1	2	4	197	137	25	2	0	0	6	4
-40	51	1	2	2	434	334	70	12	6	2	2	2
-41	35	1	2	2	1260	584	64	0	2	0	2	6
-41	71	1	4	4	2	2	2	0	2	2	4	2
-30	15	2	4	4	360	410	120	0	0	0	2	2
-30	51	2	2	4	384	360	137	12	4	4	4	4
-32	35	2	2	2	1110	747	177	10	8	0	2	30
-32	71	2	4	4	2	0	2	2	2	2	4	2
-34	15	2	4	2	384	334	60	0	0	0	2	6
-34	51	2	4	2	634	897	147	30	0	0	0	15
-36	35	2	0	2	847	1622	187	36	0	0	0	2
-36	71	2	4	4	4	2	2	2	2	2	4	4
-38	15	2	2	4	240	292	54	4	0	0	2	6
-38	51	2	2	2	1184	747	114	10	0	2	6	4
-40	35	2	2	2	947	847	120	8	0	0	0	2
-40	71	2	0	2	4	4	2	2	2	2	4	2
-41	15	2	2	4	334	224	36	0	0	2	4	4
-41	51	2	2	2	660	610	74	6	2	0	0	8

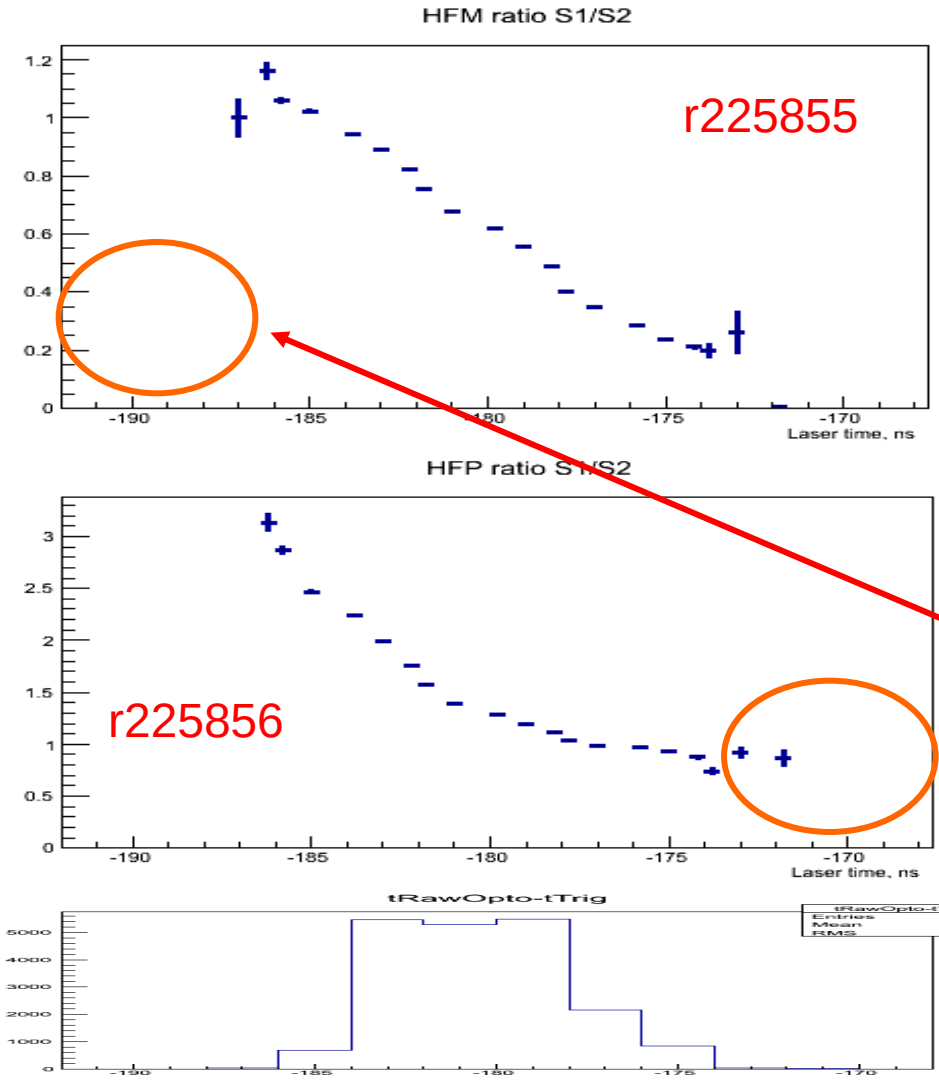
R225856, HFP

Eta	phi	D	TS: 0	1	2	3	4	5	6	7	8	9
30	21	1	2	634	1422	560	23	0	0	0	6	8
30	57	1	2	660	1860	997	21	4	0	0	2	25
32	1	1	2	21	64	42	6	2	2	2	2	2
32	37	1	4	80	240	100	15	0	0	0	4	4
34	21	1	2	434	797	210	12	0	2	2	19	6
34	57	1	2	747	2360	747	42	4	0	0	0	38
36	1	1	2	84	100	36	4	2	0	4	4	2
36	37	1	4	360	584	110	0	0	0	4	4	8
38	21	1	2	560	847	187	27	10	2	2	4	30
38	57	1	2	1047	1734	334	0	0	0	0	0	27
40	35	1	2	157	334	100	8	0	4	4	2	2
40	71	1	2	94	137	70	4	27	6	4	4	2
41	19	1	4	684	947	254	2	0	0	2	2	8
41	55	1	2	1984	1522	272	0	0	0	0	17	10
30	1	2	4	32	30	23	4	4	2	2	2	2
30	37	2	4	130	434	120	10	0	2	2	2	0
32	21	2	2	384	584	292	6	0	0	2	10	21
32	57	2	2	84	334	197	14	2	4	2	2	6
34	1	2	4	46	147	80	6	0	0	2	4	2
34	37	2	2	484	797	224	12	0	0	2	17	4
36	21	2	4	660	797	210	0	0	0	2	4	6
36	57	2	2	1260	2360	584	15	2	0	0	0	12
38	1	2	2	27	60	21	4	4	2	2	2	2
38	37	2	2	847	1622	312	32	0	12	2	4	15
40	19	2	4	384	534	130	15	2	4	4	8	14
40	55	2	4	1110	1260	292	0	0	0	4	10	10
41	35	2	4	50	64	15	4	2	2	2	0	2
41	71	2	4	147	130	42	0	2	2	4	2	2

Afterpules…


HFP shape
HFP shape
Entries 2800020
Mean 2.468
RMS 1.043
10^3
10^2
10
1
0
2
4
6
8

HF Raddam data quality (1)



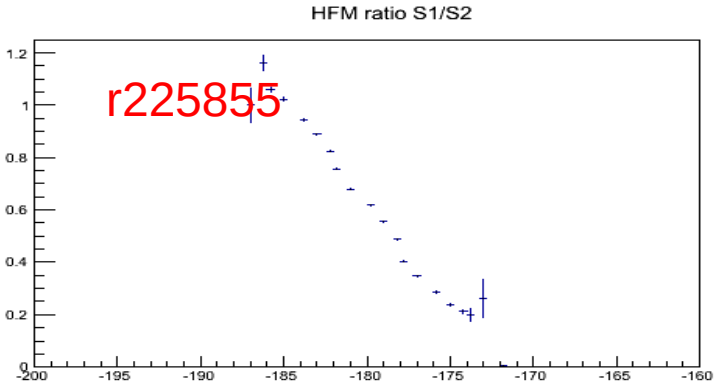
With current timing settings we don't see S1/S2 plateau, so current data can't be used for HF RADDAM analysis.

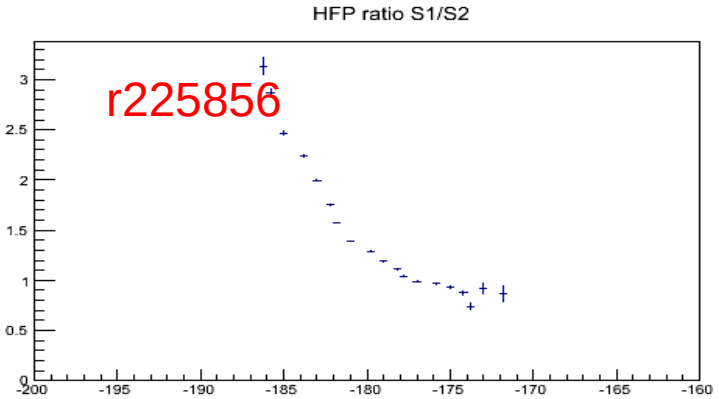
Fine tuning of timing required

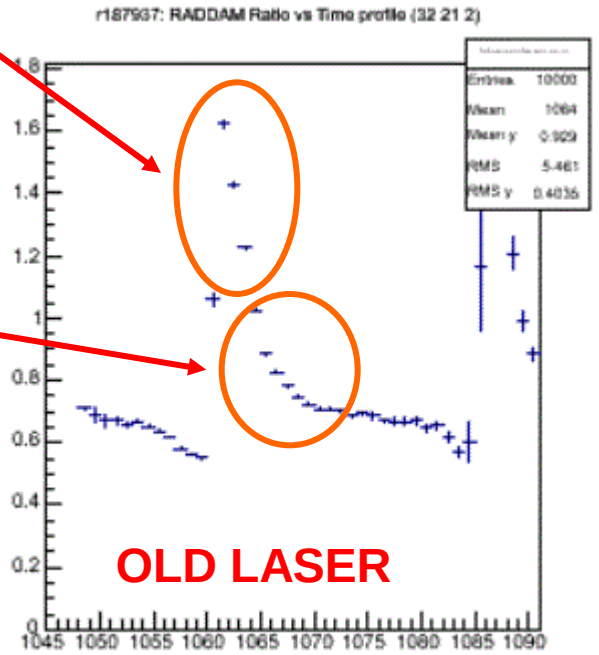
Phase scan needed

Expected plateau

HF Raddam data quality (2)







With old laser (big jitter) even with not adjusted timing we had some fraction of “GOOD” events

With new laser without properly adjusted timing fraction of “GOOD” events will be ZERO

Conclusions / todo

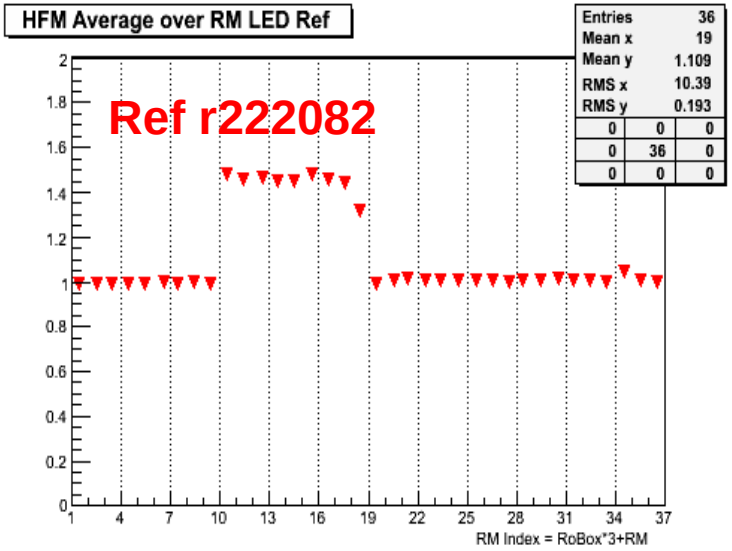
- Laser TDC is working now (laser jitter ~2.4 ns)
- QADCTDC FED included in some laser configurations
- HF raddam laser timing and amplitude was preliminary adjusted
- Phase scan needed for fine tuning of timing to make data useful for analysis

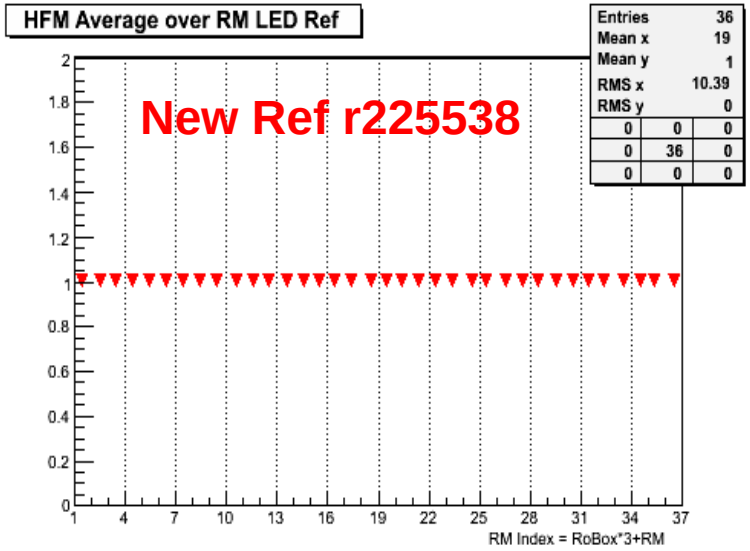
- Recover laser QADC (important for Laser->Megatile analysis)
- Adjust timing and amplitude for the rest of laser configurations

- Take laser data regularly (2 times per week) as a part of health runs (important for laser stability study)

DetDiag (1)

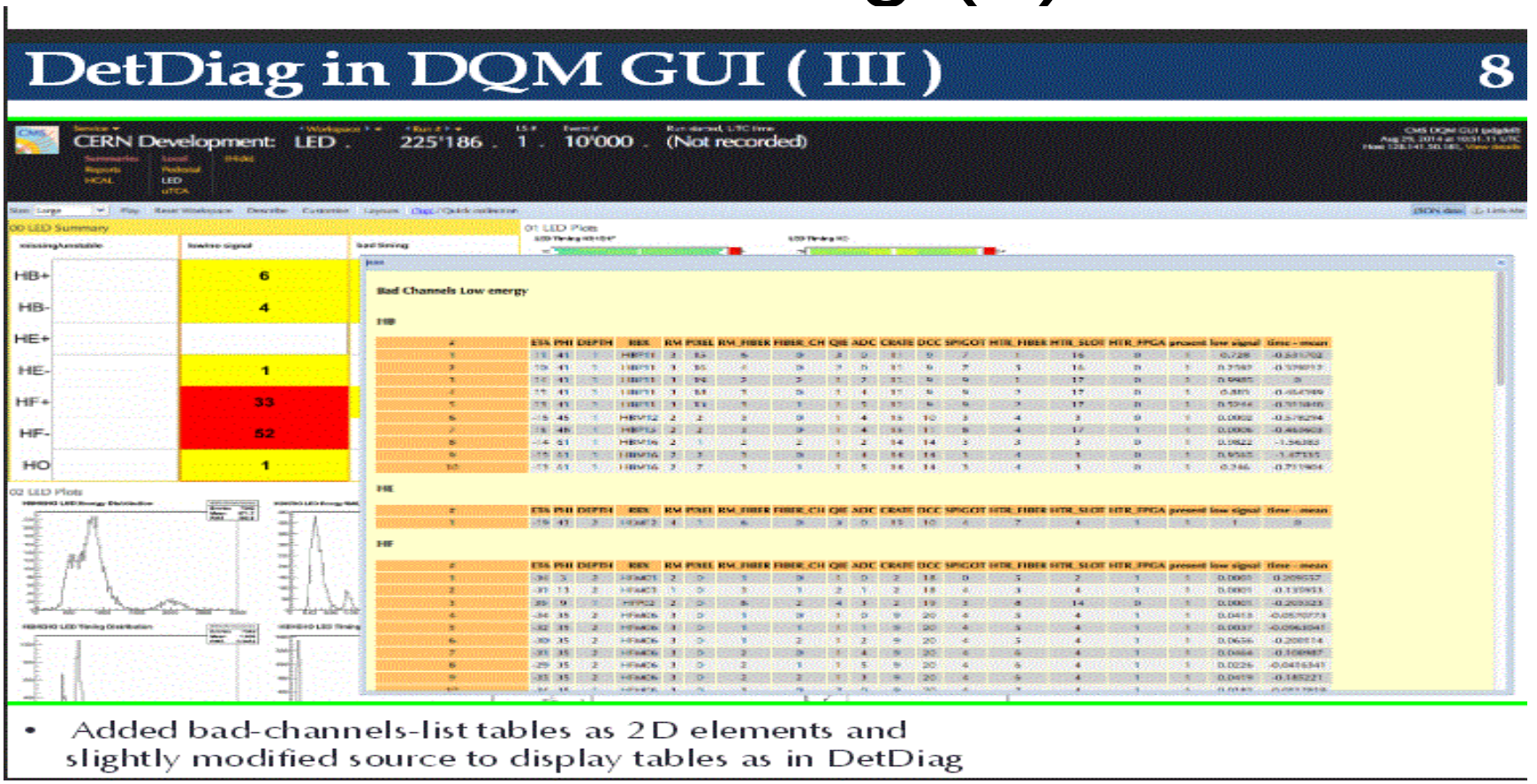
- New pedestal and LED reference runs:
- PED: r225529 (no missing channels)
- LED: r225538 (HFM is good now)





- HO SiPM specific histograms removed (all regular channels are SiPMs)

DetDiag (2)



Development to migrate DetDiag from static HTML -> DQM GUI
See Aleko's presentation:
https://indico.cern.ch/event/336768/contribution/5/material/slides/0.pdf

Health runs discussion

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David SOUTHWICK — HCAL health check

Message ID: **822217** Entry time: **WED 20.AUG.14 17:31:06** **Short link:** http://cmsonline.c

Author: David SOUTHWICK, David.Southwick@cern.ch

Type: HCAL Report to Daily Run Meeting

Subject: HCAL health check

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************************
HCAL Health Check
************************
**All systems have been reverted back to TTC from TCDS**
#225264   -2k- Local_Multipartition/HBHEabc_Pedestal
#225265  -10k- Local_Multipartition/HBHEabc_LED
#225266  -50k- HO/LEDs
#225267 -350k- HO/Peds
#225275  -10k- HF/Pedestal
#225277  -10k- HF/LED
#225279   -5k- HF/SelfTrigger - getting stuck at radom number of events... (200, 500, 1600...)
#225283   -2k- Local_Multipartition/HCALall_Pedestal
#225284  -10k- Local_Multipartition/HCALall_LED
#225287   -5k- Local_Multipartition/HCAL_all_SelfTrigger

#225291 -400k- HO/test/LED_PED
#225293 -200k- HO/SelfTrigger_40fC
#225294 -100k- HO/SelfTrigger_50fC
#225295 -100k- HO/SelfTrigger_60fC
#225296 -420k- HO/PED_IVScan
#225298 -460k- HO/LED_IVScan
```

Similar pedestal runs:
Do we really need this?

Similar LED runs:
Do we really need this?

Self Trigger **5k** events:
How can we use it?

Long runs:
Do we have enough time to take this runs during interfill Period?

- We have several pedestal and LED configurations for subdetectors + multipartition PED and LED runs
- Laser configurations are missing
- HF afterpulse (20TS) configuration is missing
- Proper Self trigger configurations are missing

- **We need to start discussion about run types / statistics for health / stability monitoring**
- **We need to start take health runs regularly as soon as possible**