ECal Status April 2022

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According our plans on the first stage of experiment 2/3 of calorimeter should be ready for Installation to the MPD frame – 1600 modules – 25600 towers(channels)

33 out of 50 half-sectors

700 modules in stock

100 will come before June

800 modules we are waiting before autumn

JINR responsibility

China contribution

What we need to build full calorimeter?

Budget to get some missing materials Budget to pay modules assembling. Time

To build full barrel calorimeter we need 800 modules. It may cost about 5M\$ and require about 1 year (including material request, modules assembling and integration procedures)

Even if we are not planning to complete ECal in the START option we have to keep some even very low activity in our production areas, to keep areas alive.

Before Assembling tests

Test area 4 dark rooms with 2 test zones in each 32 modules can be tested simultaneously



Before Assembling tests

Each module should be tested before assembling to the MPD structure (clusters, half-sectors). Teams from the INR, MEPhI and ITEPH bear most of efforts in the cosmic tests.



Cluster test

Two Methods of ECAL Calibration Tests with Cosmic muons





Combination of towers as a trigger monitor



Large (here 8 days) ← Data taking time → Small (here 1 day)







Both methods give identical results with good accuracy and will effectively complement each other when calibrating the whole ECAL.

Sector production - 3 steps

- 1. Gluing 16 modules in cluster
- 2. Production and gluing of supporting plaits to the cluster
- 3. Electronics installation and Incorporation of 3 clusters in the half-sector box

Step 1 Production rate 5 clusters/week

30 clusters ready out of 100

About 4 months to complete



Step 2 Production rate 5 clusters/week

25 clusters ready out of 100

About 4 months to complete





Step 3 Assembling do not started yet. First box will come next week.

Boxes production rate is not known now and this rate may arise as the problem for us.

33 half-sectors boxes should be assembled.



Estimated production rate is 2 half-sectors per week. It require about 5 months to complete assembling of half-sectors for the desired 2/3 of calorimeter But! Many technological problems can arise during development of half-sectors assembling procedure which may delay mass production.







Conclusion

Mass tests of modules organized with the help of collaboration.

First two steps of half-sectors assembling procedure are designed. Mass production started.

Test rate and production rate, on each step, is high enough but increase (if necessary) of these rates will be problematic.

Study of the cluster with the use of cosmic muons confirmed possibility to apply such tests for half-sectors calibration independently to it space orientation