Light monitoring

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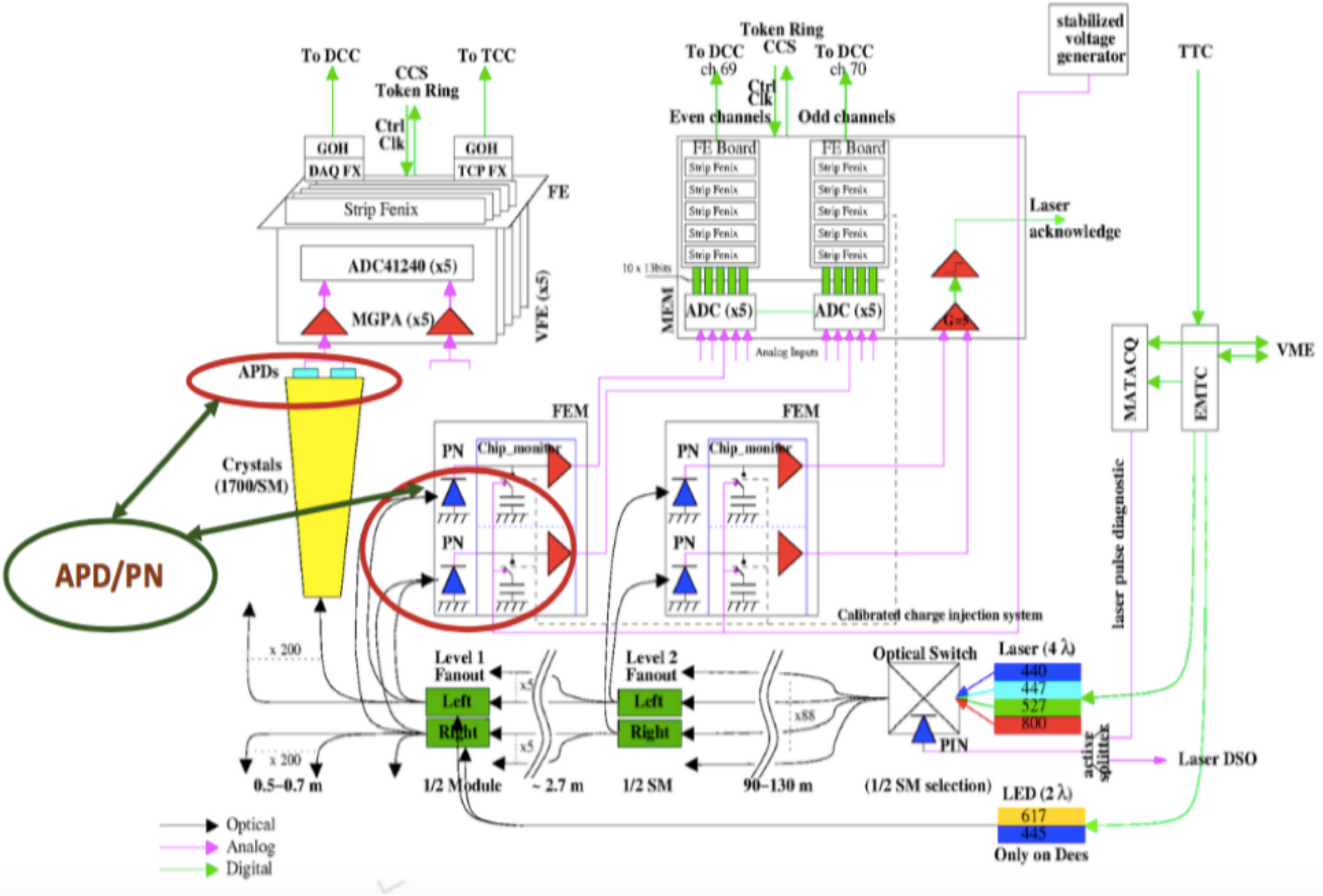
Light monitoring

outline:

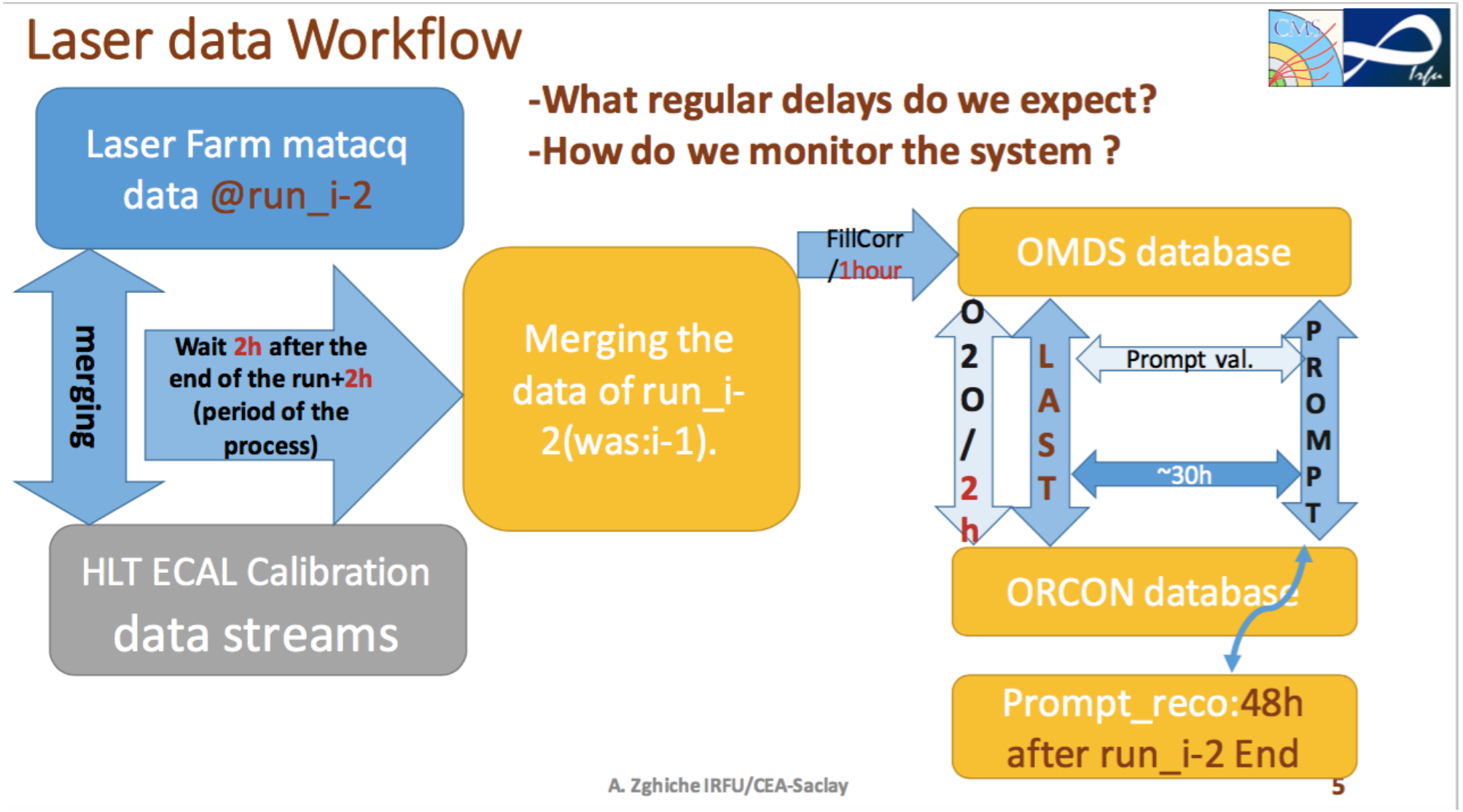
- Brief reminder of the Laser Monitoring
- Validation of workflow for the ECAL response corrections (AlCaDB)
- 2016 laser corrections tag
- Summary

Summary of the light monitoring



Validation of workflow for the ECAL response corrections with AlCaDB working Group

Current Laser data workflow



Monitoring the system

ECAL DOC *and deputy (ECAL DGL)(70130)*

Present at run meeting daily, first line on call, mostly copes with hardware , DAQ and Trigger problems, gets the calls for ONLINE laser issues

ECAL PFG (Ecal offline shifter)

makes a daily report, certifies goodness of data or ECAL and ES, monitors the Laser data correction filling

ECAL Laser hardware expert (164241)

intervenes on the laser hardware in case of problems

ECAL Monitoring person on call (77800)

(responsibility of Saclay team)

checks filling of laser correction, is called if something goes wrong with correction computation or DB filling

Monitoring the system

We monitor:

Laser Data quality while running

DQM contains many plots of laser sequence, checked 24/7 by online DQM shifter, 12/7 by ECAL DOC, and many others : **https://cmsweb.cern.ch/dqm/online/**

Light checker checked 12/7 by ECAL DOC, ECAL Monitoring expert oncall, and many others

https://ecalmon.web.cern.ch/ecalmon/mirror/light-checker/

Laser data quality after data are processed: **https://ecalmon.web.cern.ch/ecalmon/prompt/**

Laser correction page is checked 12/7 by ECAL PFG (ECAL offline shifter) and ECAL Monitoring expert oncall

DB filling

Can be seen in wbm page is checked 12/7 by ECAL PFG and ECAL Monitoring expert oncall

https://cmswbm2.web.cern.ch/cmswbm/cmsdb/servlet/ECALSummary?moreLaser.x=0&moreLaser.y=0&moreLaser=4

Express processing with laser corrections

Use the laser tag on express stream to check the π0, results are available on a web page which is checked by ECAL Monitoring expert oncall: and by PFG shifter when the process is automated:

http://cmsdoc.cern.ch/~jarry/History_plots_pi0_2015/

PPD tool: Monitoring of O2O in the Prompt-calibration Loop:

https://cms-conddb-dev.cern.ch/cmsDbPclO2O/

Monitoring the system

End of run affected by invalid data	notified by	Who should be notified	What action to take	Phone and e-mail
t_{re} < 30 hours	ECAL DOC	• Laser experts • DB experts	1. Stop DB filling (FillCorr) 2. Warn AlCa/DB to Stop O2O 3. ECAL to provide a fix into OMDS	1. cms-saclay-laser-monitoring@cern.ch Tel: **77800** 2. cms-offlinedb-exp@cern.ch & AlCa/DB shifter Tel: **70817**
30 h < t_{re} < 48 h	Laser experts	• ECAL DPG • Tier-0 • DB experts	Additionally: **4. ORM: Stop Prompt Reco** 5. ECAL Provide a fix for tag "prompt_v2" 6. AlCa/DB: override wrong IOV's in tag "prompt_v2"	1. cms-orm-on-duty@cern.ch Tel: **165572** 2. cms-offlinedb-exp@cern.ch & AlCa/DB shifter Tel:**70817**
t_{re} > 48 h (shouldn't happen)	Laser experts	• ECAL DPG	A. Points 1. 2. 3. above B. Also points 4. 5. 6. If problem not yet resolved C. Prepare fixed tag for re-reco	

Laser data workflow validated at AlCaDB WG

- Some additional checks have been put in place
  - Automatic e-mailing to a list of experts when any process is interrupted
  - Take two additional runs at the end of data-taking, to make sure we can compute the laser corrections
  - Checks for negative timestamps

- Some to be implemented during EYETS
  - Process and create the merged data files of the finished run as soon as all the data has arrived to the farm (do not wait for the following run to be closed).
  - For this: implement a check of how many times each FED has been fired with laser light, and make a "checksum" comparison with the available data. This improvement would be helpful especially in the case of long runs.
  - It is also needed for this: to have at least one IoV data stream of the next run available to compute the corrections of the last IoV of the considered run
  - We can also think of getting the information of closed runs as WB does

2016 laser corrections tag

2016 laser corrections tag

	Test Pulse corrections: TP only on EB	Cut on the ratios p2=APD/PN/ (APD_ref/PN_ref) in the final phase of the production	marginal cut on the ratio APD/PN in the start phase of the production
Running conditions **beginning of 2016**	On going TP corrections	**if p2>0.2&&p2<1.8——-OK** if p2<0.2——-put to 1. if p2>1.8——-put to 1.	if APD/PN<0.1——-put to 1.
Offline_tag june15 th 2016: **EcalLaserAPDPNRatios_2012ABCD_offline_20130205**	On going TP corrections	**if p2>0.2&&p2<1.8——-OK** if p2<0.2——-put to 1. if p2>1.8——-put to 1.	if APD/PN<0.1——-put to 1.
Prompt running conditions **in july 2016**	**Test Pulse** corrections frozen to the values of the **21st of July**	**if p2>0.05&&p2<1.8——-OK** if p2<0.05——-put to 1. if p2>1.8——-put to 1. **(5th Aug. 2016)**	if APD/PN<0.1——-put to 1.
New offline tag **sept 15th, 2016**: **EcalLaserAPDPNRatios_offline_2016_v0**	**Test Pulse** corrections frozen to the values of the **28th of May**	**if p2>0.0001&&p2<1.8——-OK** if p2<0.0001——-put to 1. if p2>1.8——-put to 1.	still APD/PN<0.1——-put to 1. because needed to recompute the corrections from the start of the production, started on the 12th of sept.2016, took a week, not ready for the 15th of sept. 2016 Conditions deployment for Re-reco
Running prompt conditions as of the start of **Run-H after sept 15th, 2016**	**Test Pulse** corrections frozen to the values of the **28th of May**	**if p2>0.0001&&p2<1.8——-OK** if p2<0.0001——-put to 1. if p2>1.8——-put to 1	removed APD/PN<0.1

2016 laser corrections tag

List of problematic channels to mask

ix	iy	iz	cmsswId	status	action
58	41	-1	872422697	v. low laser,physics response	status!=0 (broken fibre)
83	43	-1	872425899	high laser response (~3)	corrected 2011 VPT/PN_ref
84	44	-1	872426028	high laser response (~3)	corrected 2011 VPT/PN_ref
33	58	-1	872419514	low laser, OK physics response	status=2 (broken fibre) use ring avg in 2017
10	70	-1	872416582	high laser response (~3)	corrected 2011 VPT/PN_ref
62	32	+1	872439584	low laser,physics response	status=11 (dead)
39	46	+1	872436654	low laser,physics response	status=11 (dead)
39	47	+1	872436655	1% laser response	status!=0 (broken fibre)
45	90	+1	872437466	high laser response, unstable	status!=0 (VPT noisy)
26	92	+1	872435036	low/zero response	status=11 (dead)
42	41	+1	872437033	erratic	status!=0
17	57	+1	872433849	unstable	status!=0
58	88	-1	872422744	unstable	status!=0

2016 laser corrections tag

- 2016 pp laser corrections validated and inserted in DB
- A new tag for the complete laser corrections has been created

EcalLAserAPDPNRatios_offline_2016pp_legacy

- The new tag is to be completed with the HI part of the laser monitoring
  - to be copied directly from the the prompt_v2 tag once validated
  - here: https://ecalmon.web.cern.ch/ecalmon/prompt/prompt_HI_2016/
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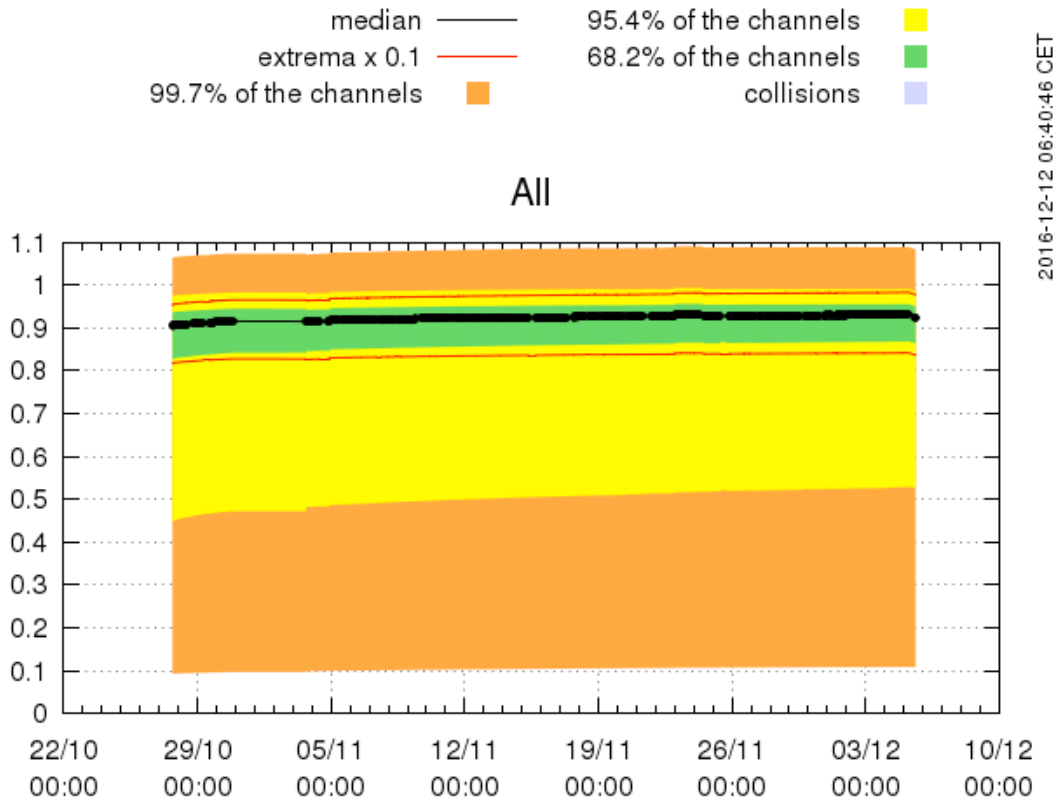
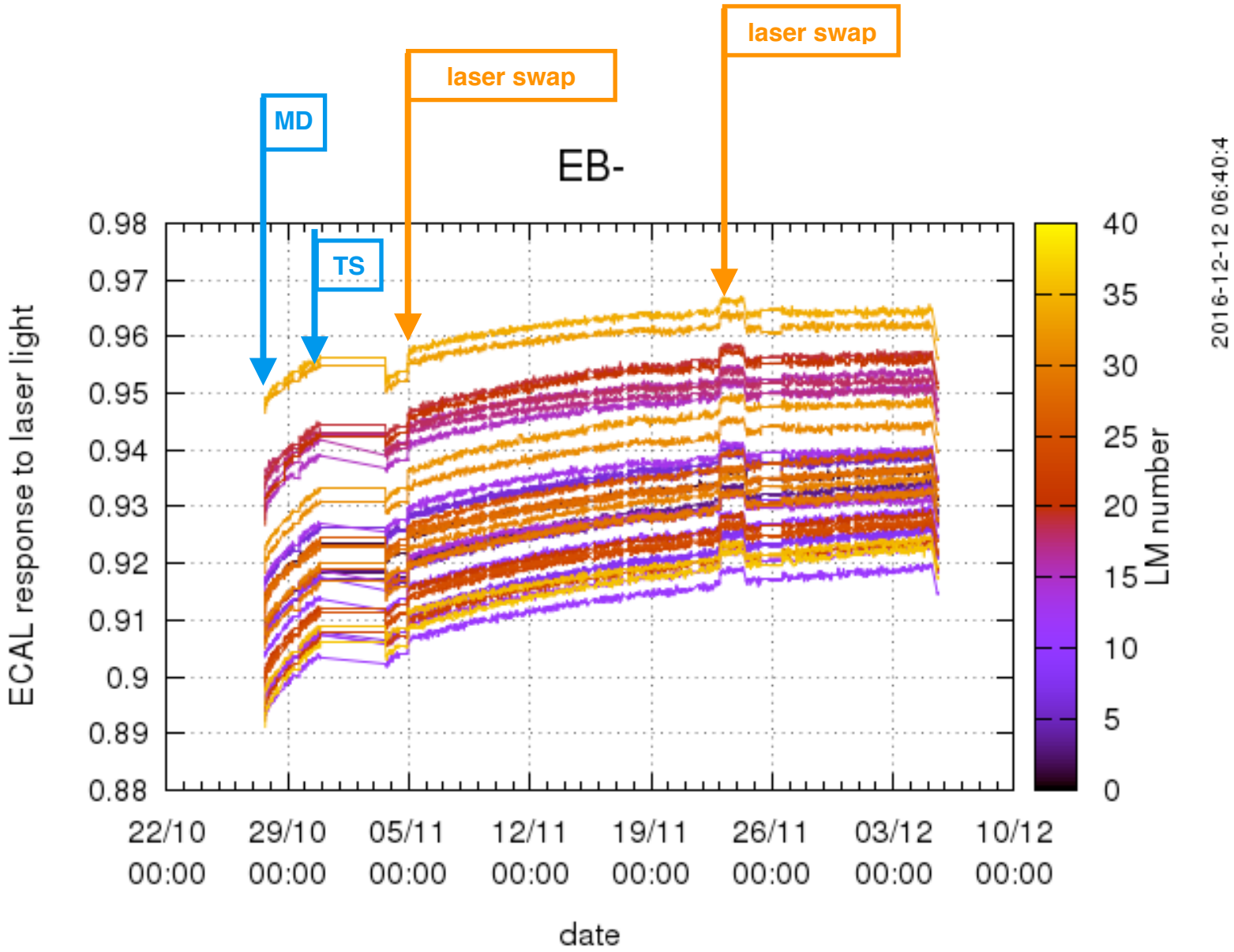
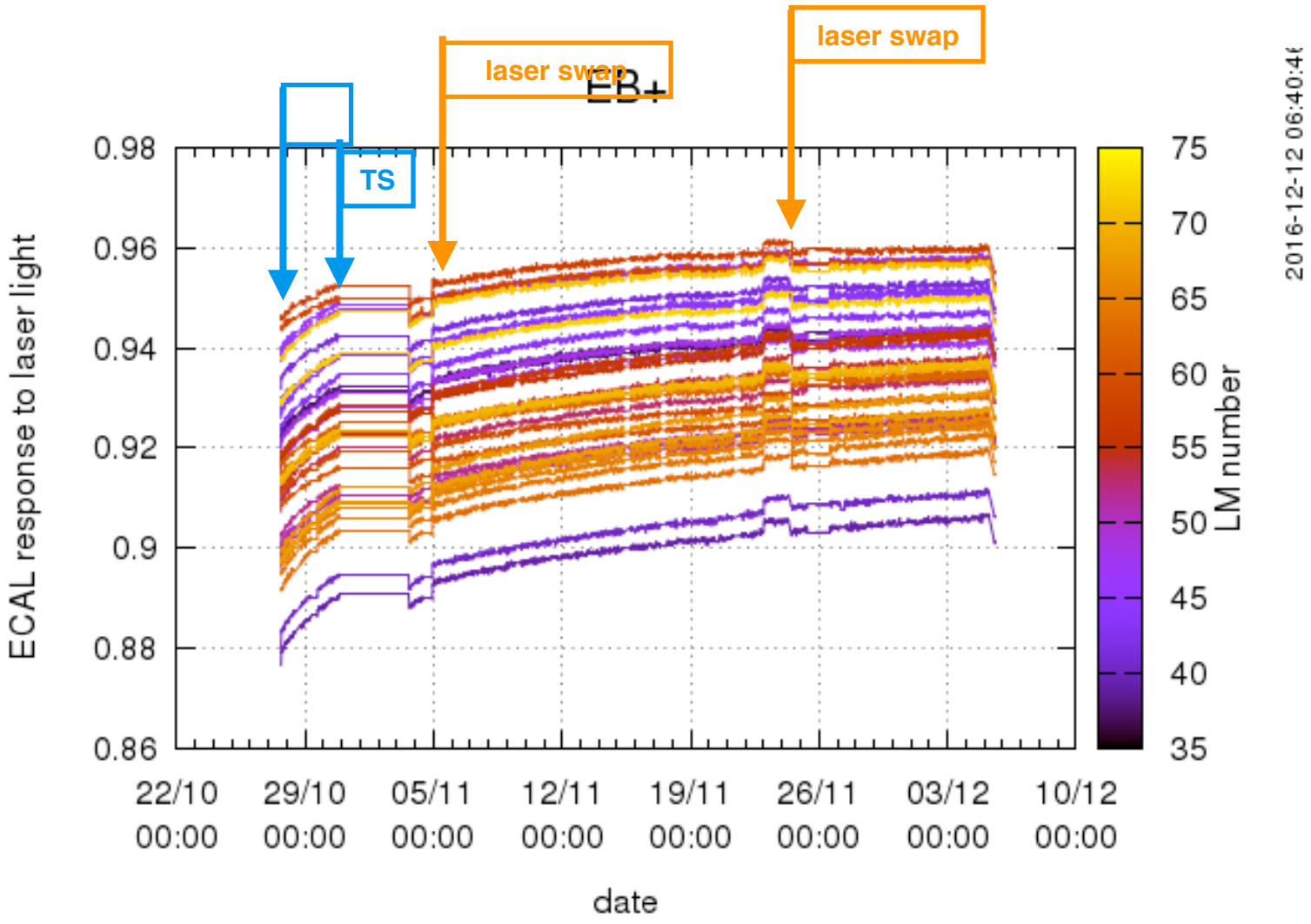


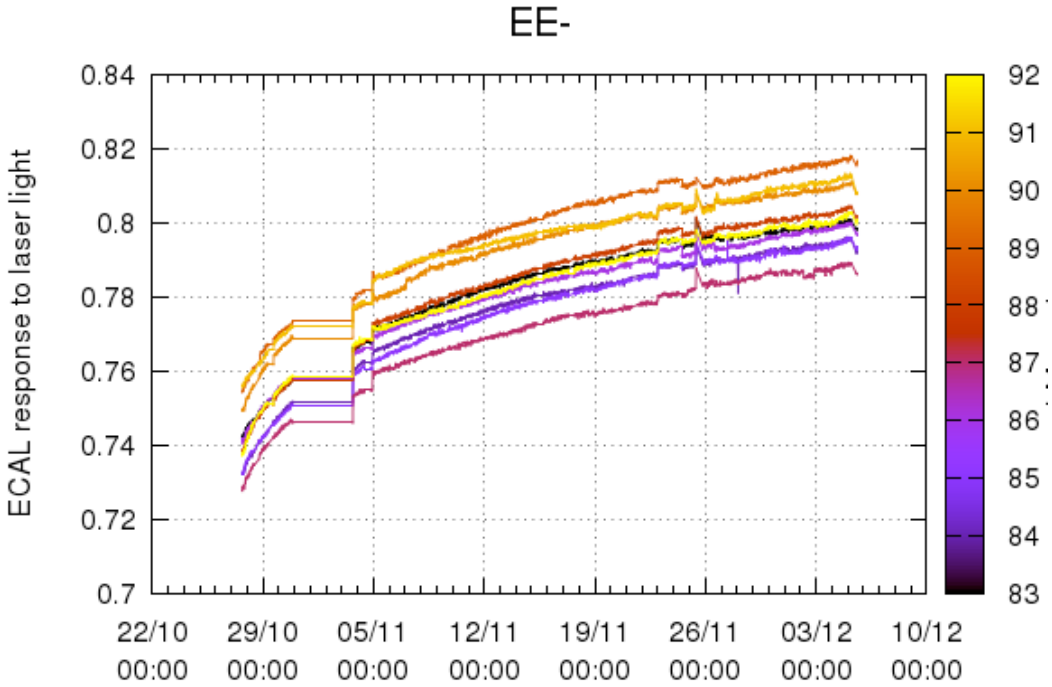
2016 laser corrections tag

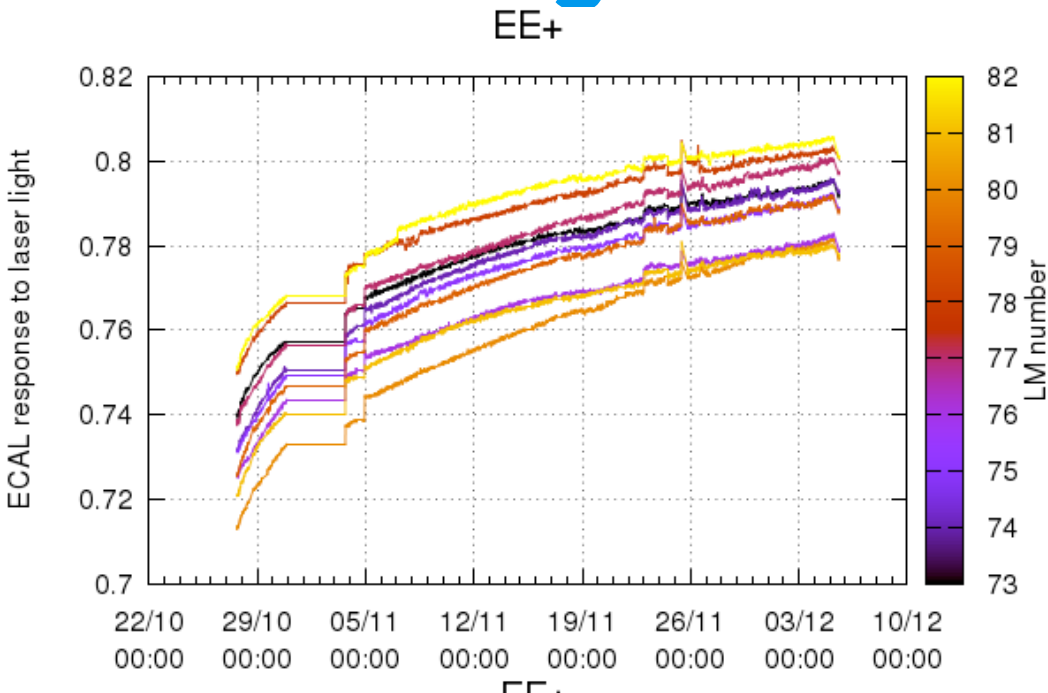


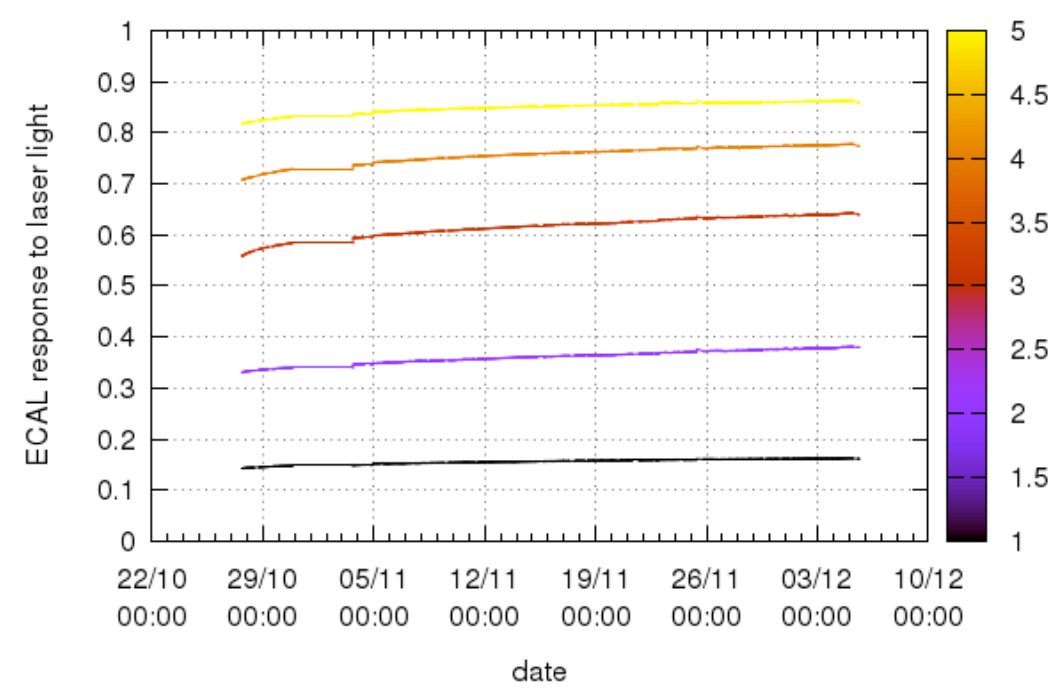
2016 laser corrections tag:HI and recovery

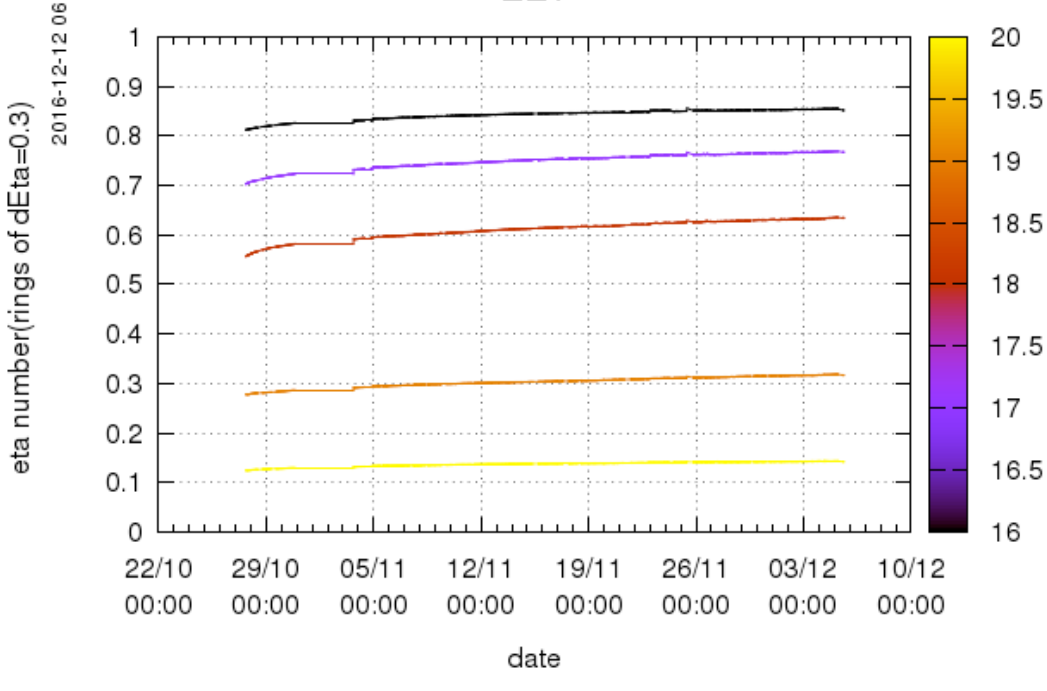


2016 laser corrections tag





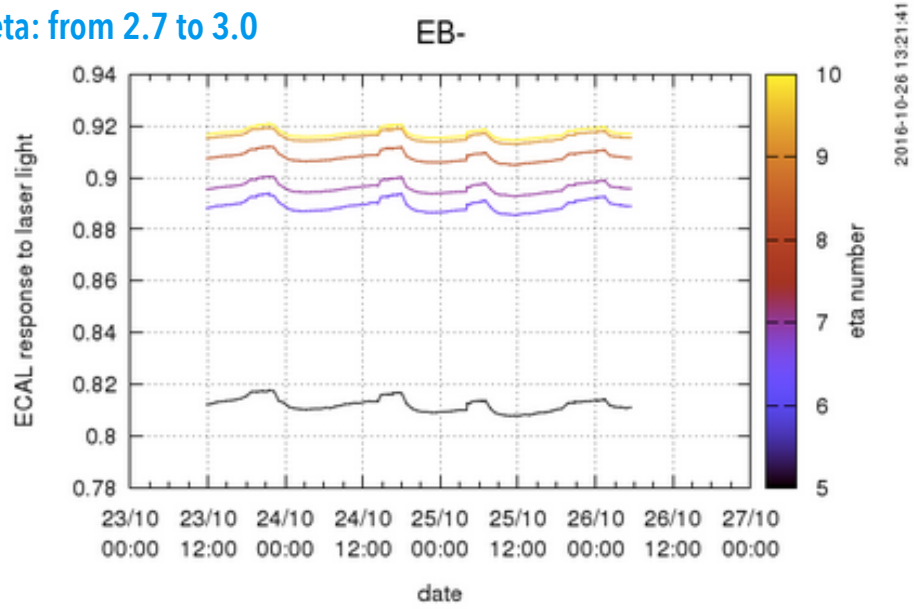


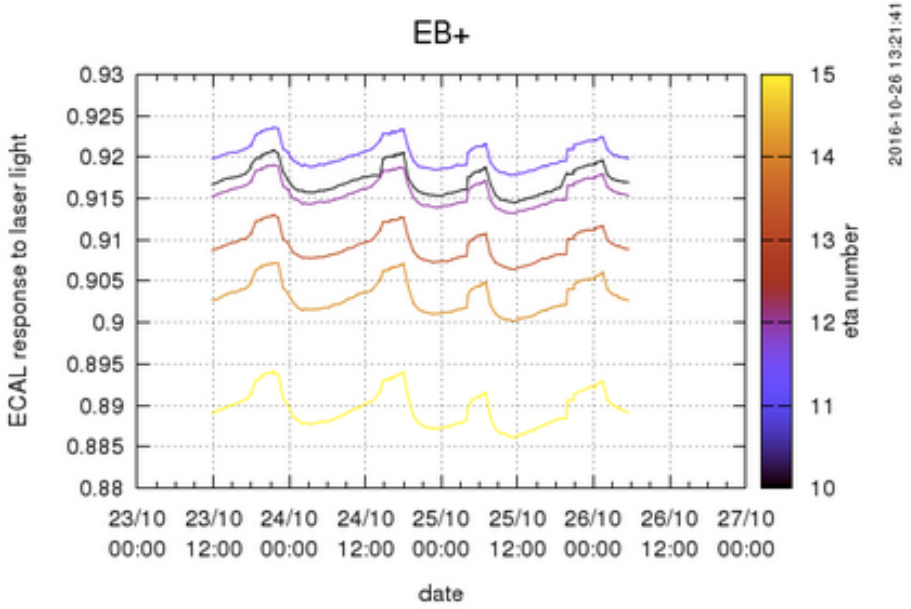


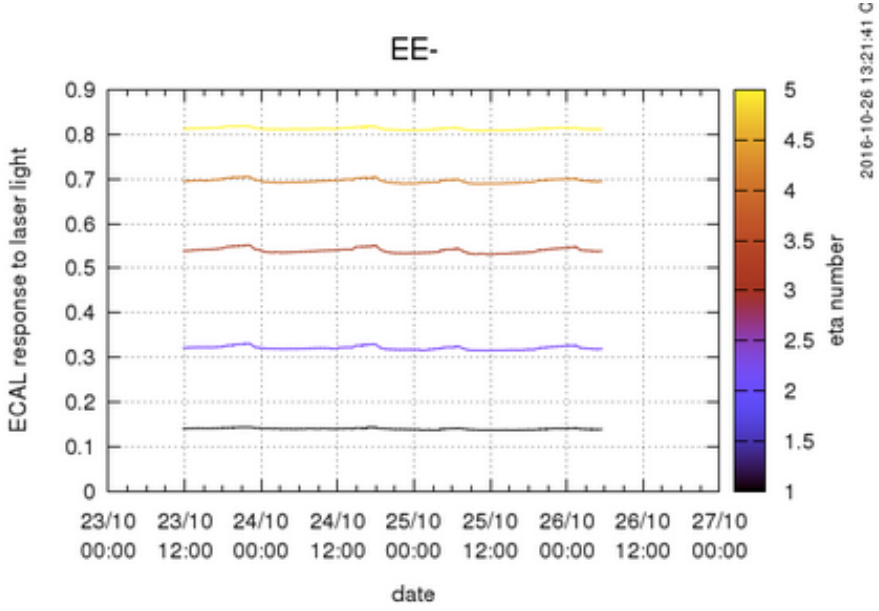
Aging Monitoring with pp collisions

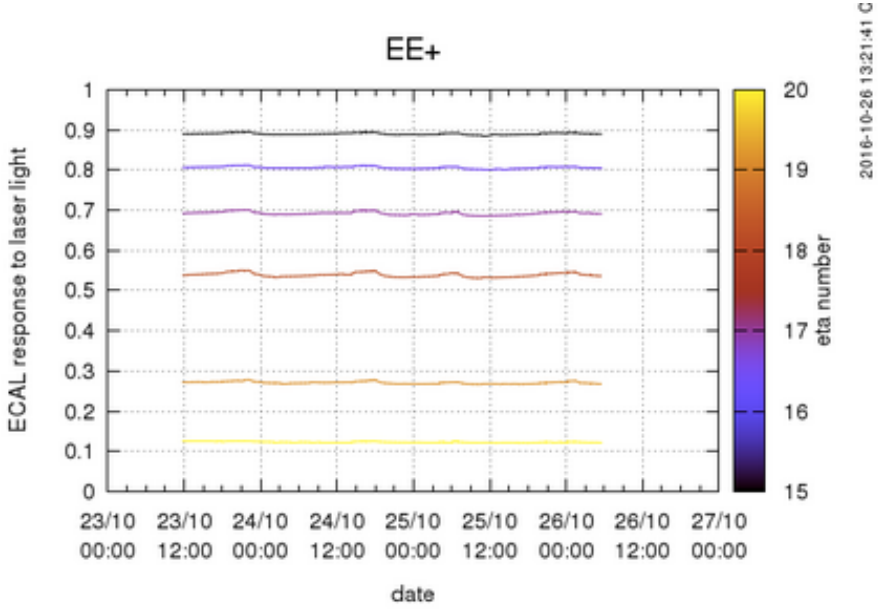
Ageing Crystals Monitoring

Median Ecal Response as a fonction of pseudo-rapidity rings: eta intervals of 0.3
ring01eta: from -3.0 to -2.7
ring20 eta: from 2.7 to 3.0

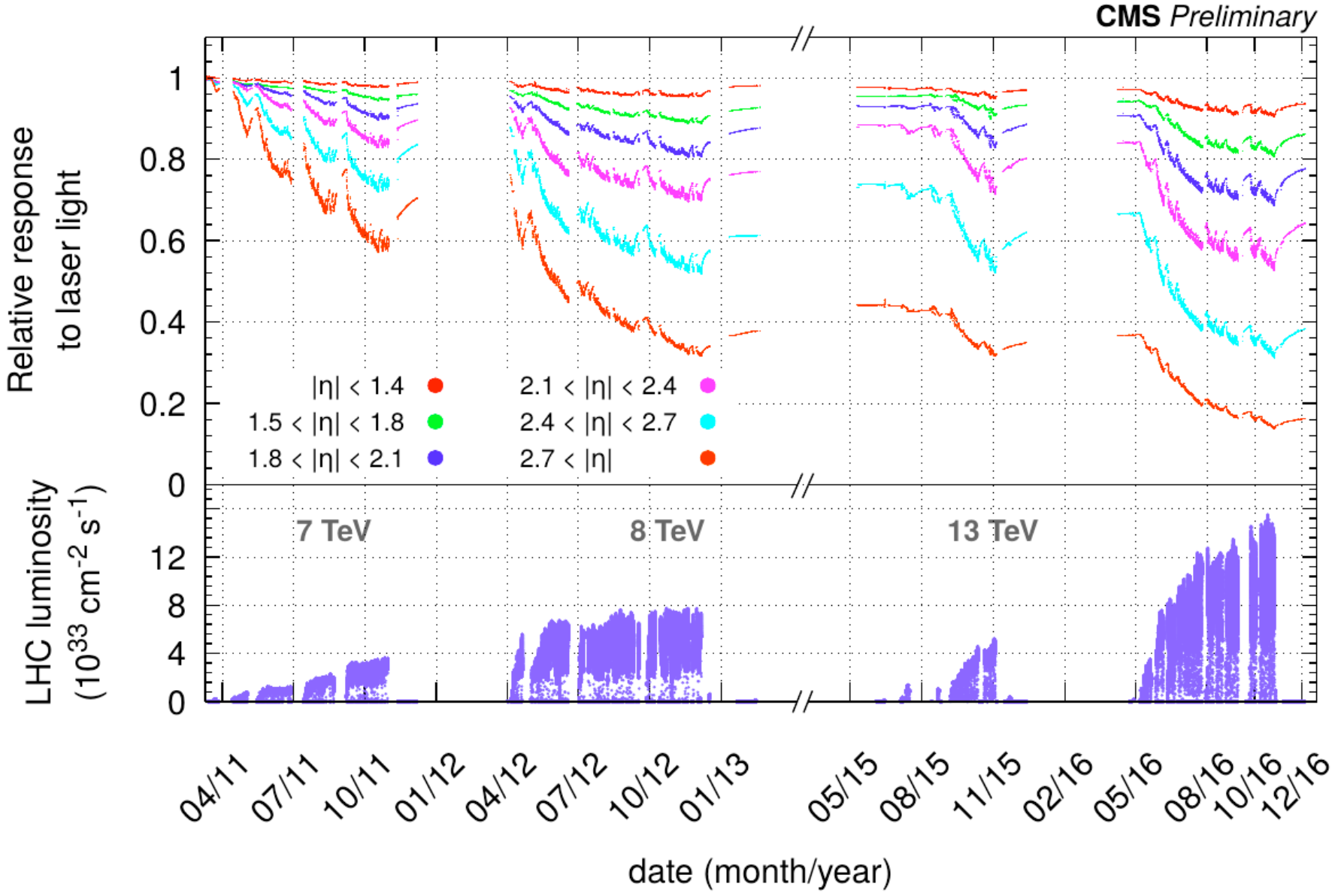








Blue Laser Monitoring history plot



Summary and Discussion

- We have had Good year of laser monitoring running
  - No hardware running issue
  - Other than the matacq-split files issue which origin is still unknown
  - and the PN electronics for modules 2,3,4 of the EB
  - Software: some remaining cuts removed
- TP corrections freezed for the future, monitor Z scale…
- Monitoring in 2017 of the ageing at high eta
- Validation of the HI part of the 2016 laser corrections tag
- History of laser tag:

https://twiki.cern.ch/twiki/bin/view/CMS/ECALLaserCorrectionTags