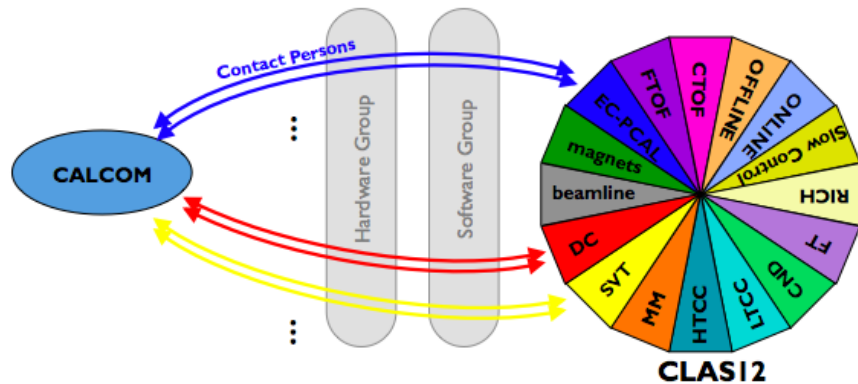


CALCOM STATUS AND PLANS



Topics:

- Calibration activities: RG-A, C, D, E, K
- DC calibration suite updates
- "Online" calibrations: RG-L
- Summary



Active Run Groups in Calibration Mode - July 2025

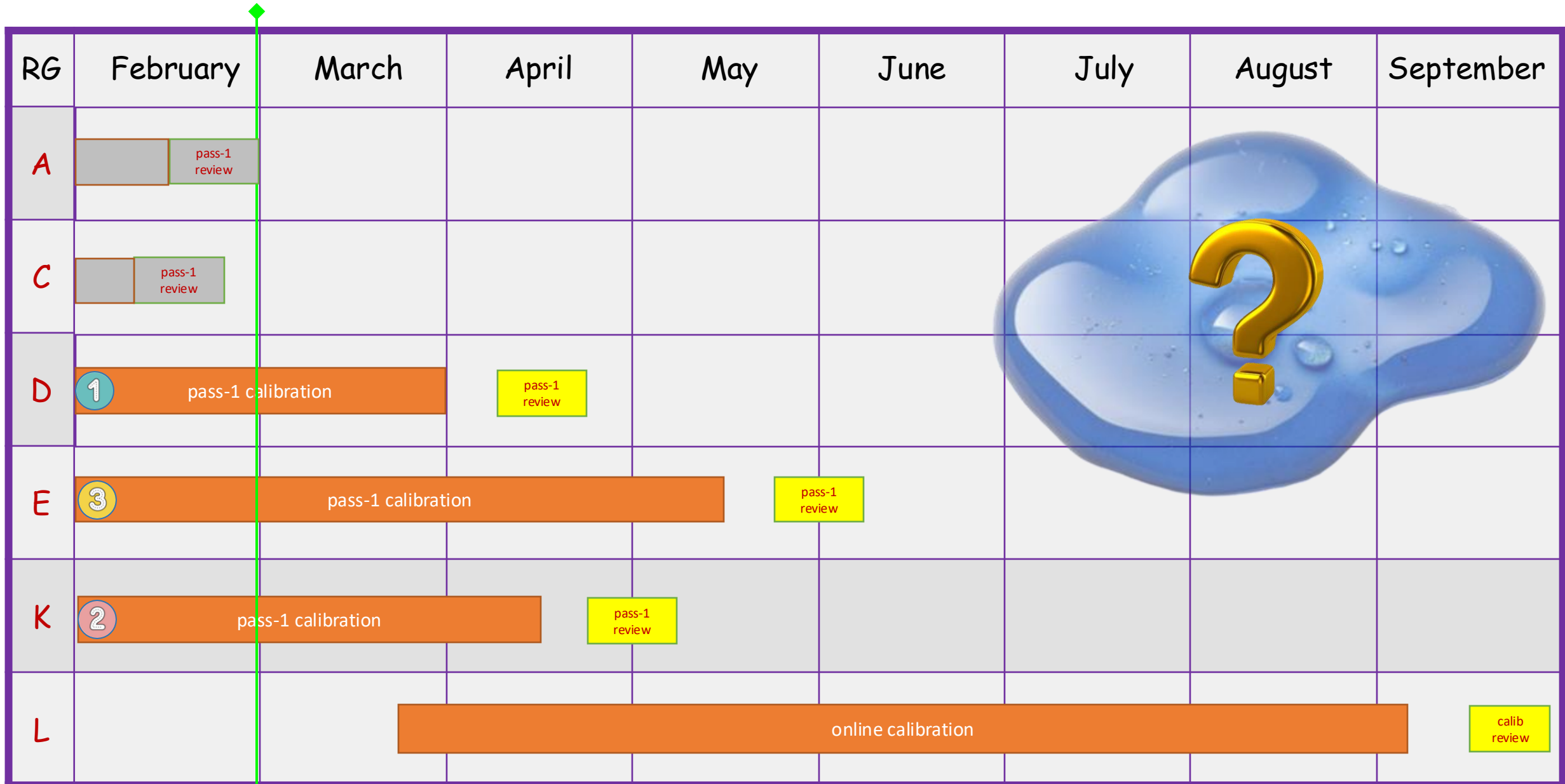
#	Run Group	Dataset	Conditions	Run Range	Stage
	RG-A	Spr18	LH2 6.4, 10.6 GeV, inbending+outbending (+ 2.2 GeV zero-field from engineering run)	3029 - 4325	Cooking
	RG-D	F23	LD2, C, Cu, Sn 10.6 GeV inbending+outbending	18329 - 19130	Cooking
1	RG-E	Spr24	LD2, C, Cu, Al, Sn, Pb 10.5 GeV	20015 - 20525	Calibrating
2	RG-K	Spr24	LH2 6.4, 8.5 GeV outbending	19200 - 19893	Calibrating
3	RG-L	Spr25	D2, 4He 2.2 GeV, 10.7 GeV	21310 -	"Online" Calibration

Three different datasets
are being calibrated in
parallel

	Analysis Coordinator	Chef
RG-E	Hayk Hakobyan	Antonio Radic
RG-K	Annalisa D'Angelo	Annalisa D'Angelo
RG-L	Mohammad Hattawy	Mathieu Ouillon, Noémie Pilleux

Calibration Timeline: February - September 2025

February 28, 2025



RG-A Spr18 - Status

[1] RG-A Spr18 - Pass-1 calibration review Dec. 1, 2023

	Run range	Beam	Torus	Solenoid
1	3000-3069	6.4 GeV	-100%	-100%
2	3070-3087	6.4 GeV	-75%	-100%
3	3097-3105	6.4 GeV	75%	-100%
4	3131-3293	10.6 GeV	100%	-100%
5	3304-3551	10.6 GeV	-100%	-100%
6	3698-3817	10.6 GeV	-100%	-100%
7	3819-3834	6.4 GeV	75%	-100%
8	3839-3853	6.4 GeV	100%	-100%
9	3855-3857	6.4 GeV	100%	-50%
10	3862-3987	10.6 GeV	100%	-100%
11	4001-4325	10.6 GeV	-100%	-100%

Note: DC HV was reduced for this run compared to F18 settings; "massive" version of FMT installed

Timeline:

- Original calibration window:
 - Jan. 8 - Jun. 21, 2024 (included alignment tasks)
- Updated calibration window:
 - Jun. 1 - Aug. 31, 2024 (after completion of alignment)
 - 1 month delay due to beam offset calibrations
 - 1 month delay due to need for additional calibration iterations
 - 1 month delay due to DC calibration studies
 - 1 month delay due to cooking issues
 - 1 month delay due to manpower availability
- Pass-1 review: Feb. 26, 2025
- Cooking: Apr. 1 - XXX, 2025 (about 50% done)

1. Day 0 (January 8th): Initial CCDB tables set by Florian for engineering runs
 2. Day 1-21: DC and central alignment (central nominally completed)
 3. Day 22-32: Beam-offset (forward and central; cooking needed)
 4. Day 1-32: Pass 0-v0, Mini-timelines for initial DC calibrations
 5. Day 32-35: Pass 0-v1 cooking with beam-offset and initial DC calibrations
 6. Day 36: Pass 0-v1 timelines
Milestone 1

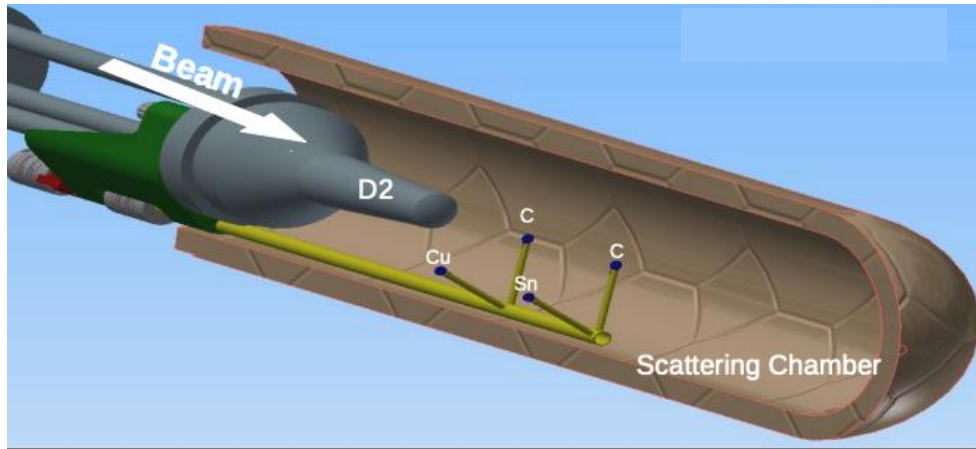
1. Day 37-45: Cook ~12 runs for FTOF calibration
 2. Day 46-59: FTOF calibration, extra DC calibrations ongoing
 3. Day 60-63: Pass 0-v2 with FTOF calibration
 4. Day 64: Pass 0-v2 timelines
 5. Day 65-69: Cook ~6 runs for FTOF contingency calibration
 6. Day 70-74: FTOF contingency calibration
 7. Day 75-79: Pass 0-v3 with FTOF contingency calibration
 8. Day 80: Pass 0-v3 timelines
Milestone 2

1. Day 81-83: RF calibration using pass-0 v3
 2. Day 84-87: Pass 0-v4 with RF calibration
 3. Day 88: Pass 0-v4 timelines
Milestone 3

1. Day 89-100: Cooking of ~20 full runs for subsystem calibration
 2. Day 101-115: Subsystem calibrations and AI training/denoising validation
 3. Day 116-119: Pass 0-v5 with initial subsystem calibrations
 4. Day 120: Pass 0-v5 timelines
 5. Day 121-126: Cooking of ~10 full runs for subsystem contingency calibration
 6. Day 127-133: Subsystem contingency calibrations
 7. Day 133-136: Pass 0-v6 with subsystem contingency calibrations
 8. Day 137: Pass 0-v6 timelines
 9. Day 138-143: Cooking of ~12 full runs for physics analysis validation
 10. Day 143-172: Misc contingency
Milestone 4

RG-D F23 - Status

[2] RG-D F23 - Pass-1 calibration
review Sep. 20, 2024



Target	Schedule
LD ₂	3
⁶³ Cu/ ¹¹⁸ Sn	8
LD ₂	3
¹² C/ ¹² C	7
LD ₂	2
⁶³ Cu/ ¹¹⁸ Sn	9
LD ₂	3
¹² C/ ¹² C	7
LD ₂	3
⁶³ Cu/ ¹¹⁸ Sn	11

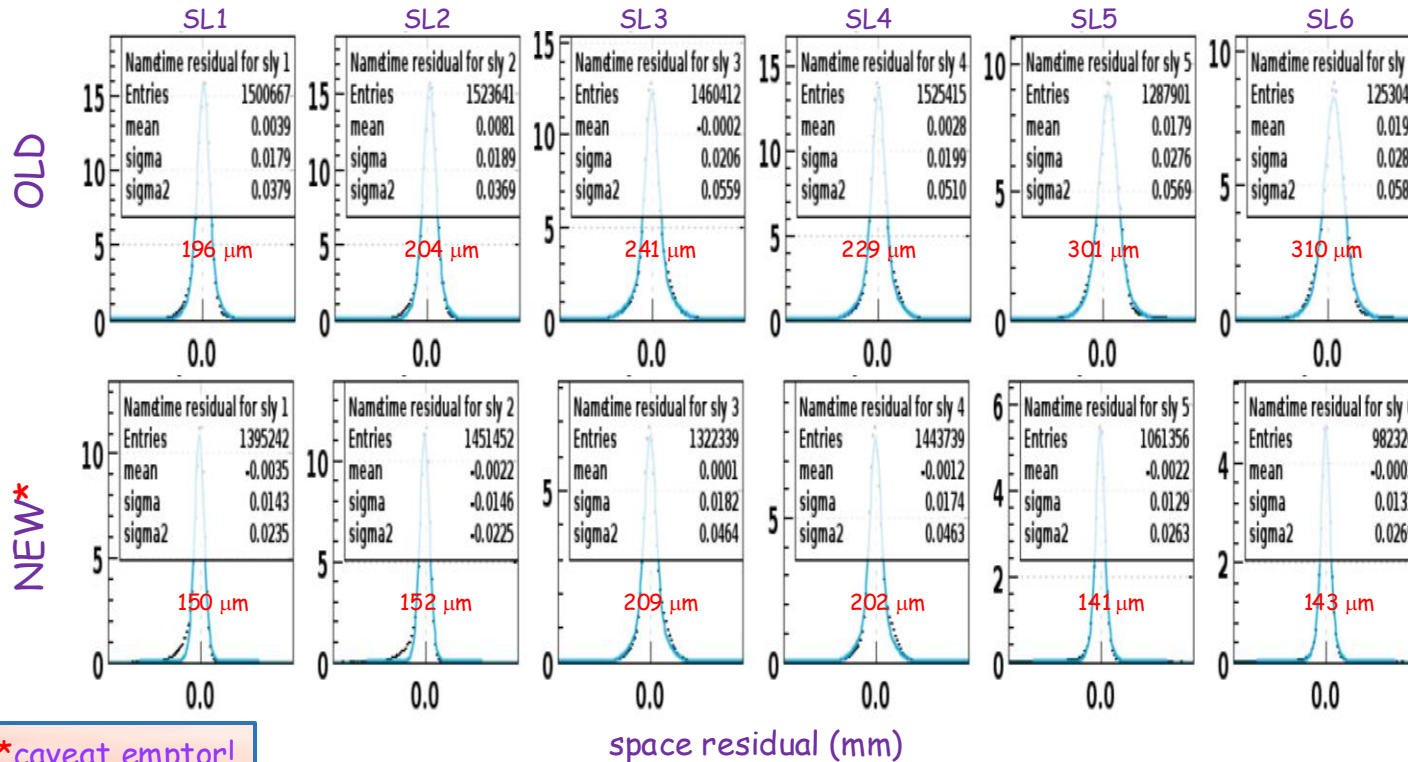
Timeline:

- DC alignment:
 - Initial alignment in Oct. 2023 - completed re-work in June 2024 - 5-month delay to original schedule
- Updated calibration window:
 - Aug. 26 - Dec. 20, 2024
 - 1 month delay due to DC time offset calibration
 - 3 month delay due to DC time-to-distance calibration
 - 1 month delay due to schedule review
- Pass-1 review: May 27, 2025
- Cooking: Jun. 13 - XXX, 2025 (~6% done)

• Calibration timeline (tentative estimates):

- ✓ I // II: ~ 20-to-25 runs for DC & FTOF (at least for the latter) calibrations: **25 days!**
 - Timelines for QA checks: 1 week each ⇒ **15 days (Milestone 1)**
- ✓ III: RF RbR calibration and associated Pass0 cooking (10 files?): **15 days** (week for cooking and another for calibration) ✓
 - Timelines for QA checks: **7 days (Milestone 2)**
- ✓ IV: 5 subsystems // calibration, assuming 2 (IB; OB?) runs each: **10 days**
 - Timelines for QA checks: **7 days (Milestone 3)**
- ✓ V // VI: Recook, recalibrate, and monitor via (mini-)timelines as needed and retrain the RG-D AI network: **10 days (Milestone 4)**
- ✓ **Milestone 1 ⇒ Milestone 4: 90 days + 10 (15) days** lead time due to any cooking hiccups related to resource limitations → **100 (105) days**; could be done by **12/6/24 (?)** by counting from 8/20 when the beam spot calibration started!

DC Calibration Suite



Improvements to code/algorithms verified in single SL fits

👉 Studies in progress to study impact on reconstruction



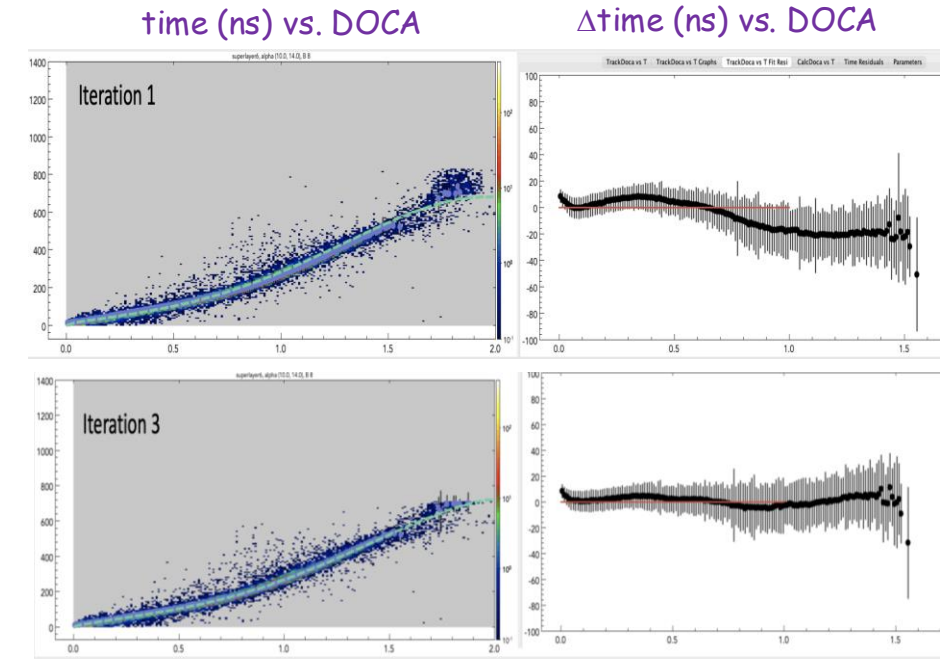
Working to speed up the DC calibration process: **t00** → **t2D** → **pressure fits**

Recent improvements in the DC calibration suite:

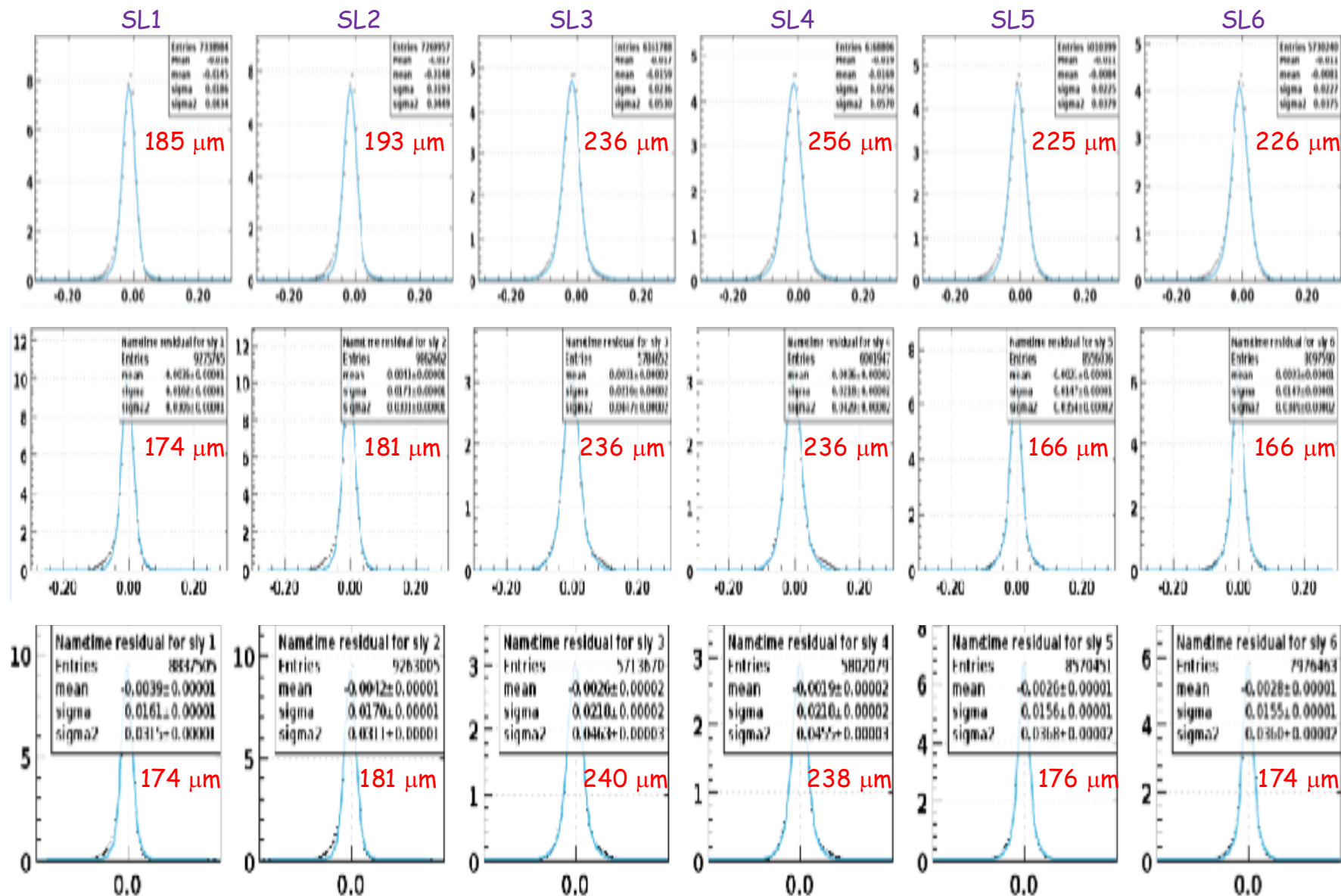
- 1) Improve algorithmic approach to account for time-walk correction
- 2) Improve B-field dependent parameterization for R2
- 3) Add improved metrics for calibration convergence
- 4) Improved automation



See update by Florian Hauenstein



DC Calibration Suite ... A More "Real World" Study

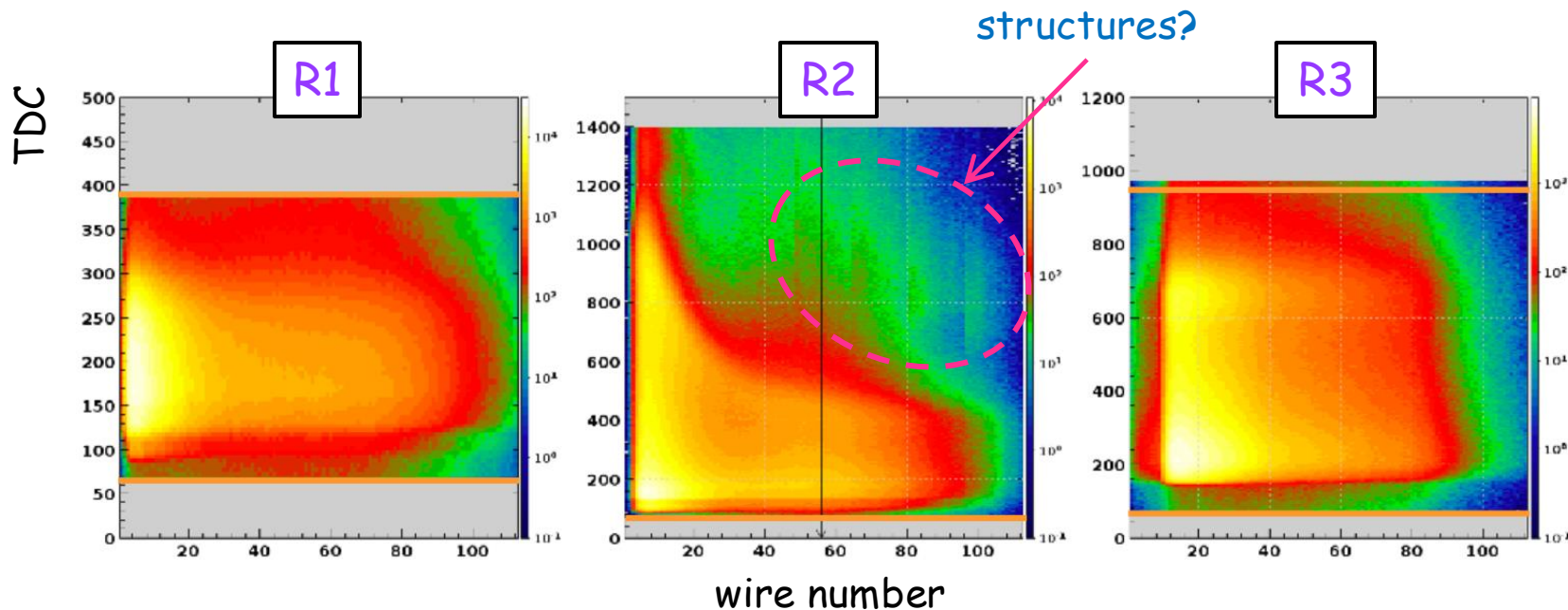


Calibration Jan. 2024:
Only electrons, $\beta > 0.9$

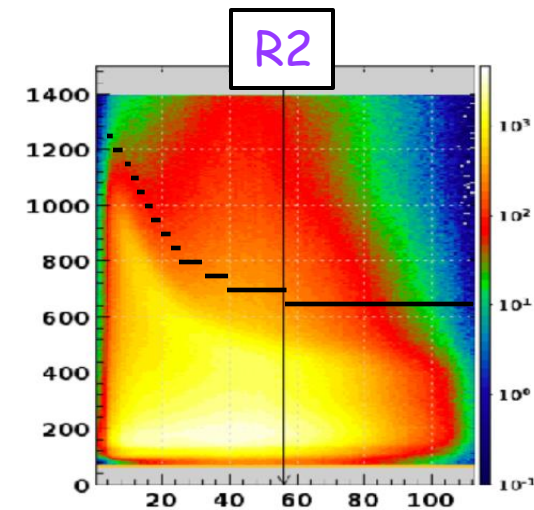
Calibration v2:
Only electrons, $\beta > 0.9$

Calibration v2:
All particles, $\beta > 0.5$

DC TDC Window Cuts



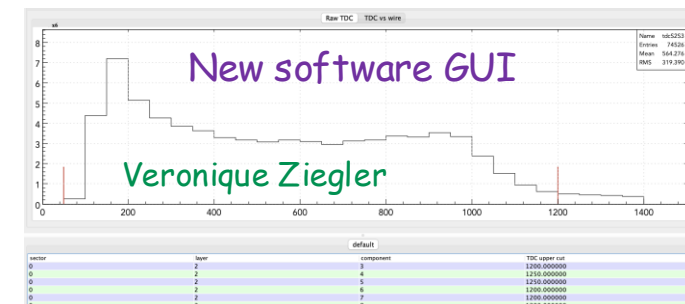
Data sorted using hits associated with tracks



- TDC min/max values implemented in reconstruction supposed to be tighter than TDC readout windows
- Double hits on wire per event - second hit overwrites the first hit in decoder - but only for times above TDC "software" TDC max cut
 - This leads to loss of efficiency for these hits
- Step #1: Modify decoder to not allow overwrite of first hit in time
- Step #2: Implement proper TDC min/max cuts for R1, R2, R3



See update by Florian Hauenstein



DC Sector-Dependent Calibrations

Region 1

Region 2

Region 3

SL1

SL2

SL3

SL4

SL5

SL6

$\sigma = 163 \mu\text{m}$

$\sigma = 166 \mu\text{m}$

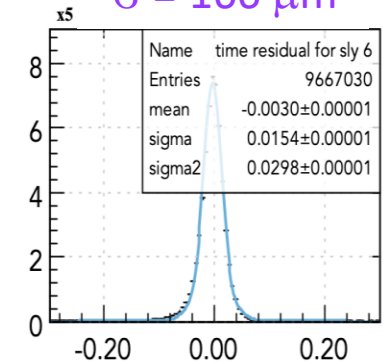
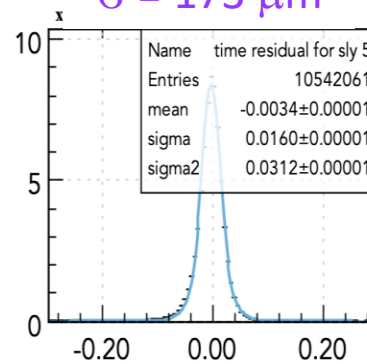
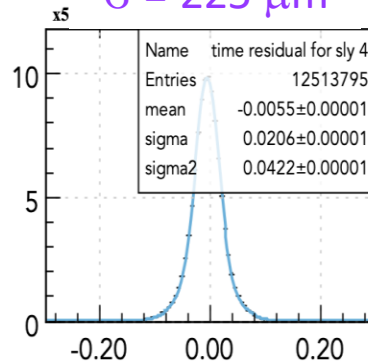
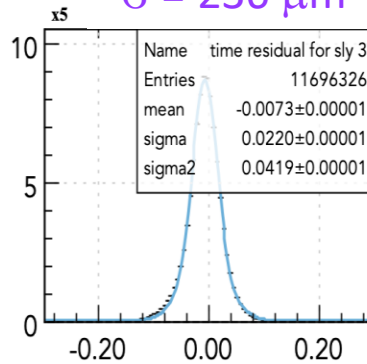
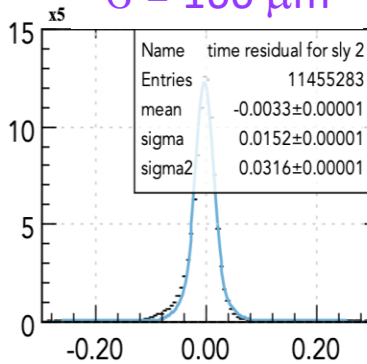
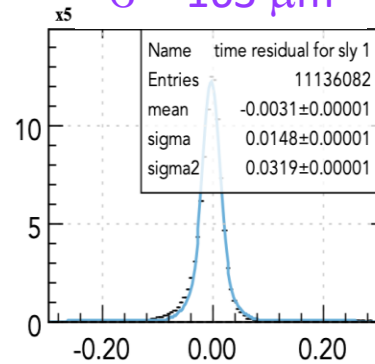
$\sigma = 236 \mu\text{m}$

$\sigma = 225 \mu\text{m}$

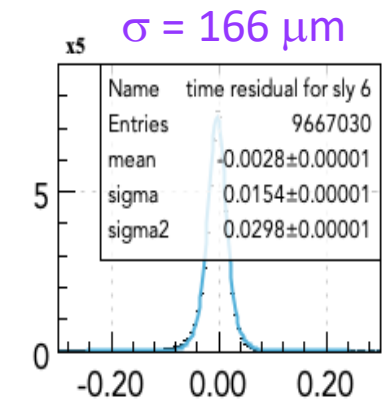
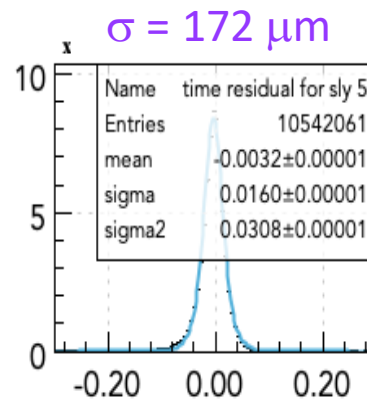
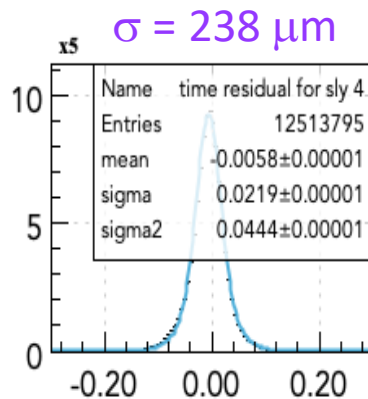
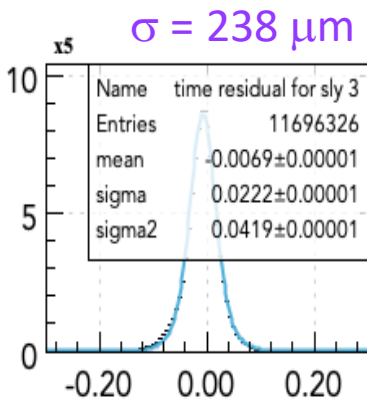
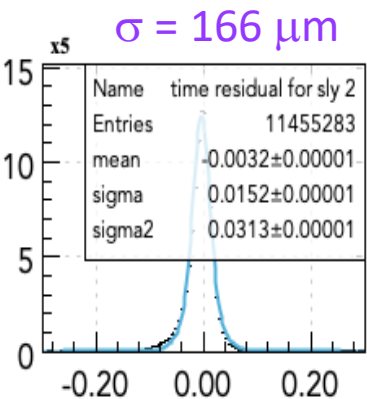
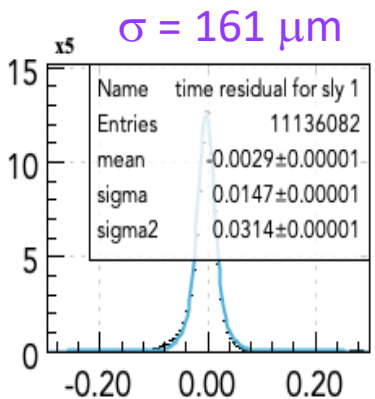
$\sigma = 173 \mu\text{m}$

$\sigma = 166 \mu\text{m}$

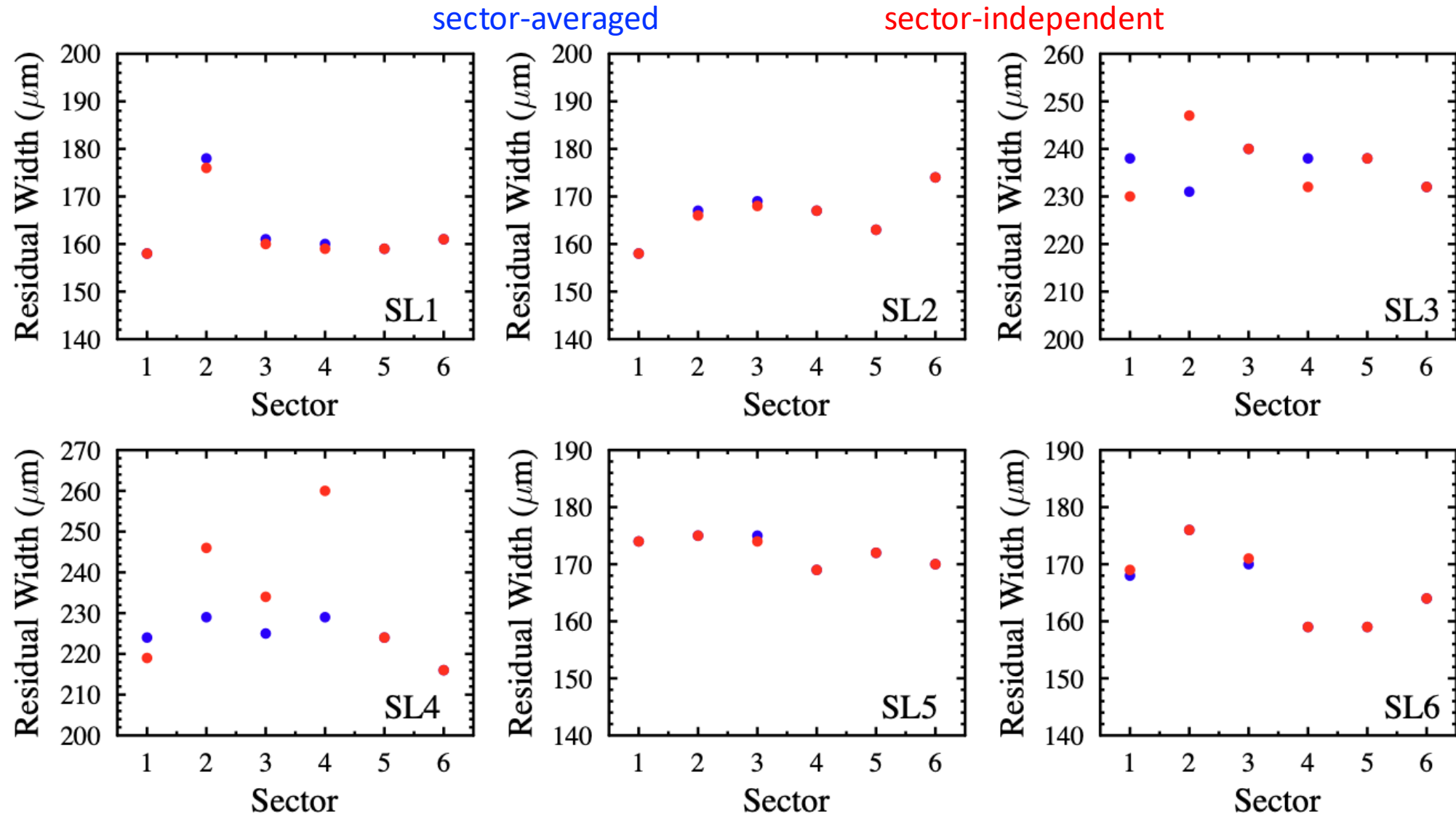
Sector
Averaging



Sector
Dependent



DC Sector-Dependent Calibrations



RG-K Spr24 - Status

[3] RG-K Spr24 - Pass-1 calibration
review Oct. 11, 2024

Where do things stand?

- Alignment and beam offset calibration complete
- Detector calibration complete
- DC calibration (with new protocols) complete for production data run range (Jan. - Mar. 2024)
- Hardware status tables complete

Remaining work:

- DC calibrations for commissioning run range (2023)
- AI network training for DC
- DC efficiency studies vs. beam current (data vs. MC)
- Physics validation and ancillary information checks
- Detailed study of DC resolution vs. HV
- Pass-1 cooking review by end of August 2025

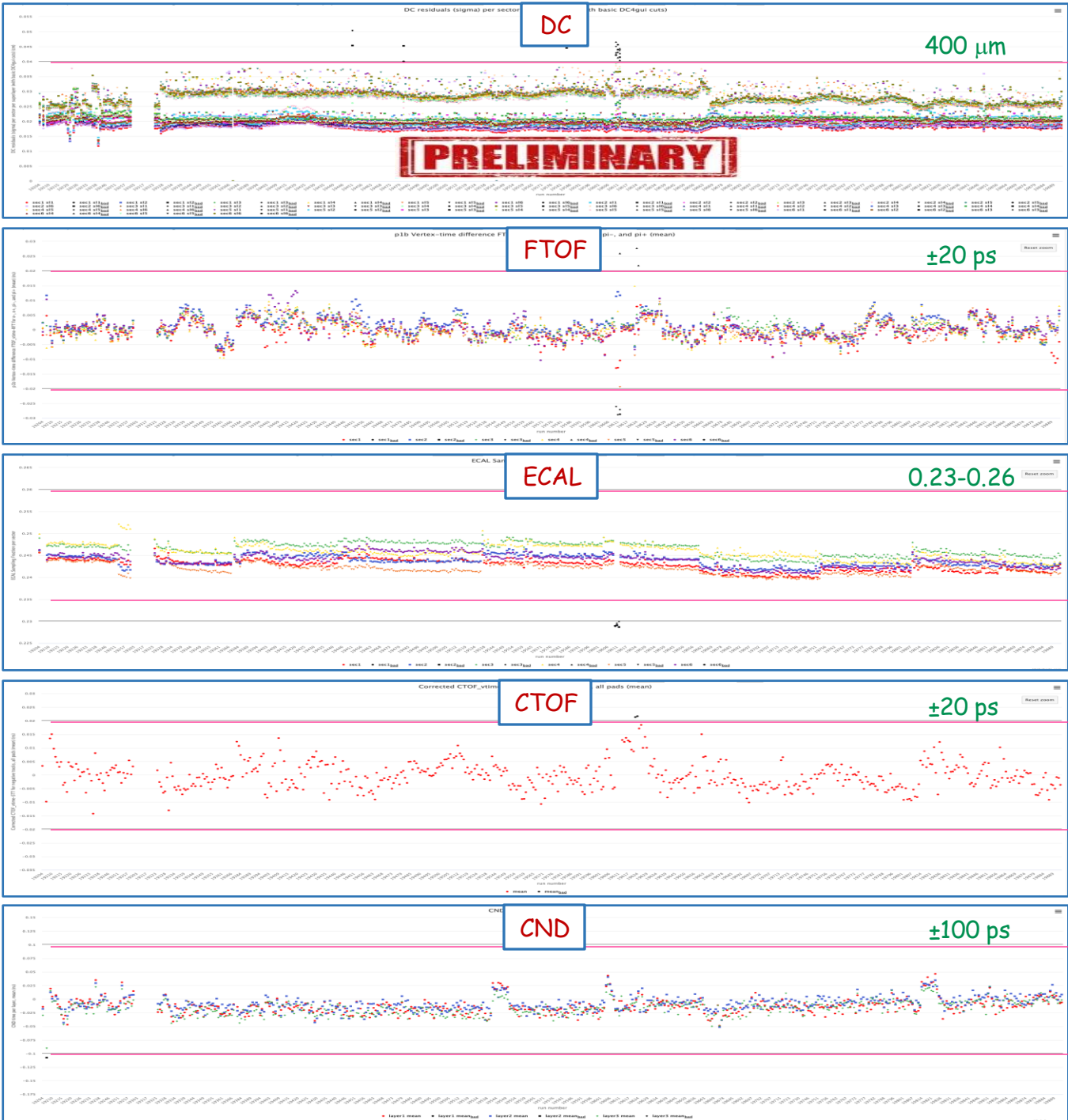
Assumptions and Estimates: • Average Processing Speed = 800 MEv/day (~ 8 full runs/day) • Milestones at each pass0 monitors & timelines • Calibration needs are announced 5 days in advance to calibrators to maximize calibration time performances • Calibration progress reported at CALCOM weekly meetings Maximum Calibration runs cooking → 20 runs → 3 days processing time Pass 0 cooking time + monitoring & timelines including monitoring checks and quality assessment with calibrators → 7 days									
Re-Calibration Timeline:									
1) Beam-Offset Calibrations:	Started by Mariana – goes in parallel with other calibrations								
2) FTOF calibration:	<table><tr><td>week 1</td><td>Cook 20 calibration runs for FTOF calibration</td></tr><tr><td>week 2</td><td>pass 0 & timelines</td></tr><tr><td>week 3</td><td>FTOF calibration iteration</td></tr><tr><td>week 4</td><td>pass 0 & timelines</td></tr></table> Milestone 1	week 1	Cook 20 calibration runs for FTOF calibration	week 2	pass 0 & timelines	week 3	FTOF calibration iteration	week 4	pass 0 & timelines
week 1	Cook 20 calibration runs for FTOF calibration								
week 2	pass 0 & timelines								
week 3	FTOF calibration iteration								
week 4	pass 0 & timelines								
3) RF calibration:	<table><tr><td>week 5</td><td>RF calibration using pass 0</td></tr><tr><td>week 6</td><td>pass 0 & timelines with RF calibration</td></tr></table> Milestone 2	week 5	RF calibration using pass 0	week 6	pass 0 & timelines with RF calibration				
week 5	RF calibration using pass 0								
week 6	pass 0 & timelines with RF calibration								
4) CLAS12 subsystem calibration:	<table><tr><td>week 7:</td><td>Cook specific calibration runs for subsystems calibration(DC, ECAL, FT, HTCC,...)</td></tr><tr><td>week 8 :</td><td>Subsystem calibration (done in parallel), test of high-level QA on fully cooked runs</td></tr><tr><td>week 9 :</td><td>Pass 0 & timelines with subsystem calibrations, cook of ~4 full runs to check high-leve physics</td></tr><tr><td>week 10:</td><td>Final check of specs, investigation of full runs</td></tr></table> Milestone 3	week 7:	Cook specific calibration runs for subsystems calibration(DC, ECAL, FT, HTCC,...)	week 8 :	Subsystem calibration (done in parallel), test of high-level QA on fully cooked runs	week 9 :	Pass 0 & timelines with subsystem calibrations, cook of ~4 full runs to check high-leve physics	week 10:	Final check of specs, investigation of full runs
week 7:	Cook specific calibration runs for subsystems calibration(DC, ECAL, FT, HTCC,...)								
week 8 :	Subsystem calibration (done in parallel), test of high-level QA on fully cooked runs								
week 9 :	Pass 0 & timelines with subsystem calibrations, cook of ~4 full runs to check high-leve physics								
week 10:	Final check of specs, investigation of full runs								
5) AI and denoising studies, final validations :	<table><tr><td>week 11-12</td><td>AI training for tracking detectors and denoising studies</td></tr><tr><td>week 13:</td><td>Hardware status table, cable swaps, efficiency versus beam current studies, Final validation</td></tr></table>	week 11-12	AI training for tracking detectors and denoising studies	week 13:	Hardware status table, cable swaps, efficiency versus beam current studies, Final validation				
week 11-12	AI training for tracking detectors and denoising studies								
week 13:	Hardware status table, cable swaps, efficiency versus beam current studies, Final validation								

Timeline:

- Original calibration window:
 - Oct. 15, 2024 - Feb. 7, 2025
 - 3 month delay to start DC calibrations
 - 2 months to complete DC calibrations
- Pass-1 review: TBD
- Cooking: TBD

RG-K Spr24 - Status

CLAS subsystem calibrations have converged - waiting for DC calibrations for Dec. 2023 run period



Run #	R1 HV Setting	R2 HV Setting	R3 HV Setting
19220	10	11	11
19222	11	12	12
19223	9	10	10
19224	10	10	10
19225	10	10	11
19226	10	10	11
19228	10	12	11
19229	10	11	10
19238	10	11	12
19239	12	13	13
19243	11	11	11
19244	10	12	10

RG-E Spr24 - Status

[4] RG-E Spr24 - Pass-1 Calibration
review Jan. 31, 2025

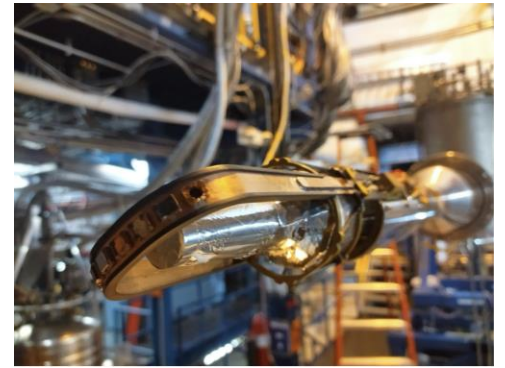
Calibration estimated timeline:

- Beam offset -> Completed ✓
- DC/FTOF ~10 runs
 - Cook calibration runs + pass 0 and timelines checks -> 2 weeks
 - Reiterate calibration -> 2 weeks (milestone 1)
- RF -> calibration using pass 0 + new pass0 and timelines -> 2 weeks (milestone 2)
- CLAS12 Subsystem Calibration -> CND, CTOF, ECAL, HTCC, LTCC, RICH ~10 runs
 - Cook calibration runs for subsystems -> 1 week
 - Subsystem calibrations -> 1 week?
 - Pass0 and timelines with new calibrations -> 1 week
 - Checks of specs -> 1 week
 - Recook and recalibrate neccessary runs -> 1-2 weeks
- Extra week of unforeseen problems and cooking delays related to resource limitations

Total: 12-13 weeks.

Timeline:

- Original calibration window:
 - Feb. 1, 2024 - May 10, 2025
 - 2 month delay for DC calibrations
 - 1 month delay for subsystem calibrations
- Pass-1 review: TBD
- Cooking: TBD



Where do things stand?

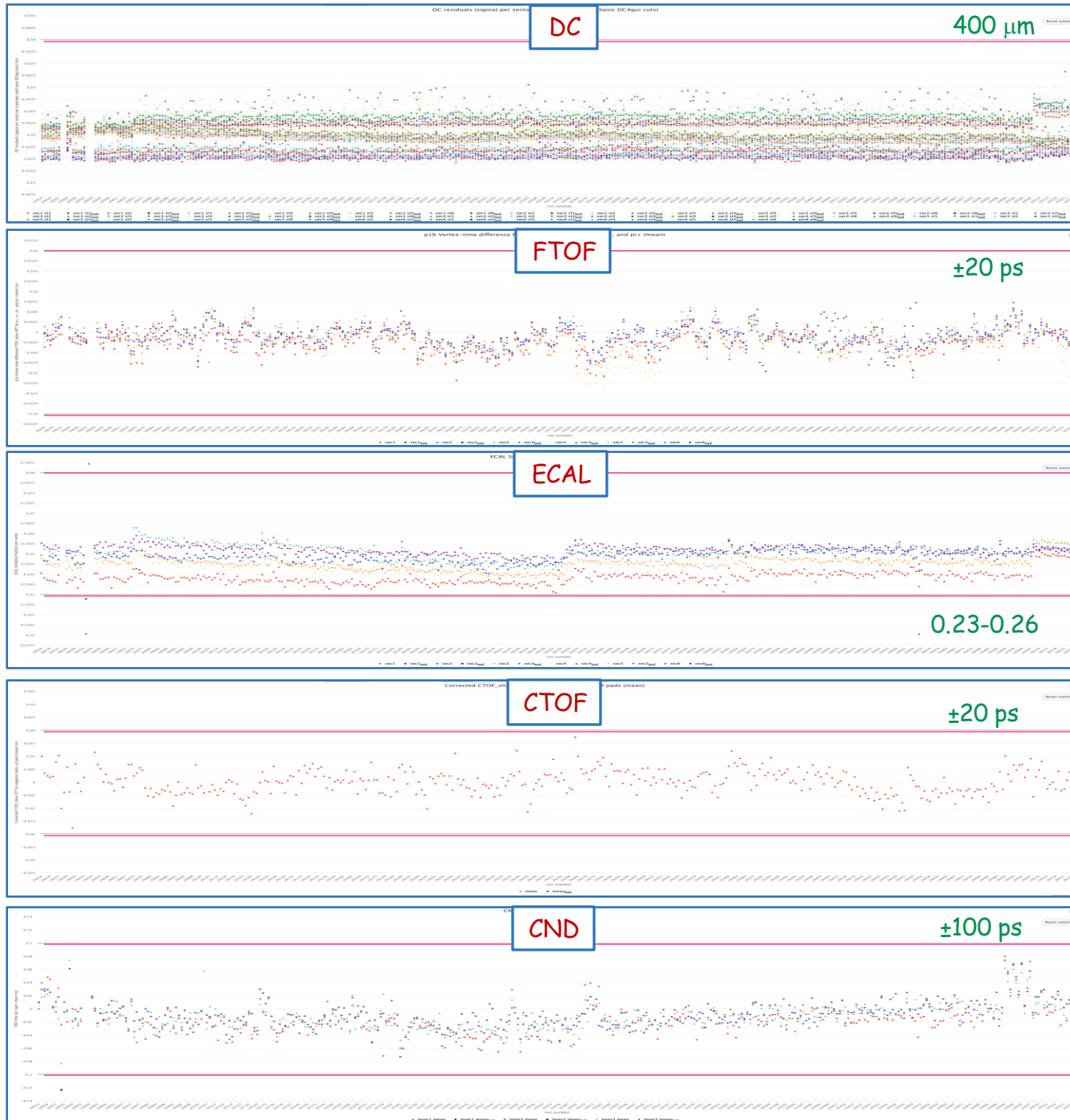
- Alignment and beam offset calibration complete
- Detector calibration through 2 iterations
- DC calibration (with new protocols) complete

Remaining work:

- Hardware status tables
- AI network training for DC
- DC efficiency studies vs. beam current (data vs. MC)
- Physics validation and ancillary information checks
- Pass-1 cooking review by end of August 2025

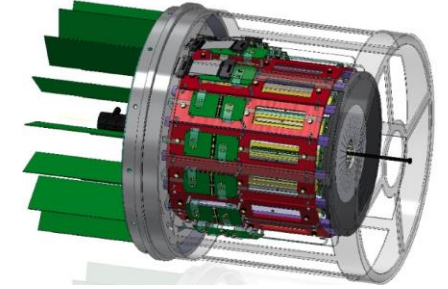
CLAS subsystem calibrations have nearly converged.

- 14



RG-L Spr25 - Status

[6] RG-L - Online calibration



Where do things stand?

- FD calibration of 2 reference runs completed (1-pass, 5-pass)
- DC alignment check complete
- Online pass-0 running from the start
- Initial RF calibration complete
- Beam offset calibration for FD complete
- Initial DC calibration complete
- Beginning FINAL calibration for FD subsystems
- Develop AHDC and ATOF calibration suites using beam data and MC

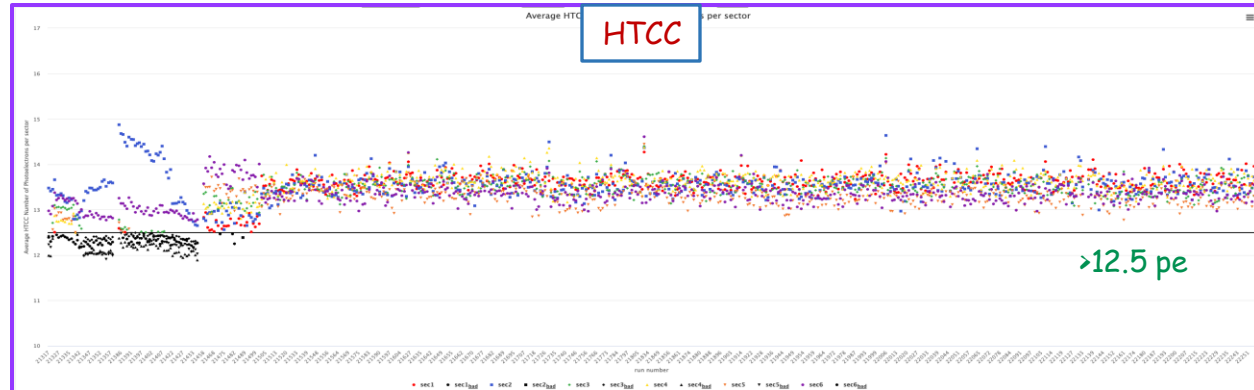
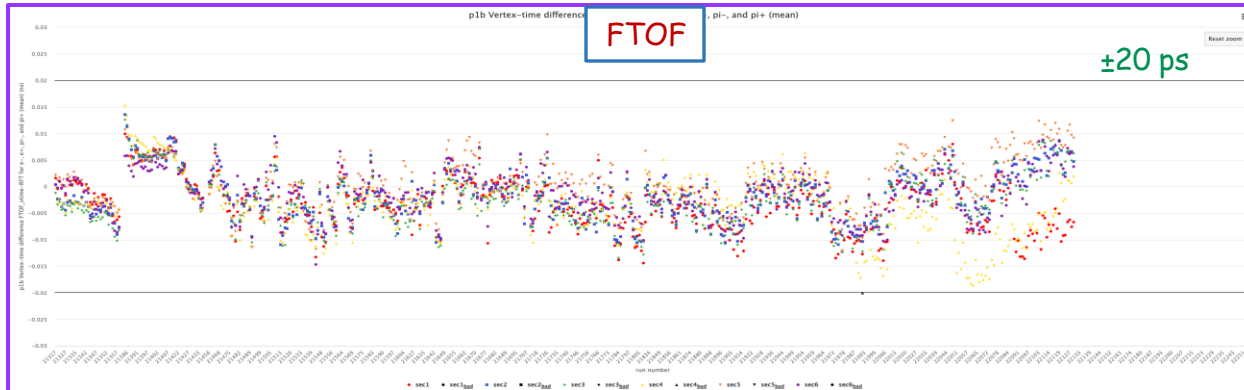
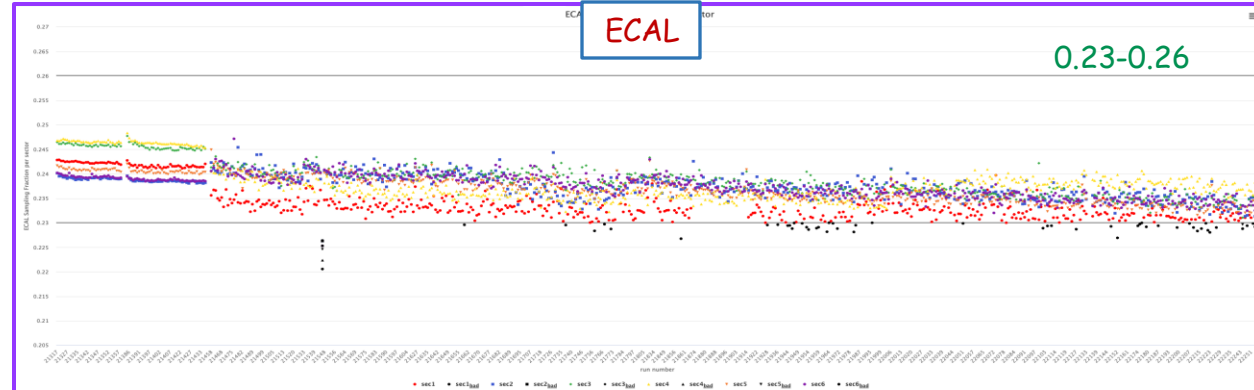
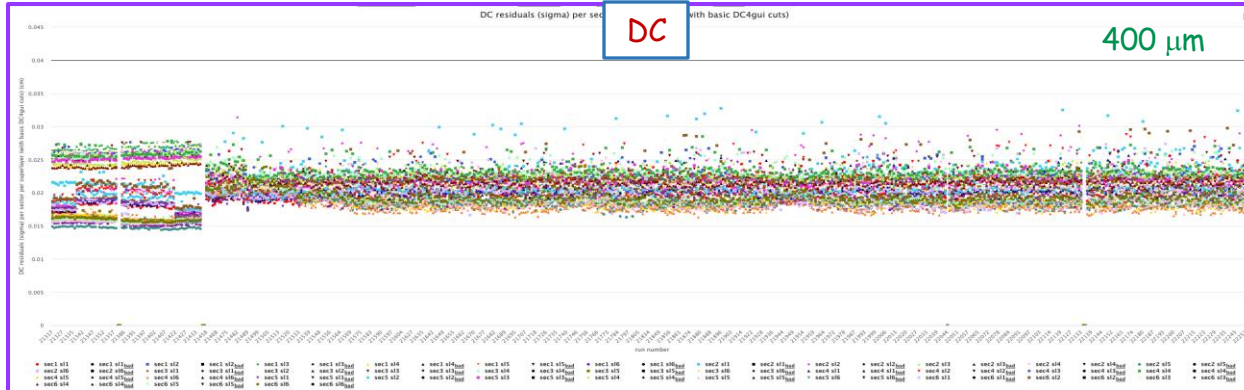


See ALERT update by Michael Paolone

Next steps:

- Complete full DC and FD calibrations
- AI network training for DC
- Complete development/validation:
 - AHDC calibration suite
 - ATOF calibration suite
- Calibrate AHDC and ATOF - including alignment
- Study physics response of ALERT to separate p, 2H, 3He, 3H, 4He final states
- Complete archaeology of dataset to define production run list
- Too soon to predict when cooking of dataset will begin

RG-L Spr25 - Status

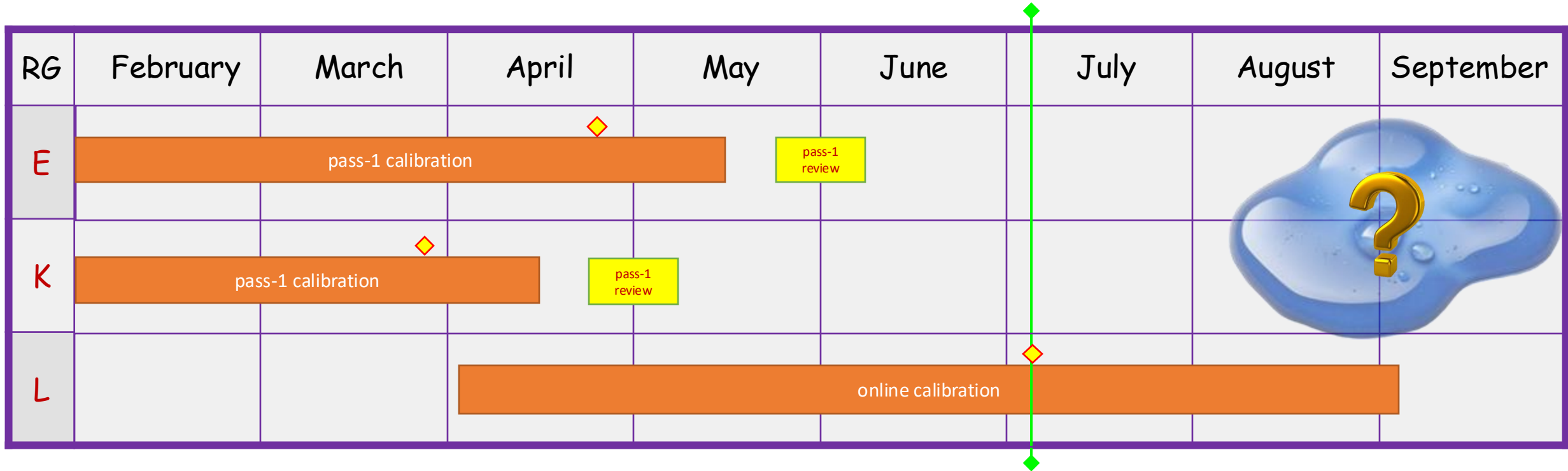


RG-L Forward Detector starting point for "final" subsystem calibrations

Now preparing to cook runs for FTOF calibration up through June 17, 2025

Calibration Timeline: February - September 2025

July 4, 2025



Summary

- CALCOM has been overseeing the detector calibrations of the different CLAS12 datasets:
 - Completed calibrations: RG-A Spr18, RG-D - cooking in progress
 - Current focus: RG-E, RG-K, RG-L
 - RG-E, RG-K - work advanced - entering final phase of efforts to prepare for cooking review
 - RG-L - final calibrations for FD in progress; developing ALERT calibration suites/protocols

- CALCOM is a critical service-work committee for the CLAS Collaboration:
 - Lots of folks are part of this work: CALCOM, coordinators, chefs, timeline crew, subsystem leaders, calibrators, alignment team, Software Group, data validators, ...



CLAS12_CALCOM@JLAB.ORG

- Related efforts:
 - Calibration task force - addressing task force charge nearly complete
 - ➔ See talk by Raffaella De Vita
 - Discussion of upcoming pass-3 - DC reconstruction, alignment, DC calibration, AI for CVT tracking, ...

Backup Slides

CLAS12 Calibration and Commissioning

Contents [hide]

1 CALCOM Committee

2 CLAS12 Subsystem Contact Persons

3 Commissioning Plans

4 CLAS12 Calibration

5 Meetings and Minutes

CALCOM Committee

The role of the CALCOM (Calibration and Commissioning) Group is to be responsible for the development of the tools/algorithms to calibrate the CLAS12 detector and to help ensure that the design performance specifications are met. In addition the CALCOM group is responsible for developing the CLAS12 commissioning plan and overseeing its execution.

The committee is composed by:

- Daniel Carman (chair / hardware)
- Raffaella De Vita (software / hardware)
- Gagik Gavalian (common tools)
- Maurizio Ungaro (simulation)
- Veronique Ziegler (reconstruction)

CLAS12 Subsystem Contact Persons

System	Subsystem	Contact Person(s)	Software Contact Person
Calorimeters	ECAL	C. Smith	C. Smith
Central Tracker	SVT	Y. Gotra	V. Ziegler
	MM	Y. Gotra	F. Bossu, M. Defurne
	RTPC	M. Hattawy	M. Hattawy
Cerenkov Counters	HTCC	Y. Sharabian	I. Illari, W. Phelps
	LTCC	M. Ungaro	V. Mascagna, M. Ungaro
	RICH	M. Contalbrigo	M. Mirazita
Forward Tagger	FT-Cal	R. De Vita	R. De Vita
	FT-Hodo	N. Zachariou	R. De Vita
	FT-Trk	R. De Vita	V. Ziegler
Forward Tracker	DC	F. Hauenstein	V. Ziegler
	FMT	Y. Gotra	V. Ziegler
RF		R. De Vita	R. De Vita
Scintillation Counters	FTOF	D.S. Carman	D.S. Carman
	CTOF	D.S. Carman	D.S. Carman
	CND	S. Niccolai	S. Niccolai
	BAND	F. Hauenstein	F. Hauenstein



CLAS12 Calibration

Ready for Calibration Reviews:

- RG-A: Spr18, F18, Spr19
- RG-B: Spr19, F19/W20
- RG-C: Sum22, F22, W23
- RG-D: F23
- RG-E: Spr24
- RG-K: W18, Spr24
- RG-L: (TBD)
- RG-M: F20/W21

CLAS12 Dataset Information:

- CLAS12 Dataset Run ranges
- Run Group QADB information (Jan. 2025)

Information for Analysis Coordinators:

- Calibration sequence [1]
- Calibration overview [2]
- Calibration and Software Development Teams: [3]
- CCDB Tables and Usage Policies
- CLAS12 Hardware Status Word Definitions

Calibration Suite Documentation:

- Alignment: DC and FMT
- BAND: suite
- Beam Offset: suite
- Cherenkov:
 - HTCC: suite, tutorial
 - LTCC: suite
 - RICH: suite, Time calibration, Cherenkov angle calibration, Monitoring histograms and timelines, Scaler calibration runs
- CND: suite, tutorial, algorithms
- CTOF: suite, tutorial, algorithms, ccdb, geometry
- CVT:
 - MM:
 - SVT: suite
- DC: suite, tutorial, calibration wiki
- ECAL: suite
- FT:
 - FT-CAL: suite, tutorial
 - FT-HODO: suite, tutorial
- FTOF: suite, tutorial, algorithms, ccdb, geometry
- RF: suite, tutorial
- RTPC: geom, ccdb

Meetings and Minutes

- Zoom meeting connection: [4]
- 2011 Meetings
- 2012 Meetings
- 2013 Meetings
- 2014 Meetings
- 2015 Meetings
- 2016 Meetings
- 2017 Meetings
- 2018 Meetings
- 2019 Meetings
- 2020 Meetings
- 2021 Meetings
- 2022 Meetings
- 2023 Meetings
- 2024 Meetings
- 2025 Meetings



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https://clasweb.jlab.org/wiki/index.php/CLAS12_Calibration_and_Commissioning

RG-K Commissioning Run - Dec. 2023

Run Number	R1 DC HV Setting	R2 DC HV Setting	R3 DC HV Setting
19220	10	11	11
19222	11	12	12
19223	9	10	10
19224	10	10	10
19225	10	10	11
19226	10	10	11
19228	10	12	11
19229	10	11	10
19238	10	11	12
19239	12	13	13
19243	11	11	11
19244	10	12	10

START	STOP	FRIDAY, DEC 15	SATURDAY, DEC 16	SUNDAY, DEC 17	MONDAY, DEC 18	TUESDAY, DEC 19
0000	0100		"	TGT issue	60 nA	r19260 200 MeV, 60 nA
0100	0200		lumi scan runs:	TGT issue	300 MeV no DC roads	r19249
0200	0300		r19209 - 19218	TGT issue	r19233 - 19234	300 MeV no DC roads
0300	0400		10, 20, 30 nA	TGT issue	75 nA	75 nA
0400	0500		40, 50, 60 nA	TGT issue	"	r19250
0500	0600		75, 90 nA	TGT issue	300 MeV no DC roads	300 MeV no DC roads
0600	0700		DC HV scan 10 11 11	TGT issue	r19235	90 nA
0700	0800	beam off	r19219 - 19220	TGT issue	90 nA	r19251 - 19252
0800	0900	pass change; tgt work	"	TGT issue	Streaming Test	Solenoid POS to NEG
0900	1000	"	DC HV scan 11 12 12	TGT issue		
1000	1100	"	r19222	TGT issue		
1100	1200	"	DC HV scan 9 10 10	TGT issue	TGT issue	
1200	1300	ACC ready; TGT ready	r19223	TGT issue		
1300	1400	beam tuning	DC HV scan 10 10 10		DC HV scan 10 11 12	
1400	1500	beam tuning	r19224		r19238	
1500	1600	Moller runs	DC HV scan 10 10 11		DC HV scan 12 13 13	
1600	1700	beam tuning	r19225 - 19226		r19239	r19254 - trig valid prod
1700	1800	detector	DC HV scan 10 12 11		DC HV scan 11 11 11	DC & CVT thr study
1800	1900	r19204 - trig valid prod	r19228		r19243; DC HV scan 10 12 10	r19258 200 MeV, 60 nA
1900	2000	r19205 - trig valid rnd	DC HV scan 10 11 10		r19244	
2000	2100	r19206 - trig valid rnd	r19229		200 MeV no DC roads	solenoid trip
2100	2200	"			60 nA	
2200	2300	"	200 MeV no DC roads		r19245 - 19248	r19259 300 MeV, 75 nA
2300	2400	r19208 - trig valid mod	r19231 - 19232		200 MeV no DC roads	

History of HV settings for (R1, R2, R3):

- (8, 10, 9) : RG-A Spr18
- (8, 9, 9) : RG-A F18 (early)
- (9, 10, 10) : RG-A F18, RG-A/B Spr19
- (10, 10, 10) : RG-M, RG-C
- (10, 11, 11) : RG-D, RG-E
- (11, 12, 12) : RG-K Spr24 (1)
- (10, 12, 11) : RG-K Spr24 (2)

Pass-X Readiness Reviews



Readiness Review for “PASS-X” cooking of CLAS12 data

Cooking any CLAS12 data set is a computing-intensive process requiring detailed planning and preparatory work to guarantee the output data quality. For this reason, a “readiness review” is requested to authorize the start of the reconstruction data processing of any data set that makes a formal request for cooking to the CCC. The charge for this review is outlined below.

The review committee is requested to answer the charge questions based on the material presented by the Run Group and report its findings, comments, and recommendations to the CLAS Coordinating Committee.

Review Charge:

Charge #1: Is the quality of detector calibration and alignment adequate to achieve the performance specifications foreseen for CLAS12 or achievable at the current time, given the “state-of-the-art” calibration, alignment, and reconstruction algorithms?

Charge #2: Is data quality as a function of run number or time for the data set proposed for cooking stable and understood? Have runs been classified in terms of type (empty target, calibration, special, production, ...) and quality (golden run, known issues, ...), and is a detailed list available? Based on validation studies, have all CLAS12 subsystem performances been understood and issues identified?

Charge #3: Has a 'Hardware (HW) status table (i.e., bad channel table) been compiled for use in the data and MC reconstructions? Has the efficiency versus beam current been studied? How does it compare to MC simulations with the merged background? Are the DAQ translation tables correcting for all known cable swaps? At what stage(s) in the software?

Charge #4: Are analysis plans for the data set developed at adequate levels? Is the list of planned skims defined and tested running the analysis trains on preliminary data? Is all ancillary information (helicity, Faraday Cup, ...) available and understood?

Charge #5: Are the data processing tools that will be used adequate for the proposed processing task? Is the data management plan (staging area, tape destination, directory structure, logs, ...) defined and appropriate given the available resources? Is the estimate of processing time per event available and resources needed to complete the task sound?

Charge #6: Have the tools for monitoring the quality of the cooking output and identify/correct failures been defined and ready to be used?

Charge #7: Is the person-power identified and in-place for the proposed data processing?

Committee: Marco Battaglieri (chair), Nathan Baltzell, Marco Mirazita, Cole Smith, Larry Weinstein

Role: Final review of calibration quality, status tables, software and scripting before recommendation to CCC to approve production cooking (see the generic review charge).

Reviews:

- RG-B Spr19: Oct. 28, 2022
- RG-M 21/22: May 23, 2023
- RG-A Spr19: May 31, 2023
- RG-K W18: Aug. 16, 2023
- RG-A F18: Sep. 22, 2023
- RG-B F19/W20: Nov. 1, 2023
- RG-C Sum22: Jan. 26, 2024
- RG-C F22: Aug. 28, 2024
- RG-C Spr23: Feb. 19, 2025
- RG-A Spr18: Feb. 26, 2025
- RG-D Spr24: May 27, 2025

11 reviews completed since Oct. 2022

Notes:

- The calibration quality for all subsystems should meet the defined QA specifications for all datasets to allow for minimal systematics when combining data taking years apart.
- The calibration QA specifications are well defined and the Run Groups are held to the same standards.
- The committee prepares their report for delivery to the CCC to give approval to start data processing.