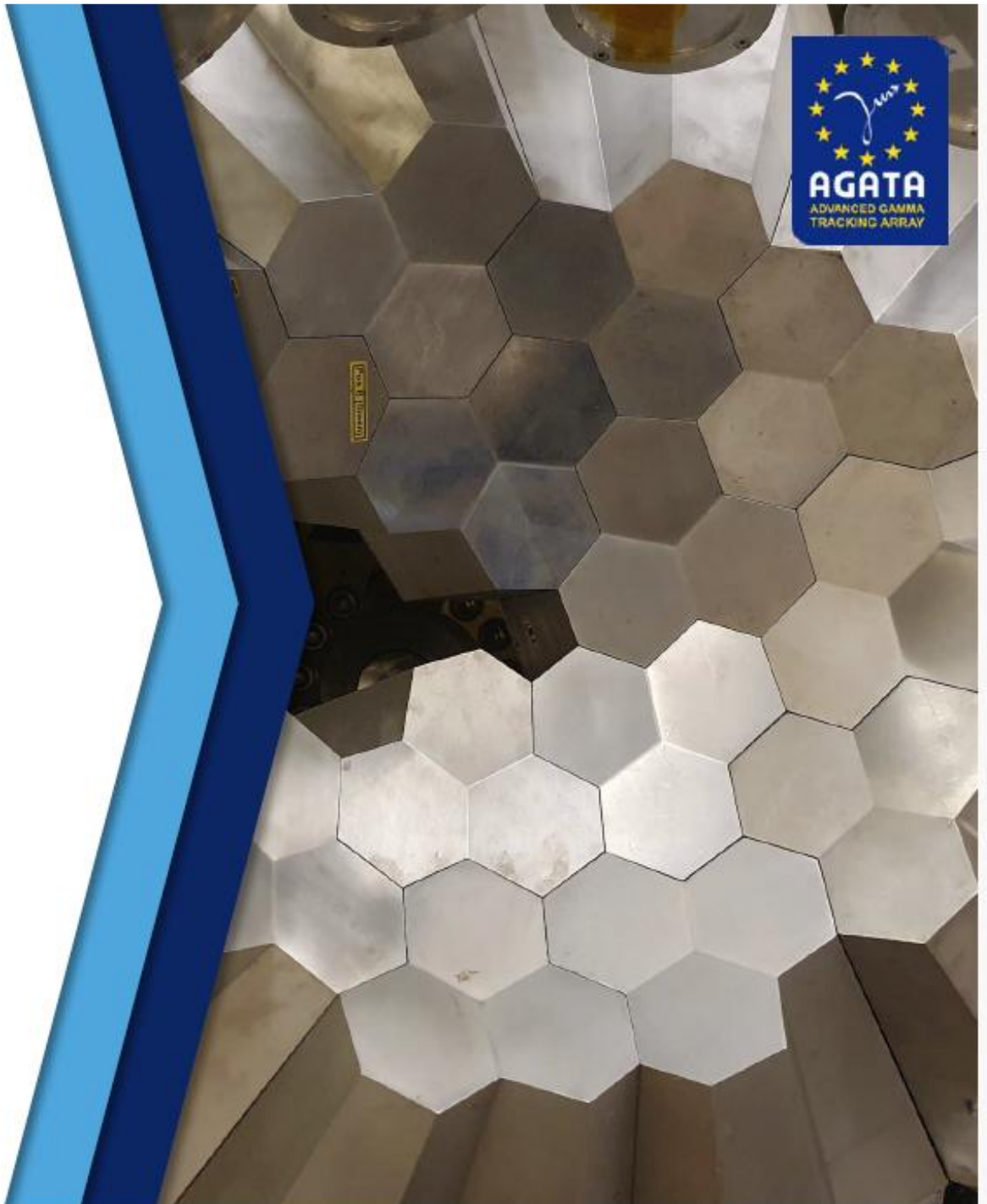
STATUS of the AGATA detectors

M. Labiche – *STFC Daresbury Laboratory*
on behalf of the Performance Team

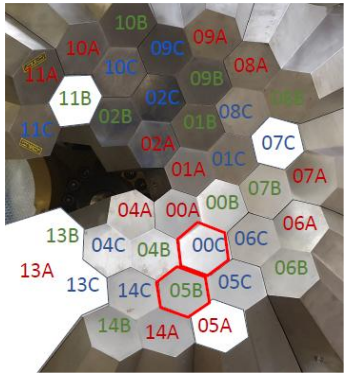


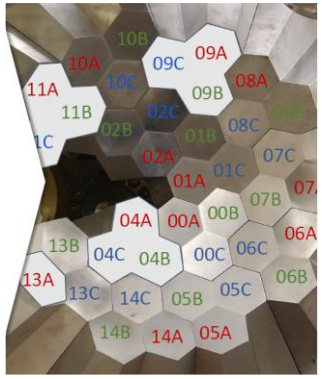
26th AGATA Week | 11th September 2026

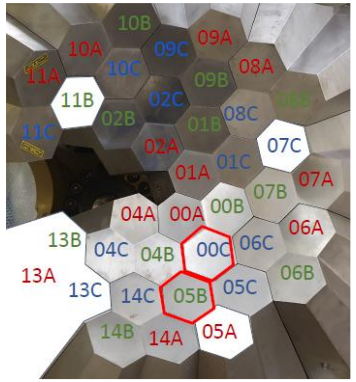
Main roles of the team

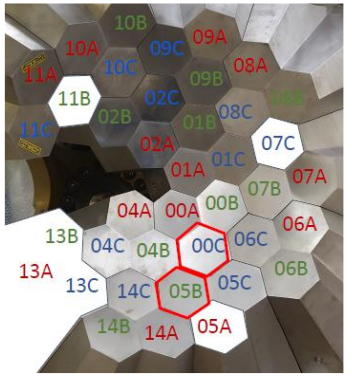
- Run/support/analyse source and in-beam performance measurements (ex: high-multiplicity, high-energy efficiency measurements and self-calibration)
- Monitor the health of each capsule in the array (ie: FWHM before and after neutron damage and relative efficiency), regularly.
- Share the results to feed the decision making process for capsule annealing/repair.
- Investigate other issues that can emerge once detector are installed in the array.

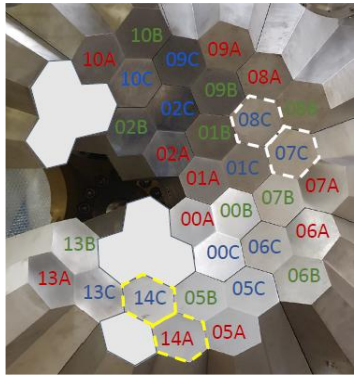
Recent status reports











ATC	Crystal ID	Position in array	Apr-25	Jul-25	Feb-26 28 crystals in DAQ	Mar-26 28 crystals in DAQ	Jul-26 28 crystals in DAQ (2 with CAEN digitisers)
1	C009	11C	Nothing reported	ATC Sent for maintenance	ATC in maintenance	ATC in maintenance	ATC in maintenance
1	B011	11B	Core broken FET - ATC put out of the array	ATC Sent for maintenance	ATC in maintenance	ATC in maintenance	ATC in maintenance
2	B019	07B	Bad resolution (oscillation of HG core. (LG ok)	Bad resolution (oscillation of HG core. (LG ok)	Bad resolution (oscillation of HG core. (LG ok)	Bad resolution (oscillation of HG core. (LG ok)	Bad resolution (oscillation of HG core. (LG ok)
2	C020	07C	Out of DAQ	Out of DAQ	Out of DAQ	Out of DAQ	Out of DAQ
6	A002	01A	-	-	-	-	2 missing segments: A1 & E4
7	A007,B014,C003	04	-	in Maintenance	in Maintenance	in Maintenance	in Maintenance
9	C004	05C	gain &baseline of core jumps	gain &baseline of core jumps	gain &baseline of core jumps	gain &baseline of core jumps	gain &baseline of core jumps
9	C006	05C	gain &baseline of core jumps	gain &baseline of core jumps	gain &baseline of core jumps	gain &baseline of core jumps	gain &baseline of core jumps
9	B001	05B	Losing validation some times	No issue reported	No issue reported	No issue reported	No issue reported
9	A001	05A	Out of DAQ	Back in DAQ	No issue reported	No issue reported	No issue reported
12	A006,B002,C001	09	Emergency filling often necessary	No issue reported	No issue reported	No issue reported	No issue reported
13	A003,B016,C015	01	Nothing reported	Nothing reported	Issue with Liquid nitrogen filling - now OFF	Removed from array	Replaced by ATC 06
14	B002	09B	Nothing reported	No issue reported	Core with bad resolution	Core with bad resolution	Core with bad resolution
17	C013	02C	Nothing reported	Segment B4 and B5 missing	Segment B4 and B5 missing	Segment B4 and B5 missing	Segment B4 and B5 missing
18	B018	00B	cross displayed in PSA hit pattern	cross displayed in PSA hit pattern	cross displayed in PSA hit pattern	cross displayed in PSA hit pattern	cross displayed in PSA hit pattern
18	C018	00C	Losing validation some times	No issue reported	No issue reported	No issue reported	No issue reported
19	A018	06A	Nothing reported	Nothing reported	trips at nominal voltage (operate 500V lower)	trips at nominal voltage (operate 500V lower)	trips at nominal voltage (operate 500V lower)
20	B020	14B	Seg, A4, A5 &A6 disappear altogether temporarly	ATC Sent for maintenance	ATC in maintenance	ATC in maintenance	CAEN digitiser used
20	A009	14A	-	-	-	-	CAEN digitiser used
21	A020,B021,C021	13A.B.C	Used for tests (not in array)	In array	No issue reported	No issue reported	No issue reported
22	A022	08A	Nothing reported	T0 &TT strange shape	T0 &TT strange shape	T0 &TT strange shape	Extra peaks at low energy in segments: E1-6, F1-6
22	B022	08B	Seg B4 with Broken FET-> ghost peaks; B3 saturation	Seg B4 with Broken FET-> ghost peaks; B3 saturation	Seg B4 with Broken FET-> ghost peaks; B3 saturation	Seg B4 with Broken FET-> ghost peaks; B3 saturation	Seg B4 with Broken FET-> ghost peaks; B3 saturation
22	C014	08C	-	-	-	-	Core signal missing (even after swaping preamps)
23	C022	10C	gain shift confirmed and T0 &TT strange shapes	gain shift confirmed and T0 &TT strange shapes	gain shift confirmed and T0 &TT strange shapes	gain shift confirmed and T0 &TT strange shapes	gain shift confirmed and T0 &TT strange shapes

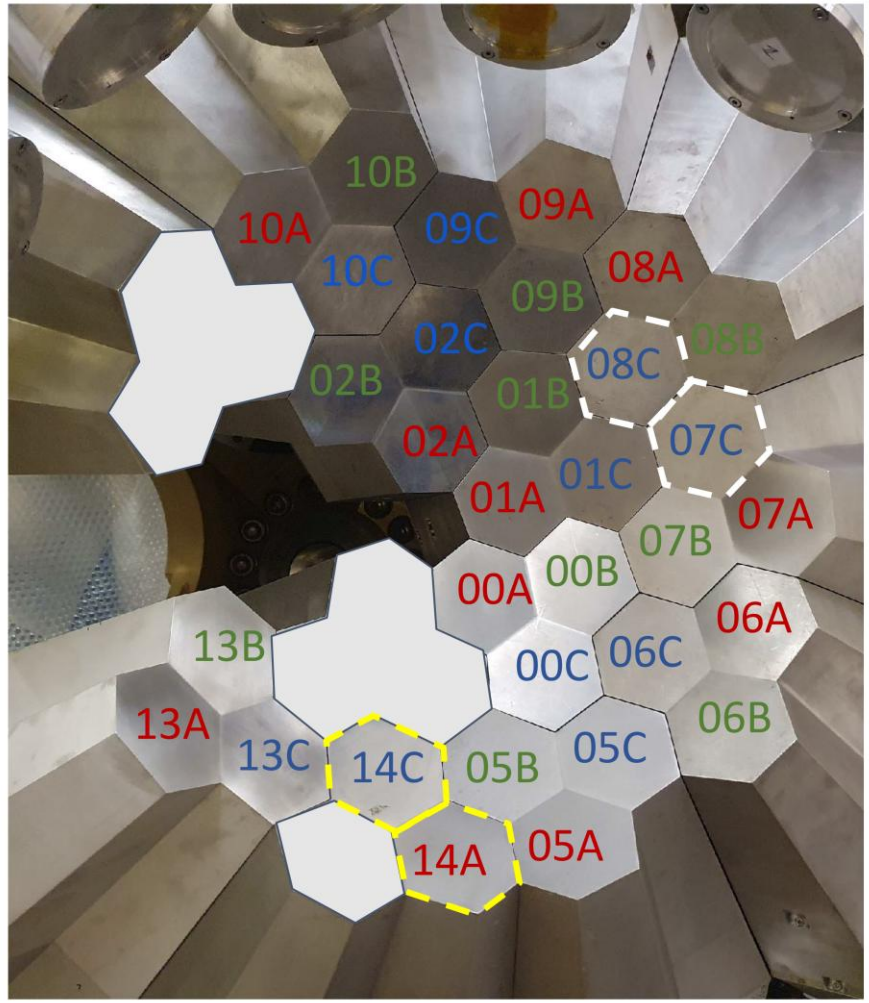
Status July 2026

11 ATC-33 dets
(28 in DAQ)
(2 Caen digitizers)

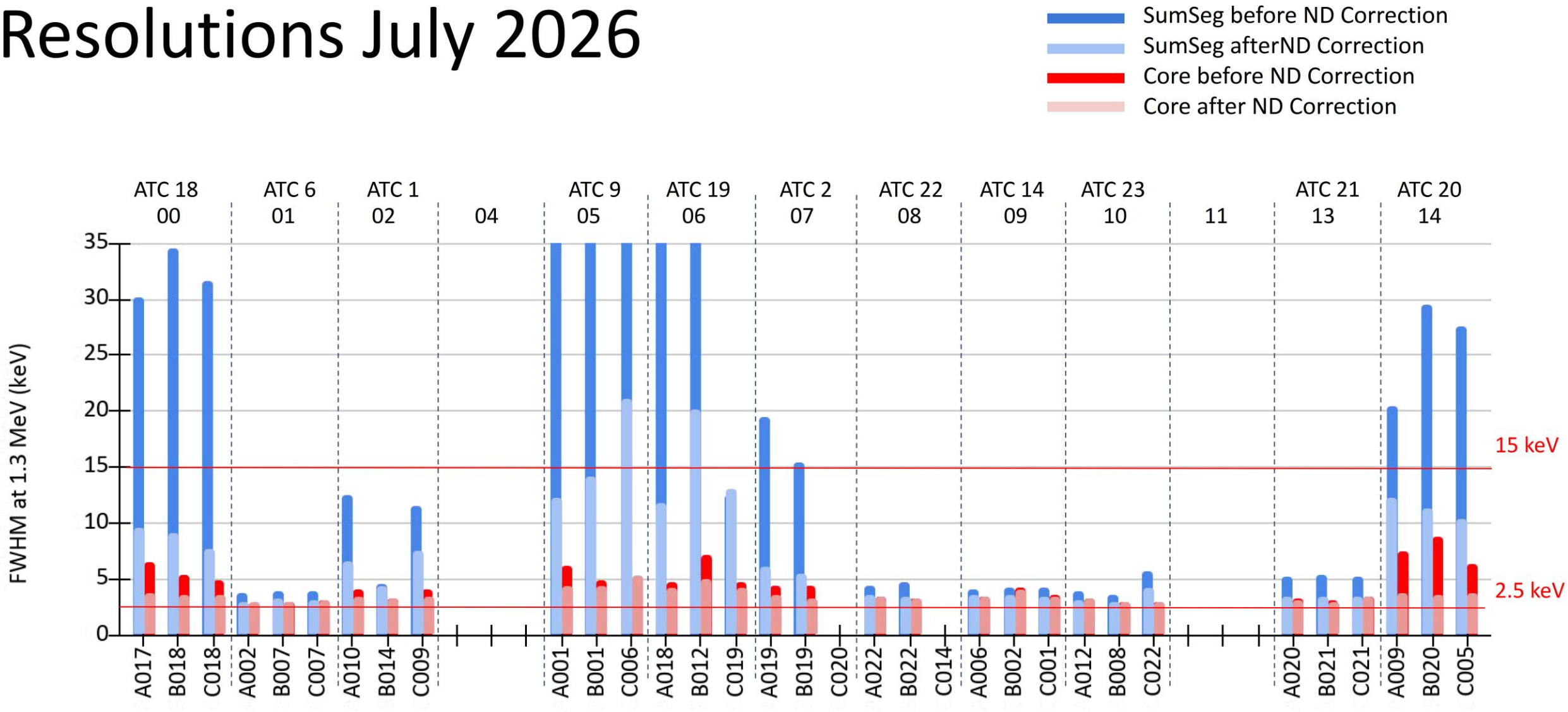
- **01A (A002 - ATC 6)**: two missing segments, seg. A1 and seg. E4.
- **05C (C004 and C006 - ATC 9):** gain and baseline of the core jump together over time, this change affects the gain of the core and of the segments
- **07B (B019 - ATC 2):** bad resolution due to the continuous oscillation of the energy in the HG core (LG ok)
- **08A (A022 -ATC 22):** Extra peaks at low energy in several segments. E1-6, F1-6
- **08B (B022 - ATC 22)**: seg. B4 with a broken FET causing ghost peaks in the neighbours and seg. B3 with adc offset out of range (saturates).
- **08C (C014 - ATC 22)**: Core signal not present. Changing the preamp did not help.
- **09B (ATC 14):** core with bad resolution. Sum of segments ok
- **10C (C022 - ATC 23)**: In many segments was confirmed a gain shift over time. In addition the T0 and TT gets strange shapes time to time. Solved during the experiments by switching off and on the preamp.
- **00B (B018 - ATC 18):** displays a cross in the PSA hit pattern

- 14A,B (A009, B020 - ATC 20): caen digitizers

- **04 (ATC 7), 11 (ATC 1):** unmounted for maintenance.



Resolutions July 2026



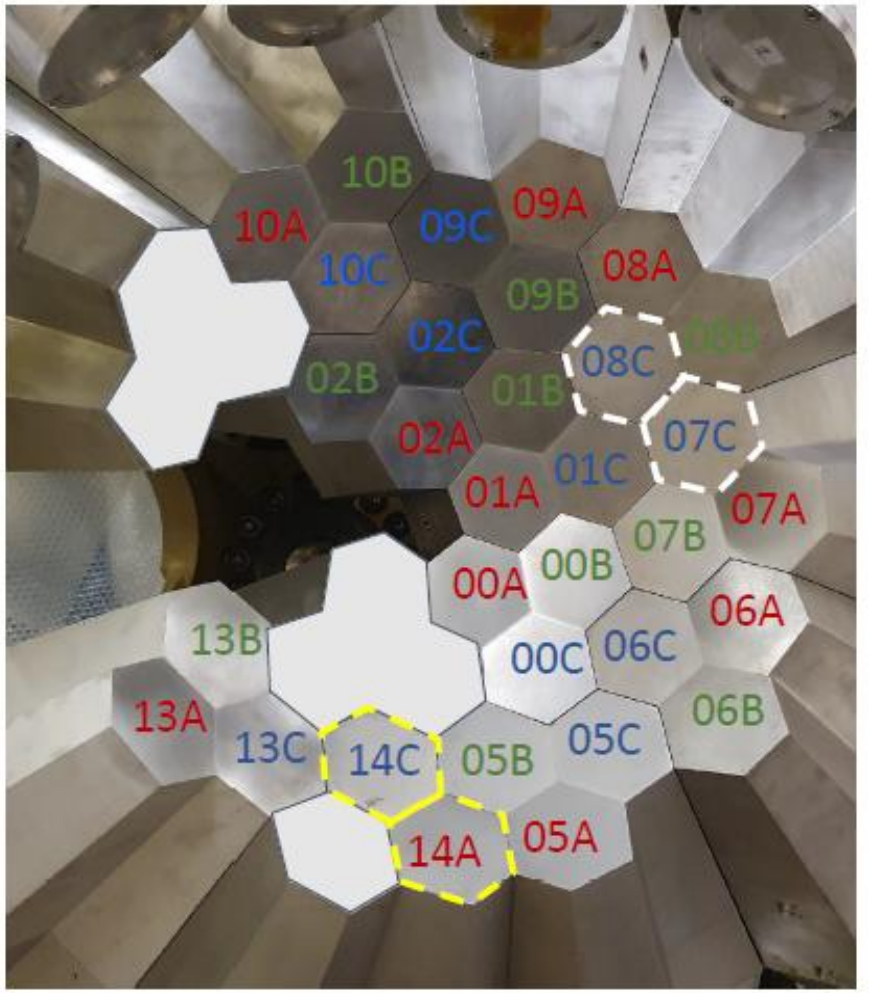
Note: Resolution of ATC 20 (Pos 14) measured in February 2026. Since April this detector was excluded from the daq.

2.5 μs of trapezoidal-filter risetime
data taken 19/07/2026
General status explained in the next slide

Crystal lookup table July 2026

Position	ATC	Crystal			Installation date
		A	B	C	
00	18	017	018	018	15/01/2024
01	6	002	007	007	13/04/2026
02	1	010	014	009	05/11/2025
04					
05	09	001	001	006	01/05/2022
06	19	018	012	019	13/02/2024
07	2	019	019	020	18/09/2023
08	22	022	022	014	17/03/2025
09	14	006	002	001	09/09/2025
10	23	012	008	022	04/10/2024
11					
13	21	020	021	021	28/01/2025
14	20	009	020	005	01/01/2023

11 ATC-33 dets
(28 in DAQ)
(2 Caen digitizers)



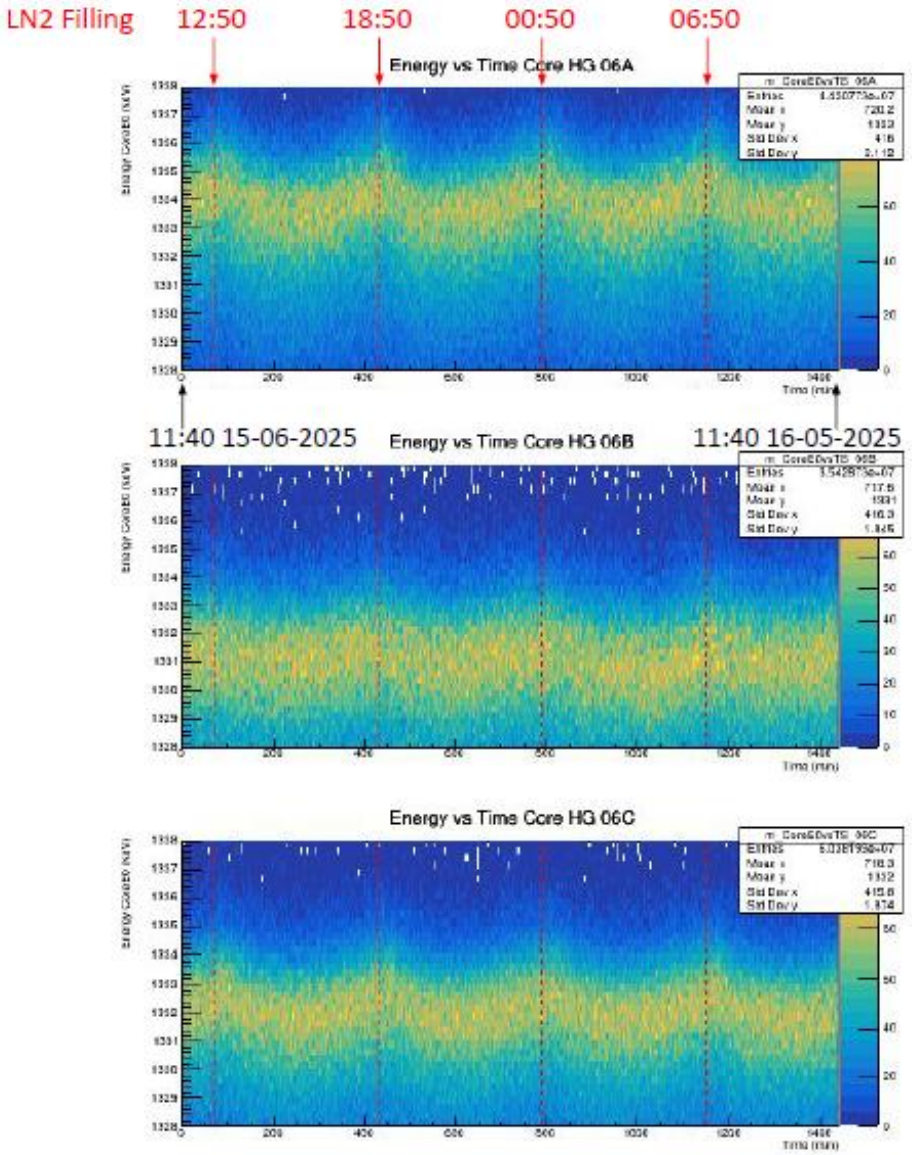
Some outstanding issues reported last year

- In some detectors, one observes:
  - Large energy drift correlated in time with LN2 filling, degrading the resolution.
  - Small energy drift correlated in time to abrupt & random jumps in LV, affecting also the resolution and PSA.

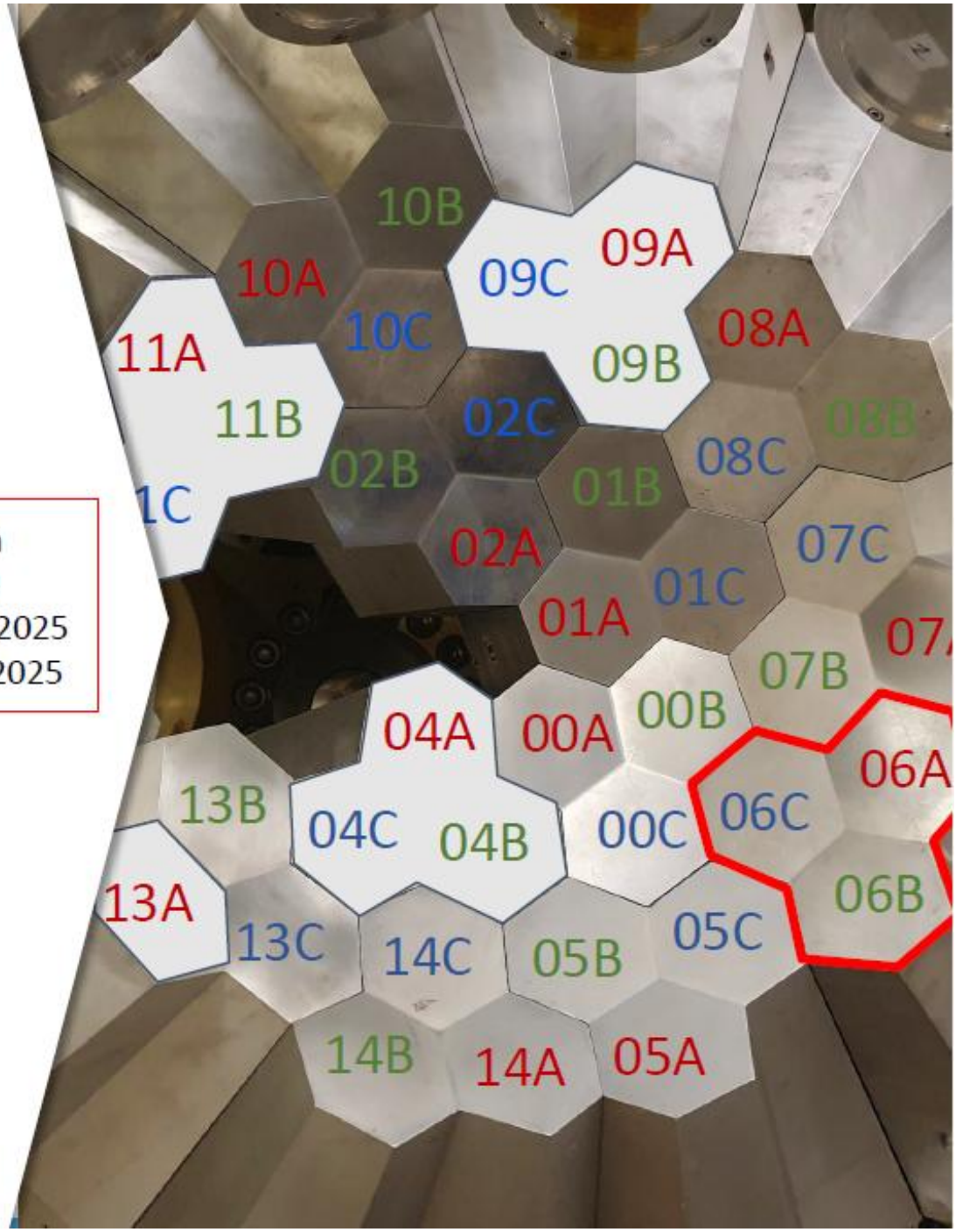
► complicating the data analysis.

Taken from R.M. Perez-Vidal presentation at the 25th AGATA week (2025)

Pos 6 - ATC 19



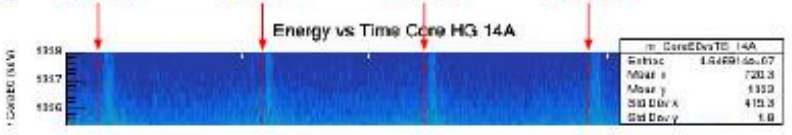
60Co run of 24h
HG core energy
START: 11:40 15-06-2025
STOP: 11:40 16-06-2025

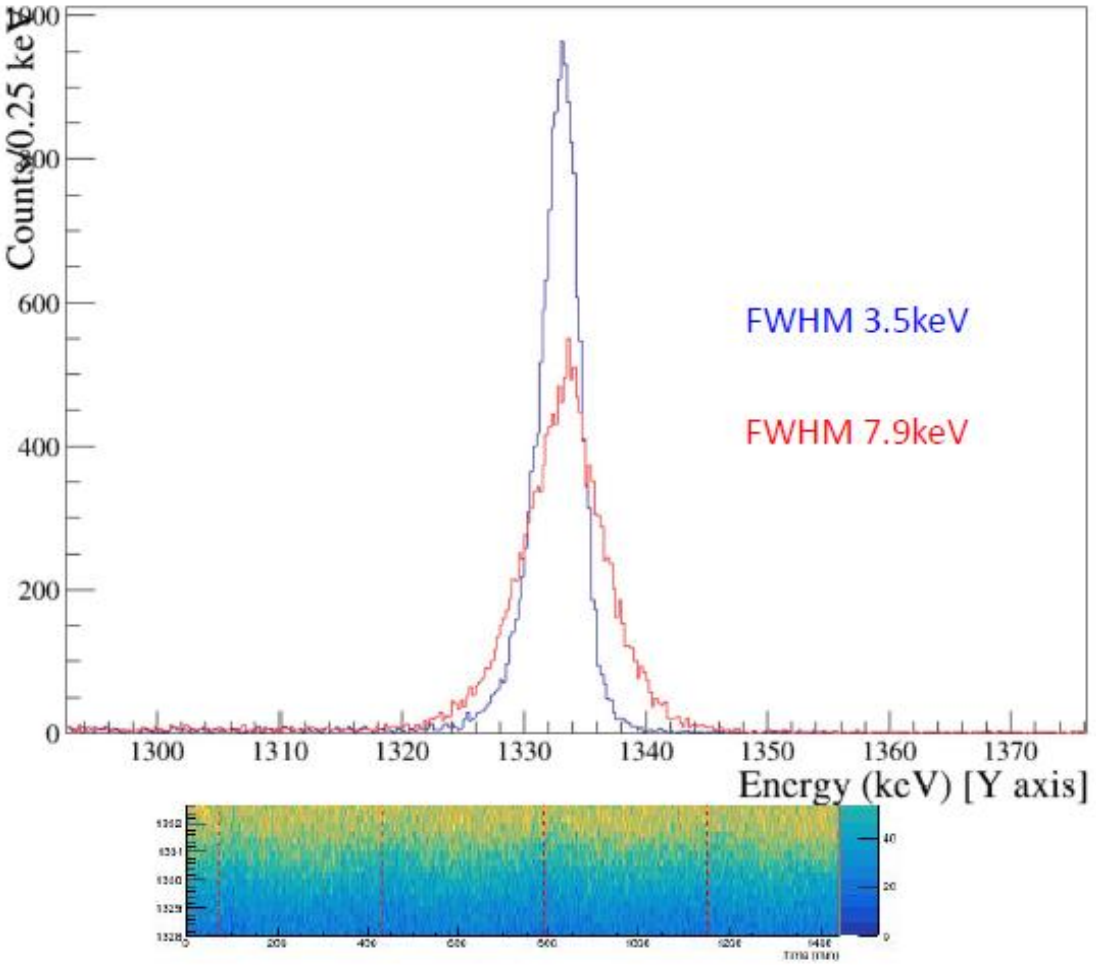


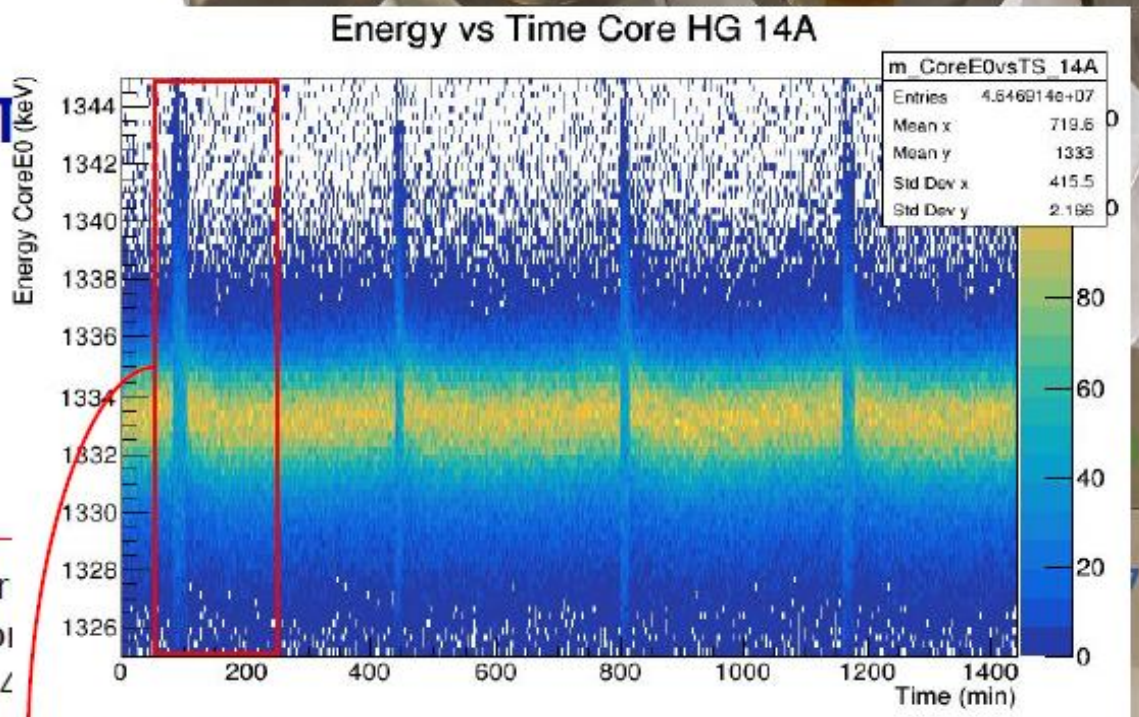
Taken from R.M. Perez-Vidal presentation at the 25th AGATA week (2025)

Pos 14 - AT

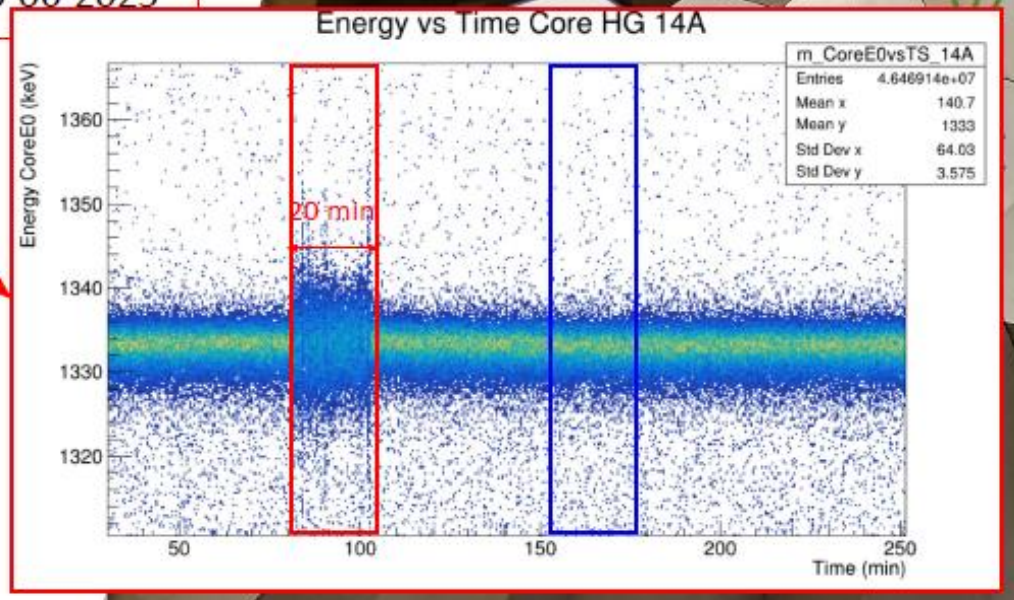
LN2 Filling 12:50 18:50 00:50 06:50





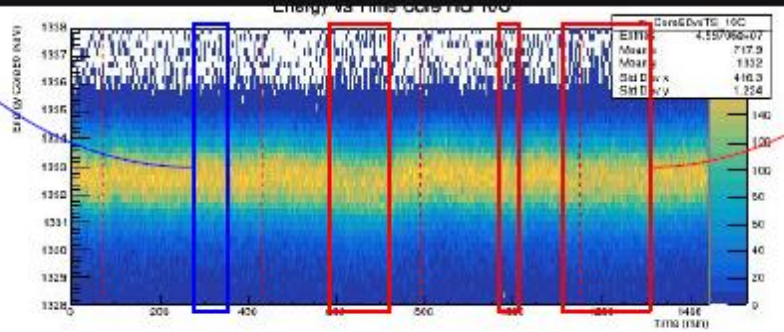


)Co r
G col
: 11:4
11:40 16-06-2025



Taken from R.M. Perez-Vidal presentation at the 25th AGATA week (2025)

Pos 10 - ATC 23



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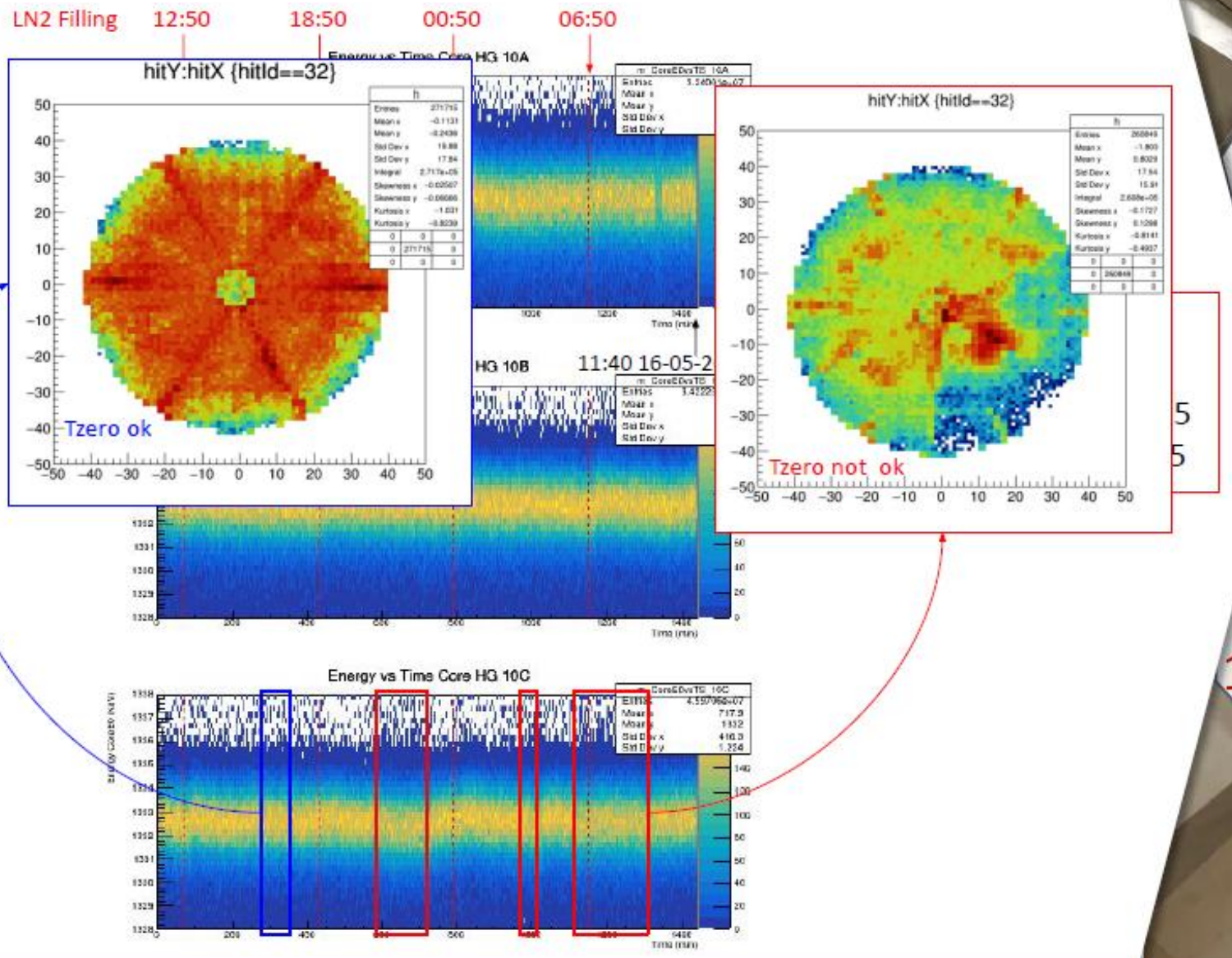
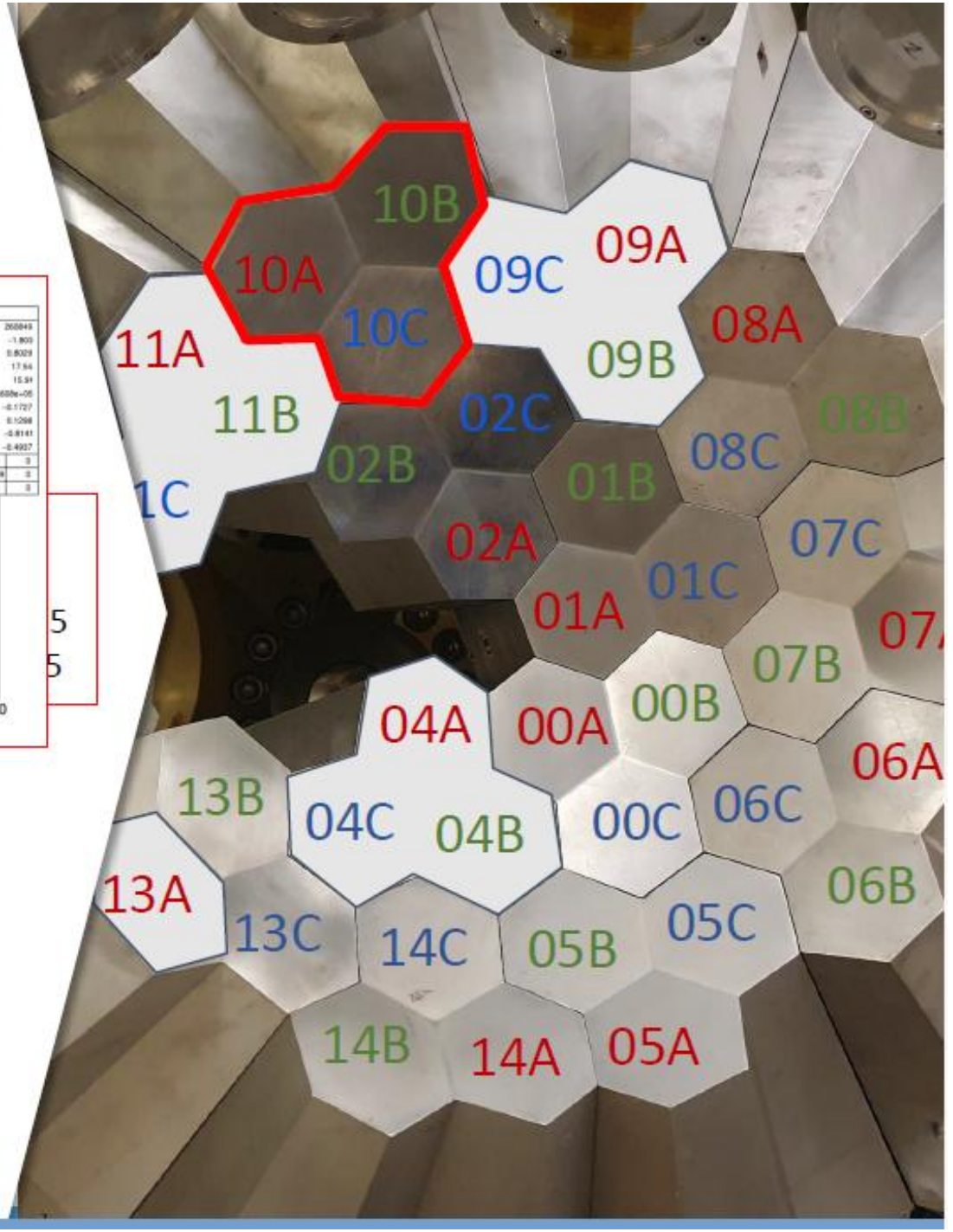
Pos 10 - ATC 23





Thank you for your attention

and

Many thanks to the Performance Team