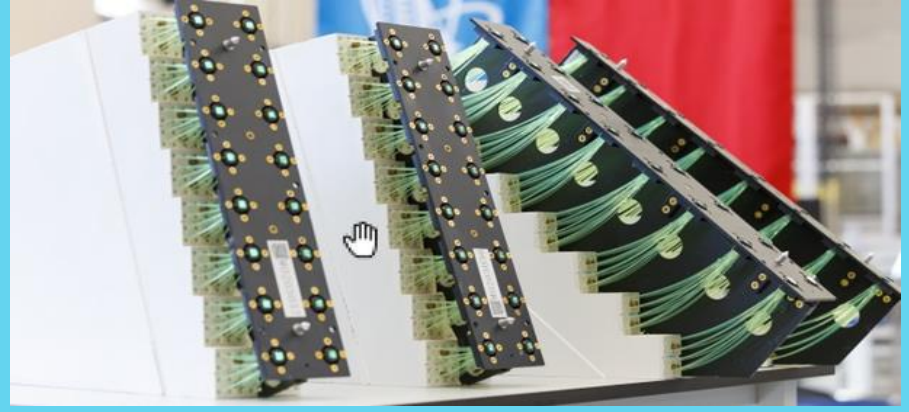
ECal Status

Dubna April 2025

Half sectors production



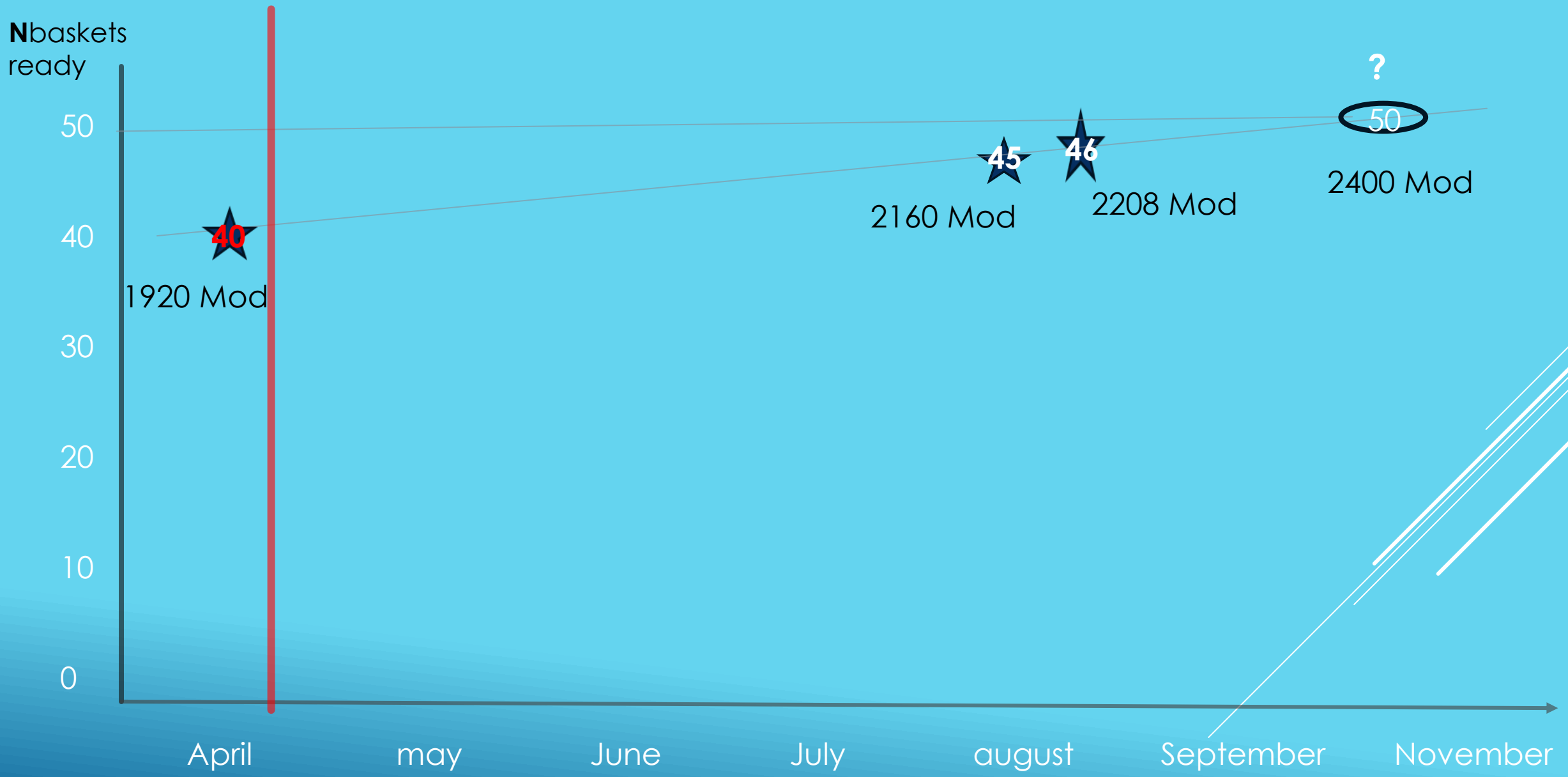
Produced and Tested about 1000+800 modules.
530 more modules needed

40 Sectors assembled
Out of 50 in the project

Production of last 530 modules started in the end of January
Modules production rate Is limited by the production rate of WLS fiber
Which is 6 km/month out of 60 km needed.

If production rate of WLS fibers will not be increased, in the end of august 45 sectors will be ready. 46 sectors will be ready for installation in the end of August.

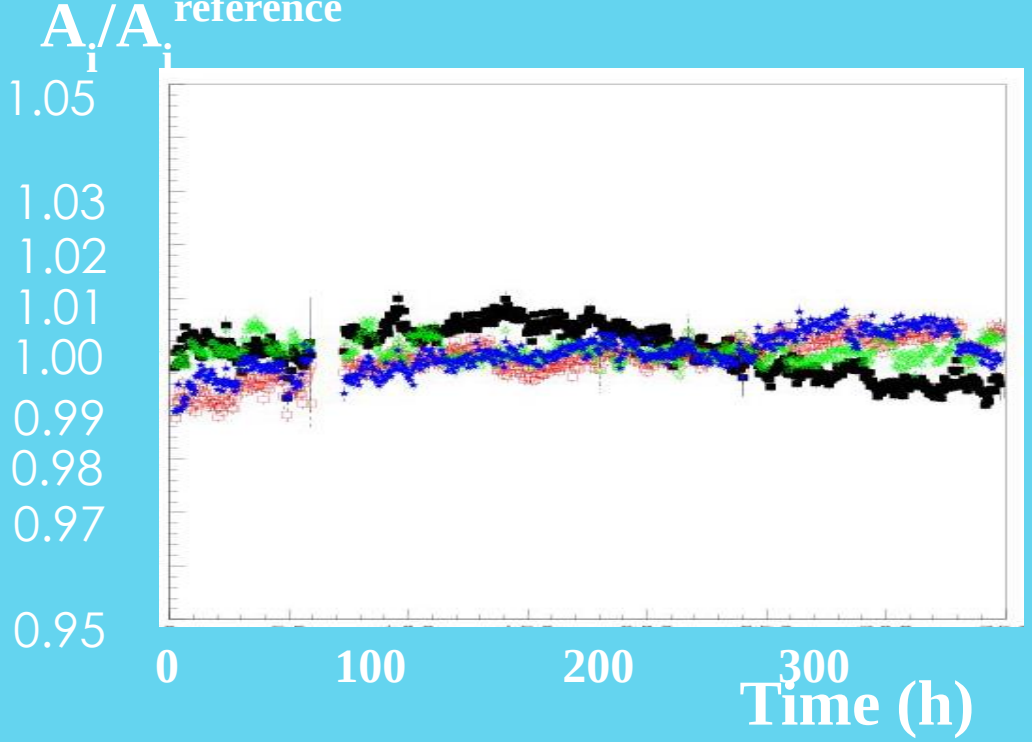
Only in November sectors production may be completed.

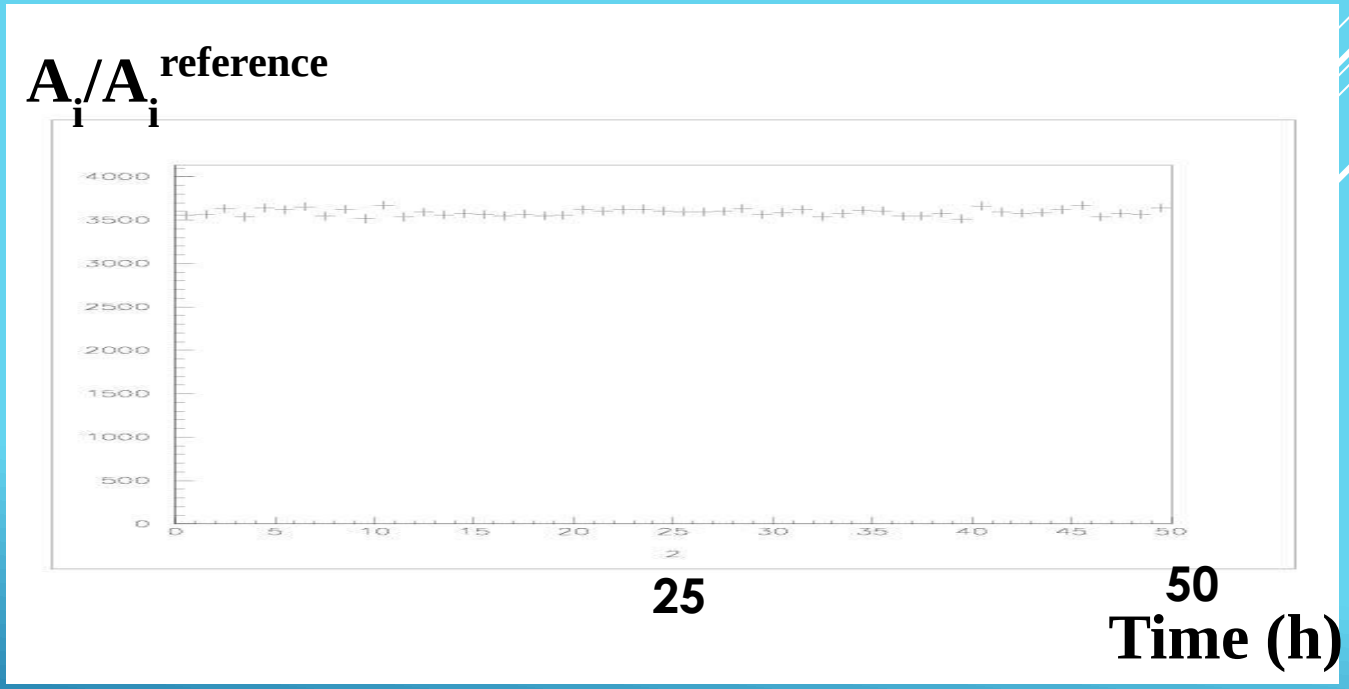

Nbaskets ready
50
40
30
20
10
0
40
1920 Mod
45
2160 Mod
46
2208 Mod
?
50
2400 Mod
April
may
June
July
august
September
November

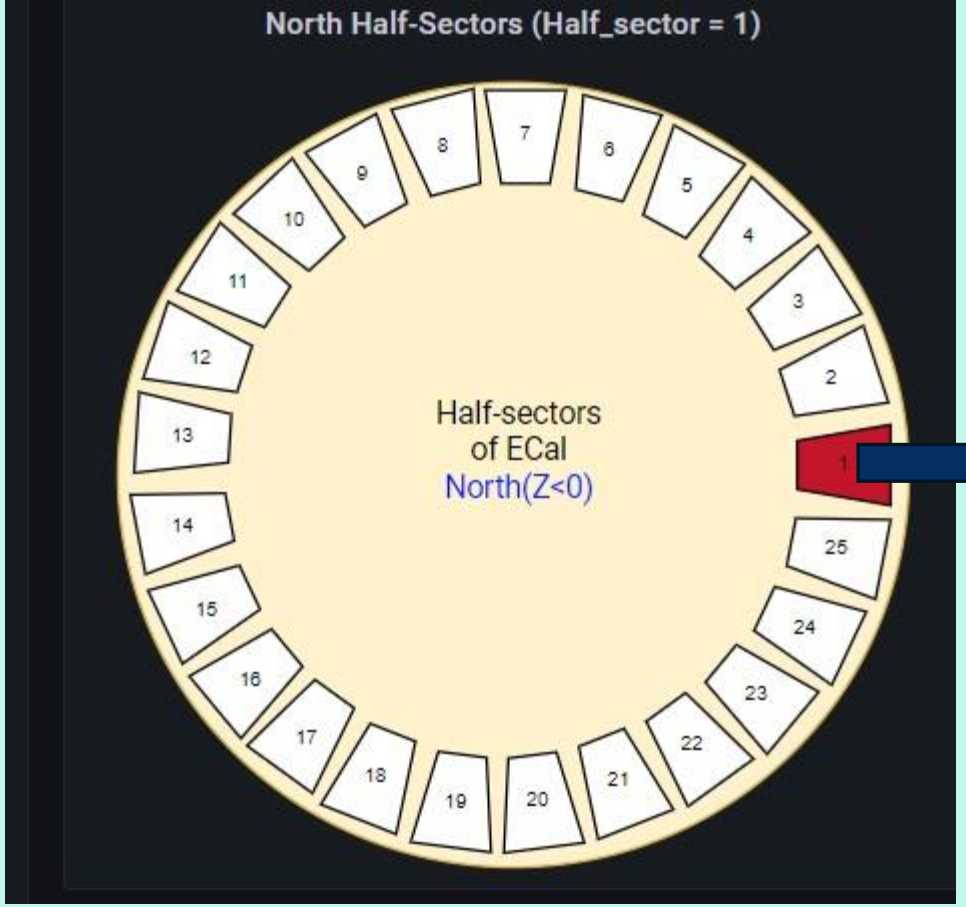
Tests

- Cosmic muons tests
- Operation Stability tests with LED

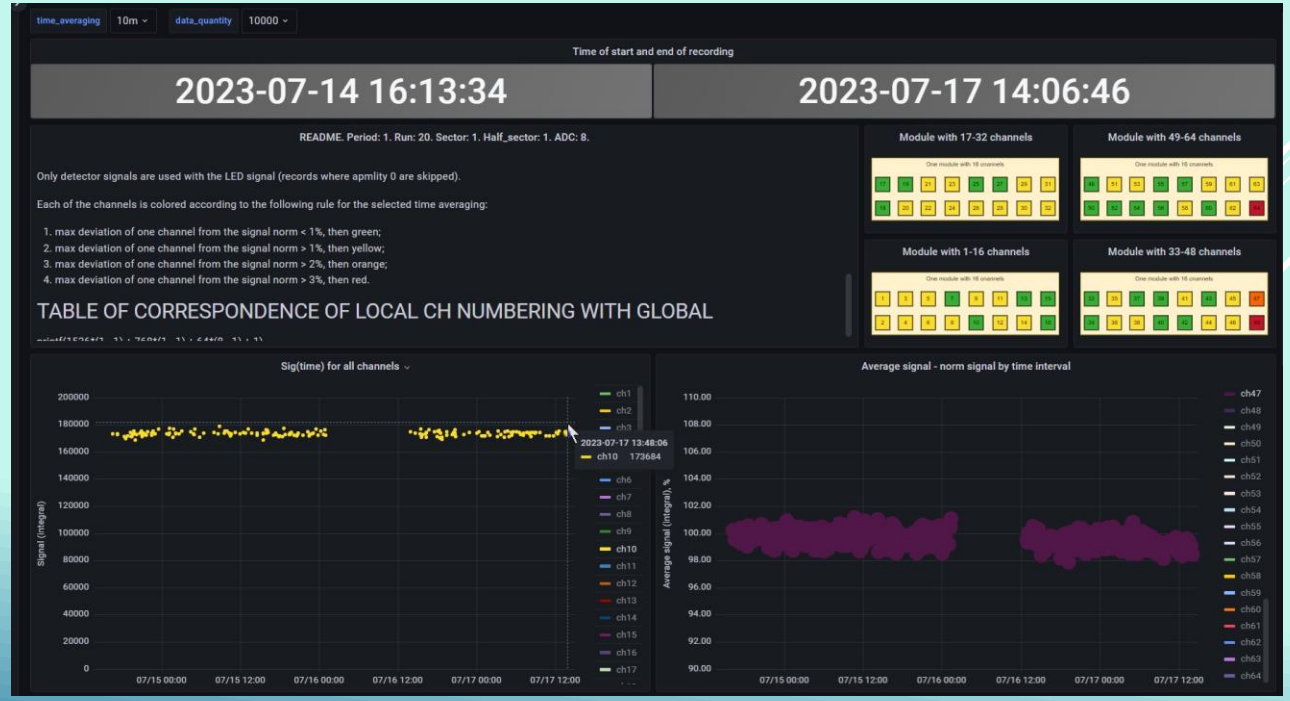
Half sectors (768 channels each) are studied on the operation stability by LED illuminating the WLS fibers through side glow fiber
Signals deviation from the reference values was analyzed vs time

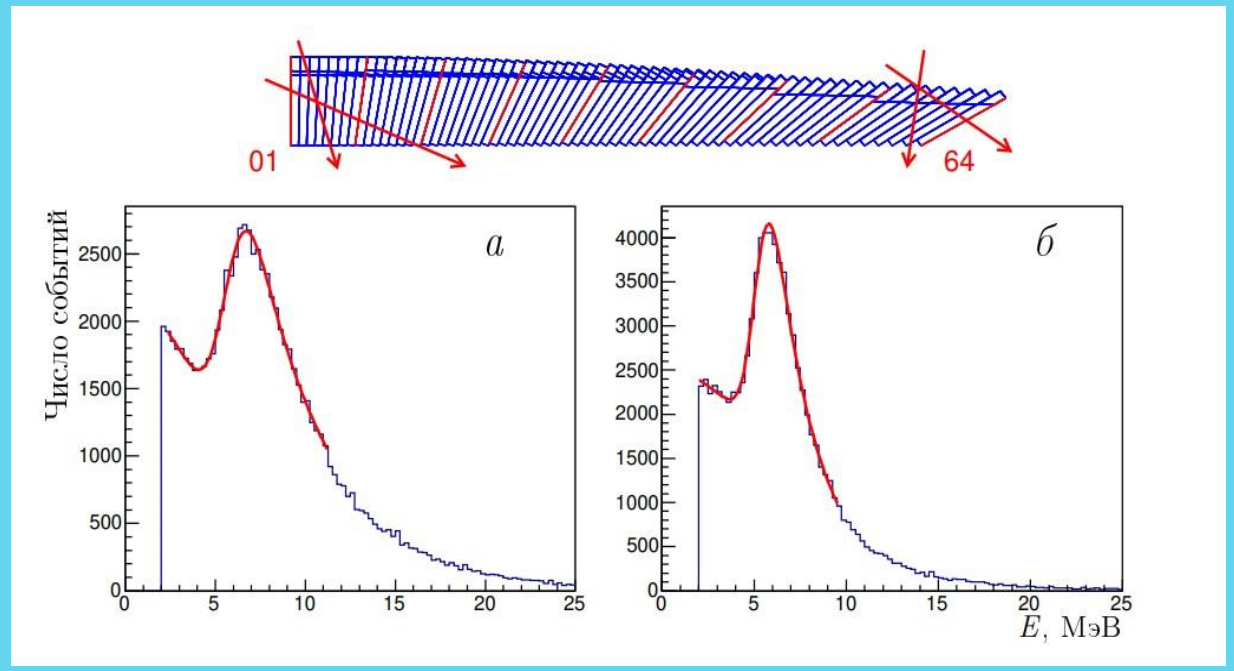

$A_i/A_i^{reference}$
1.05
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.95
0
100
200
300
Time (h)

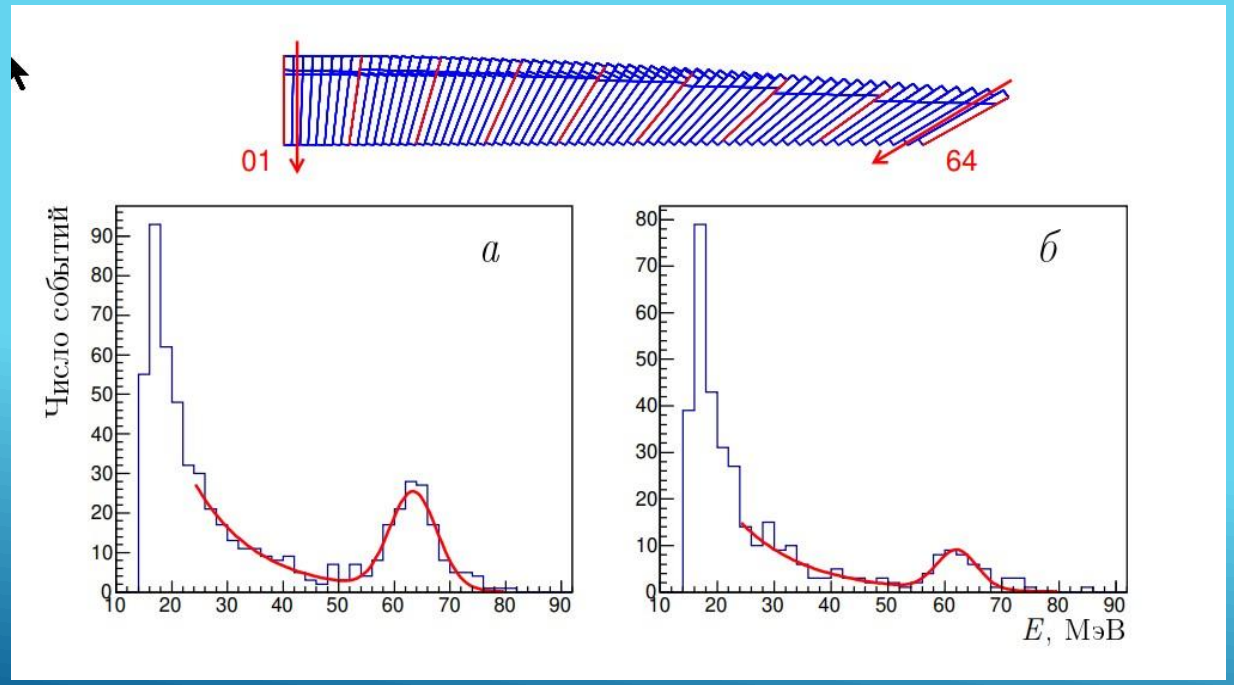

$A_i/A_i^{reference}$
4000
3500
3000
2500
2000
1500
1000
500
0
0
5
10
15
20
25
30
35
40
45
50
25
50
Time (h)

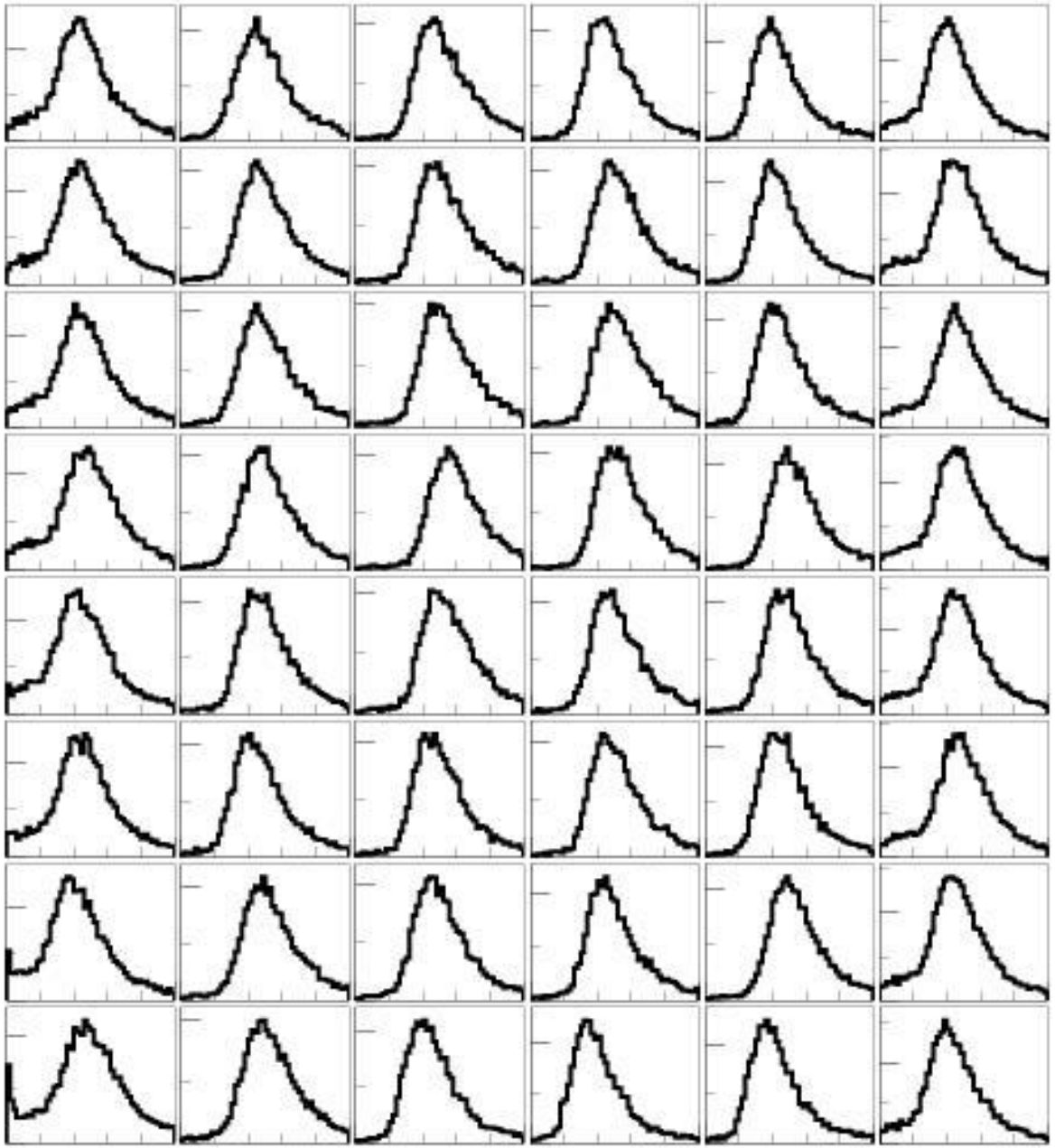

North Half-Sectors (Half_sector = 1)
Half-sectors
of ECal
North(Z<0)
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

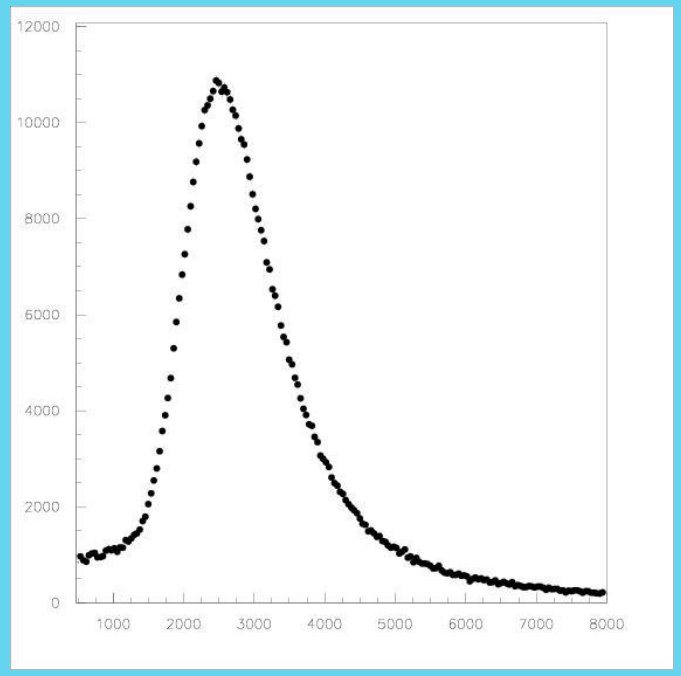

Period: 1. Run: 20. Sector: 1. Half_sector: 1
Half-sector (1-768 channels)
ADC9
ADC10
ADC11
ADC12
ADC5
ADC6
ADC7
ADC8
ADC1
ADC2
ADC3
ADC4


time_averaging
10m
data_quantity
10000
Time of start and end of recording
2023-07-14 16:13:34
2023-07-17 14:06:46
README. Period: 1. Run: 20. Sector: 1. Half_sector: 1. ADC: 8.
Only detector signals are used with the LED signal (records where apmlity 0 are skipped).
Each of the channels is colored according to the following rule for the selected time averaging:
1. max deviation of one channel from the signal norm < 1%, then green;
2. max deviation of one channel from the signal norm > 1%, then yellow;
3. max deviation of one channel from the signal norm > 2%, then orange;
4. max deviation of one channel from the signal norm > 3%, then red.
TABLE OF CORRESPONDENCE OF LOCAL CH NUMBERING WITH GLOBAL
Module with 17-32 channels
Module with 49-64 channels
Module with 1-16 channels
Module with 33-48 channels
Sig(time) for all channels
Signal (integral)
2023-07-17 13:48:06
ch10 173684
Average signal - norm signal by time interval
Average signal (integral), %

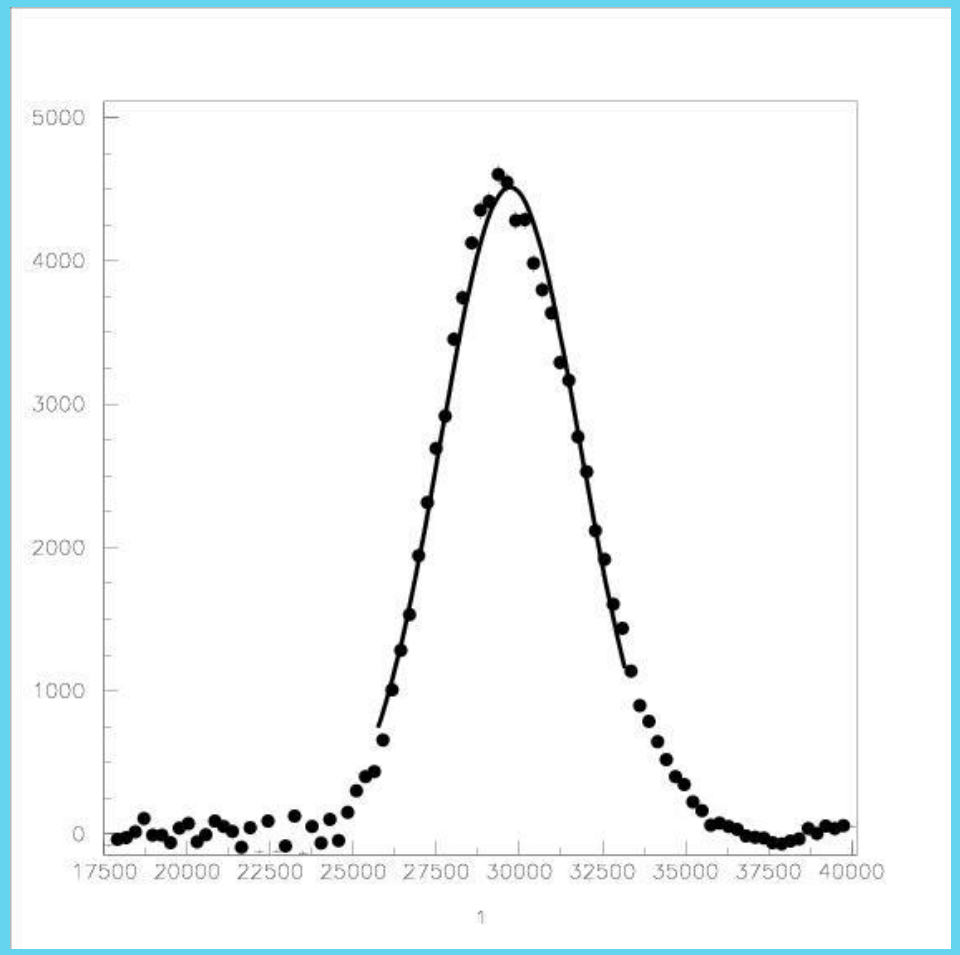

01
64
Число событий
а
б
E, МэВ


01
64
Число событий
а
б
E, МэВ





A=2548



A=29429

$A_l/A_t=11,55$

Conclusions:

- **First 40 baskets of ECal are ready to be assembled to the MPD.**
- **Work is in progress to build 400 more modules increasing ECal coverage in the barrel region up to 100%.**
- **We are estimating 46 (92%) baskets will be ready to the end of august 2025. Unlikely more.**
- **Assembled halfsectors are under long term tests. Stability of ECal operation demonstrated on the level of few % for 768 channels.**

  Possibility to use cosmic muons for the calibration of the assembled ECal is demonstrated.
- **ECal Slow Control and Stability Control software is under tests using assembled half sectors.**

Thank you for the attention!