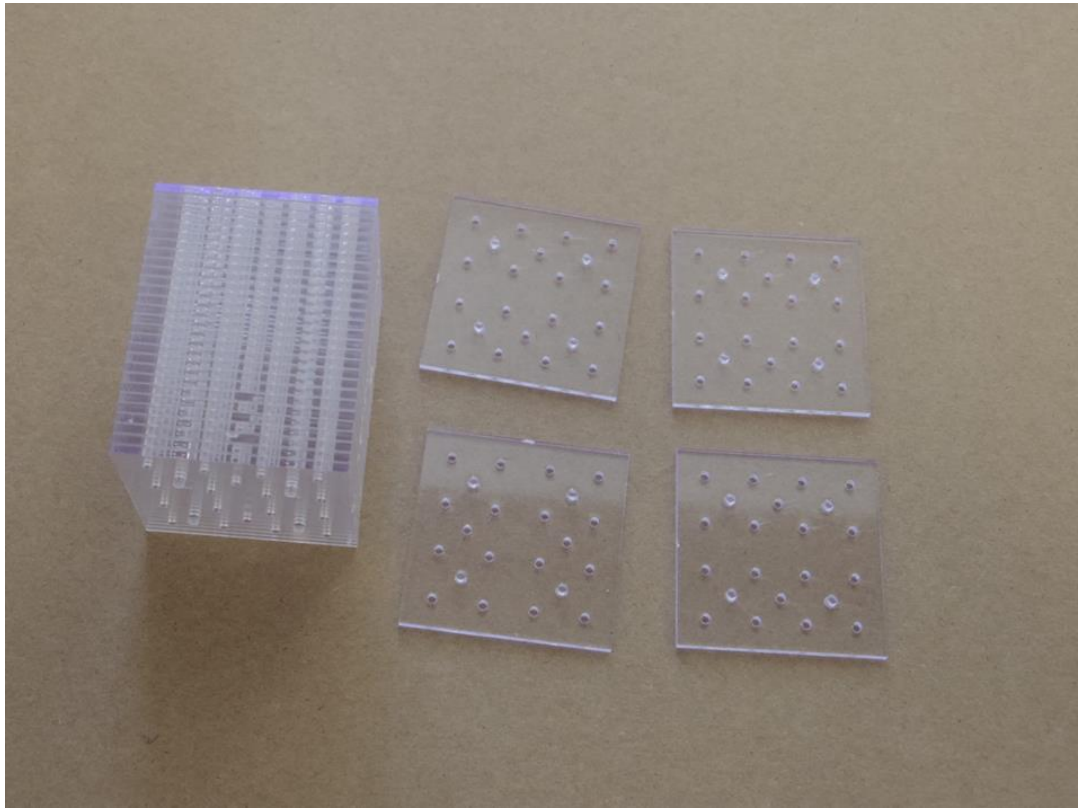
ECal Modules production

Scintillator plates, 40x40x1.5 mm^3

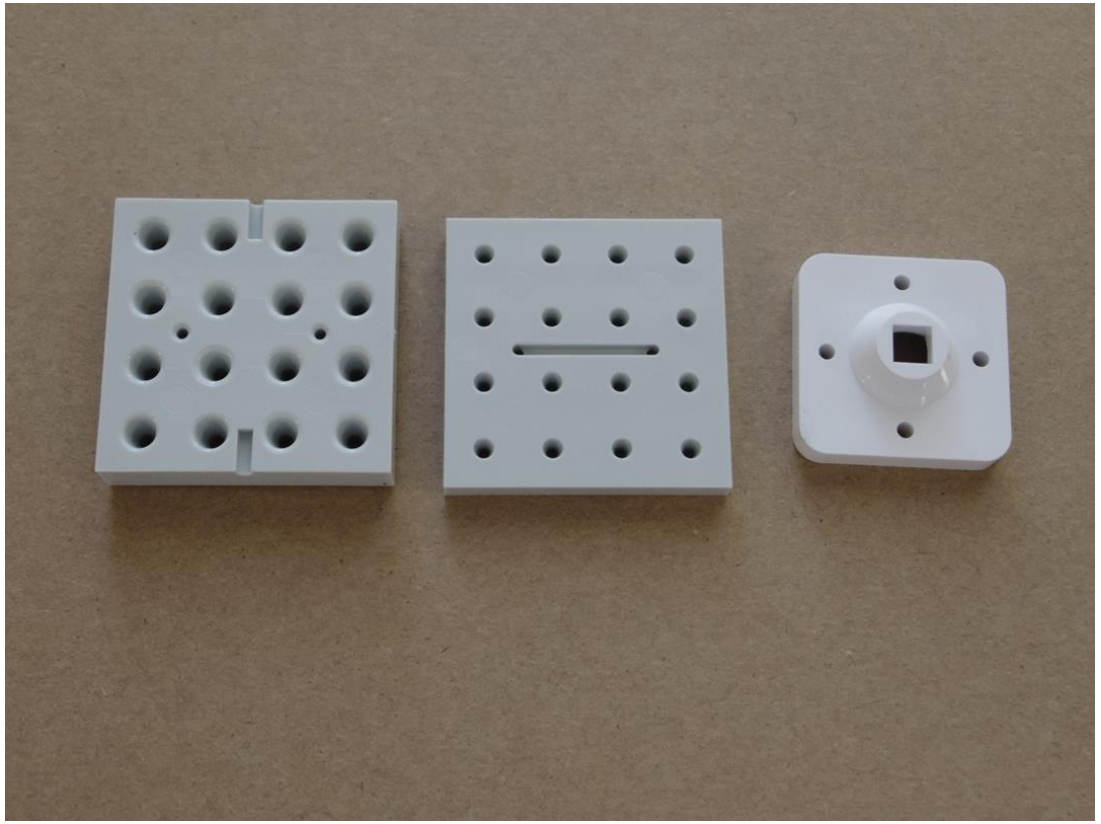
(Total ≈ 10^7 plates)

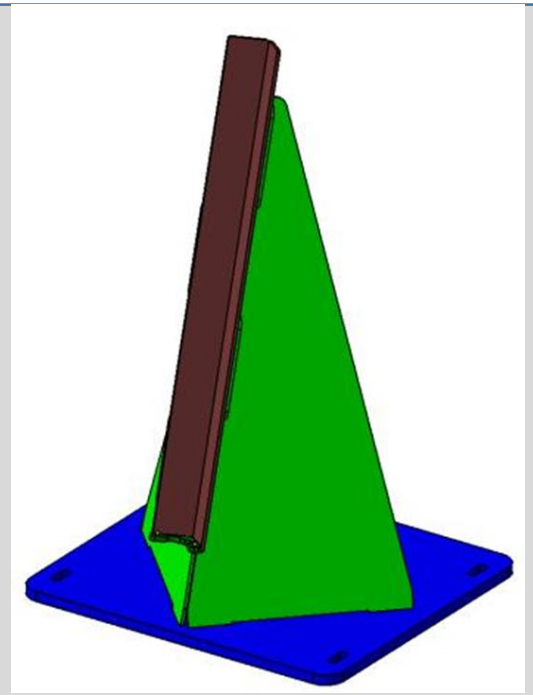
Today: Polypac (Dubna) – 2.2x10^6, Uniplast (Wladimir) - 10^6

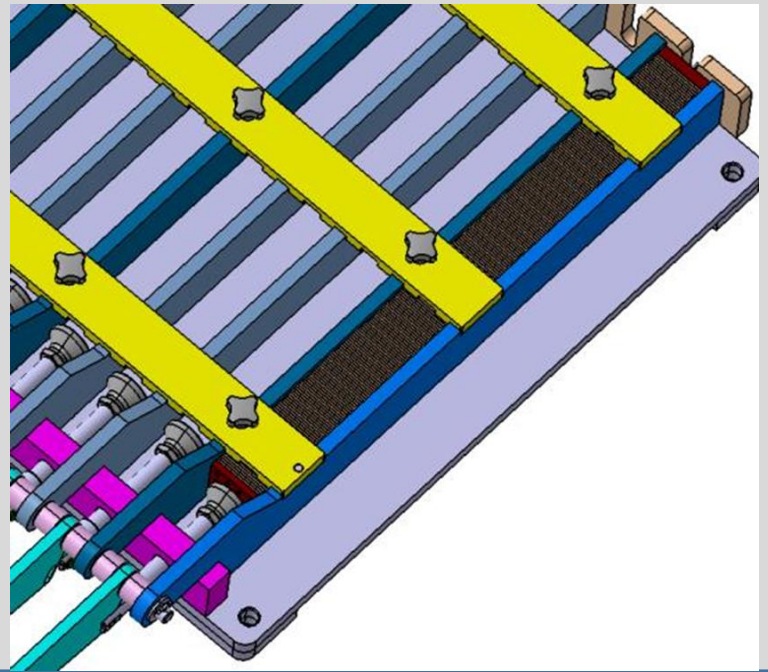


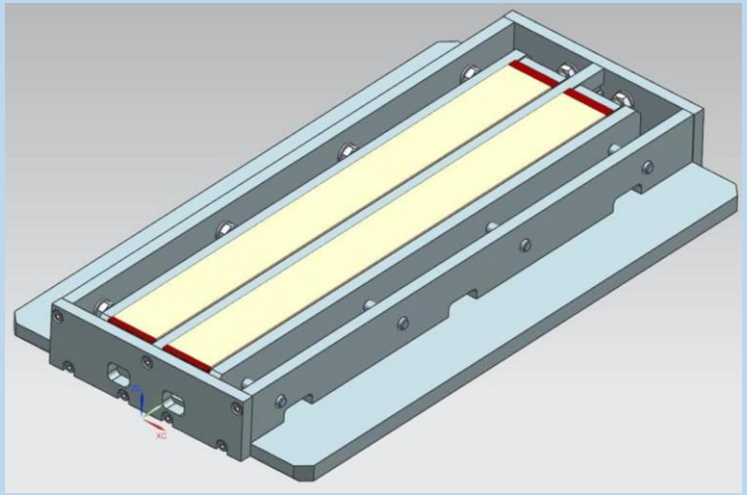
Pressure plates and fiber bonding plate

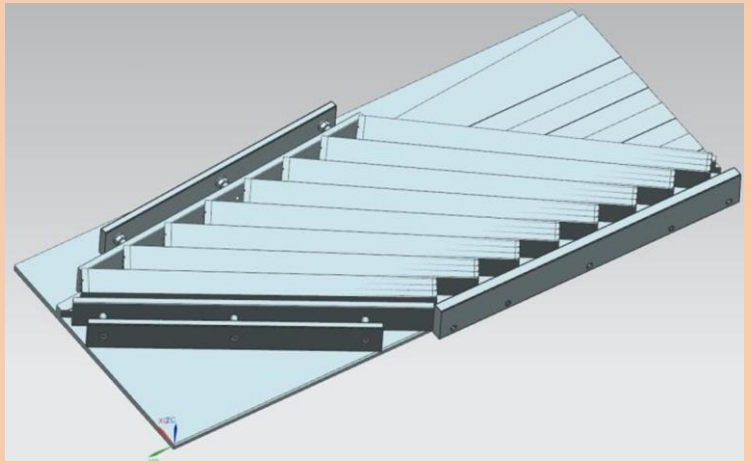
Polypac (Dubna) – half of the full set

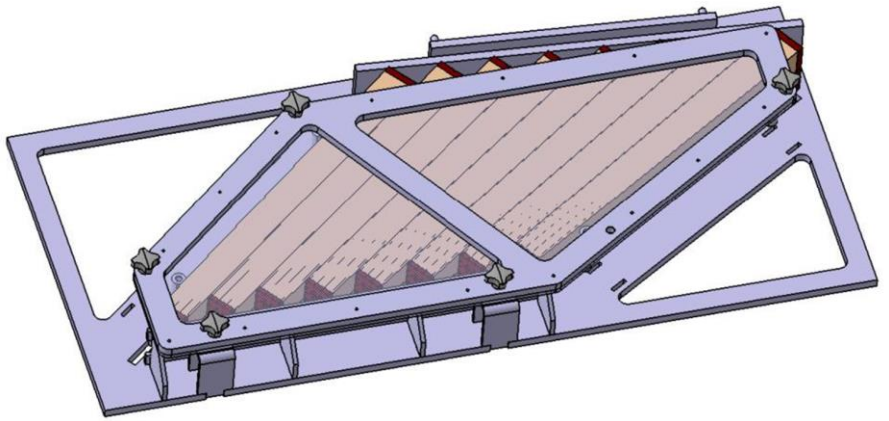








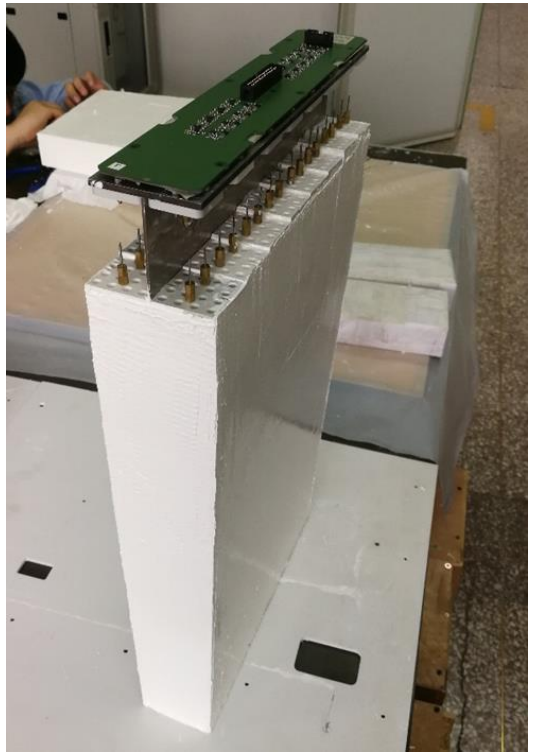




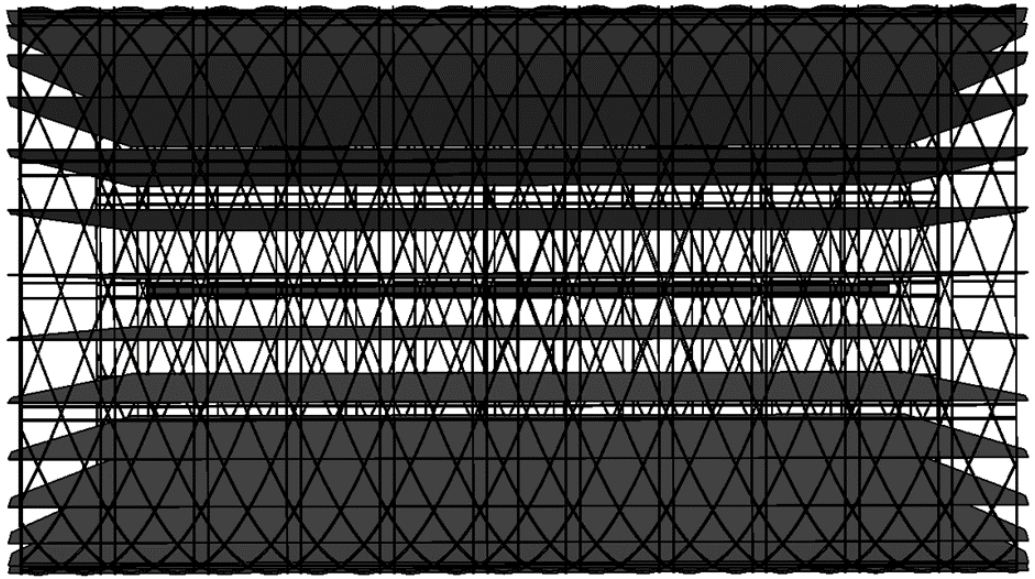
- IHEP (Protvino) – Beginning 2018 -12
- Tenzor (Dubna) - Beginning 2018 -12
- Tsinghua University (Beijing, China)

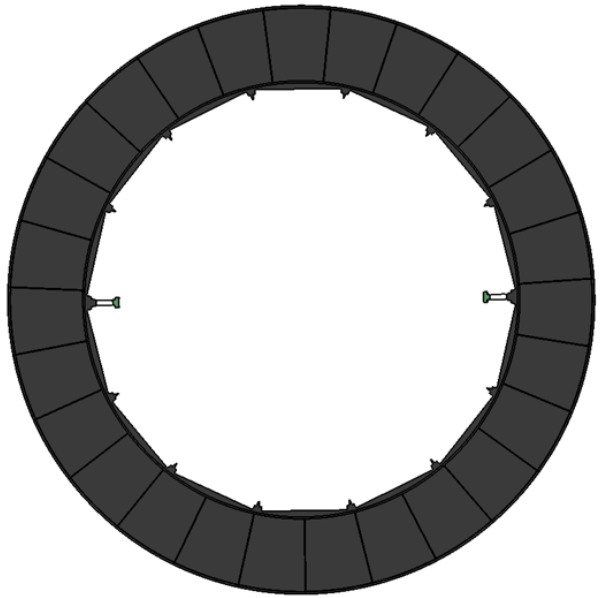
Prototype from Protvino – 2

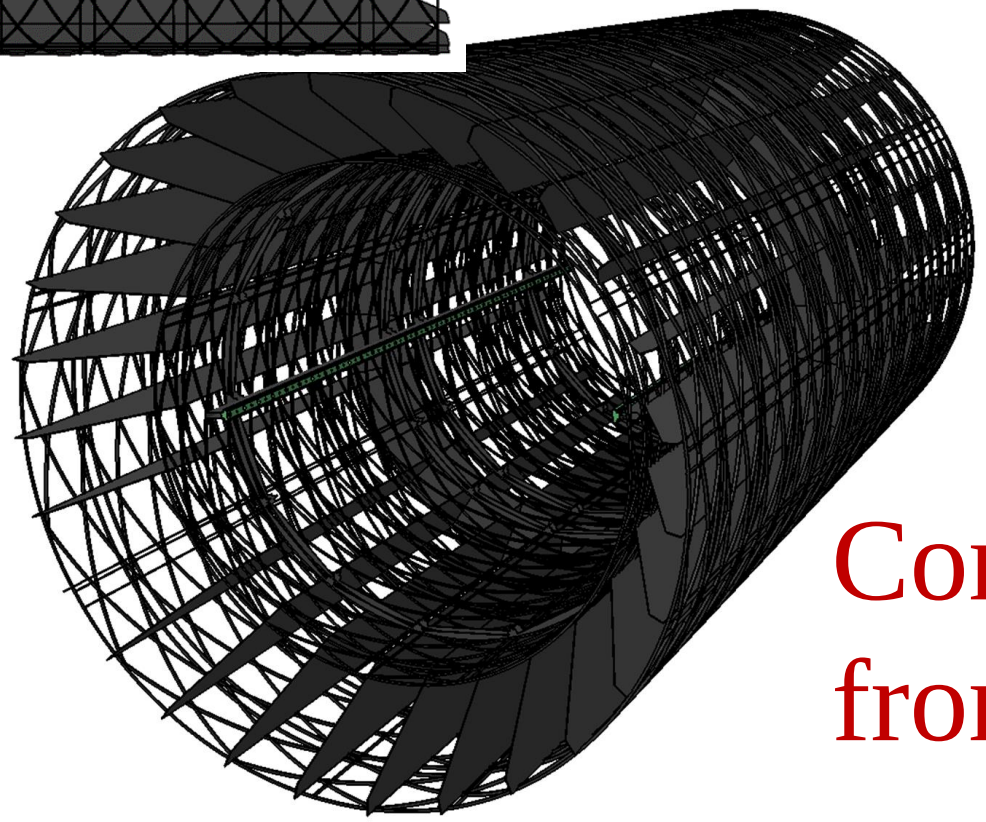
Prototype from china - 2



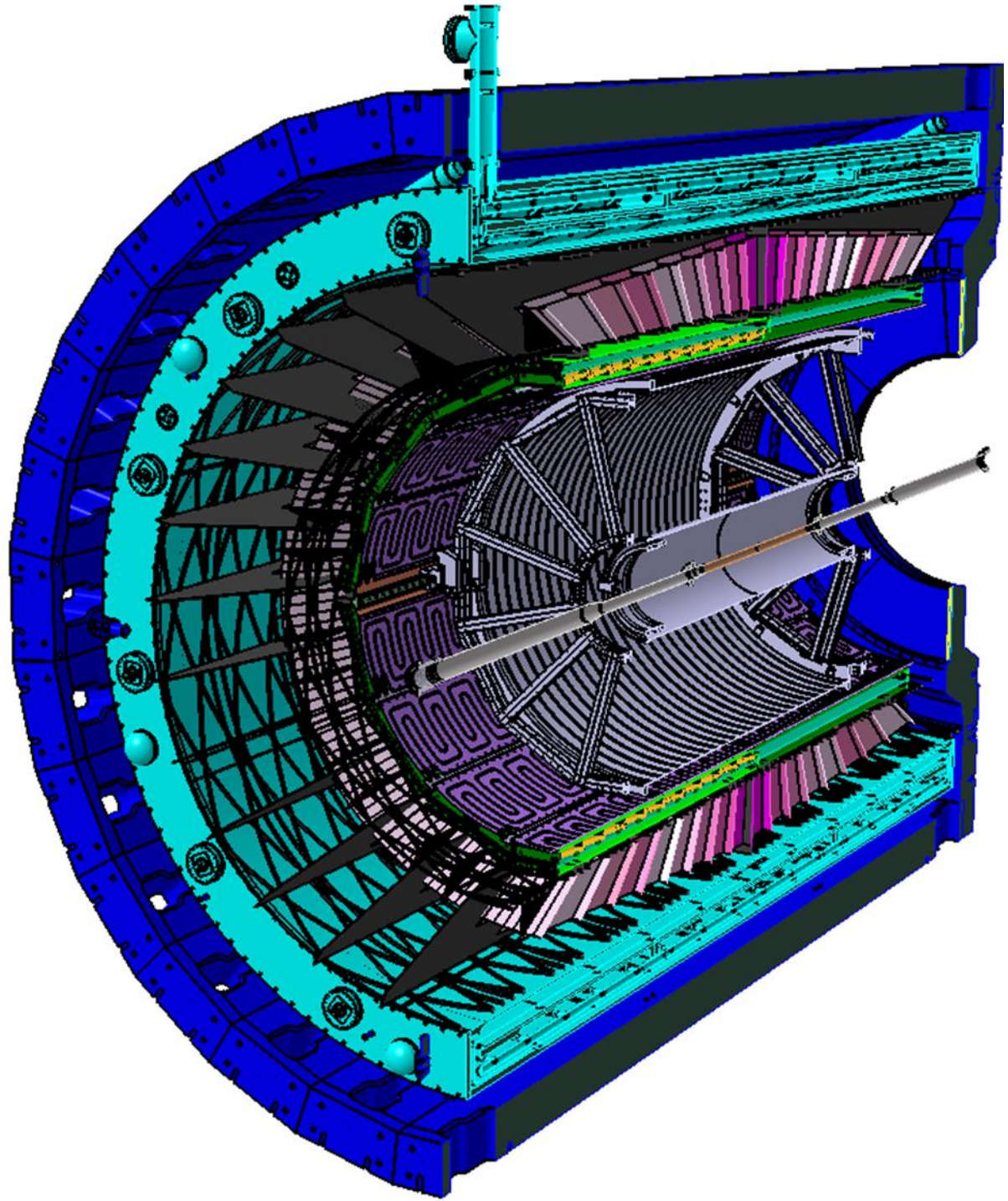
Supporting frame







Composite material
from Space industry

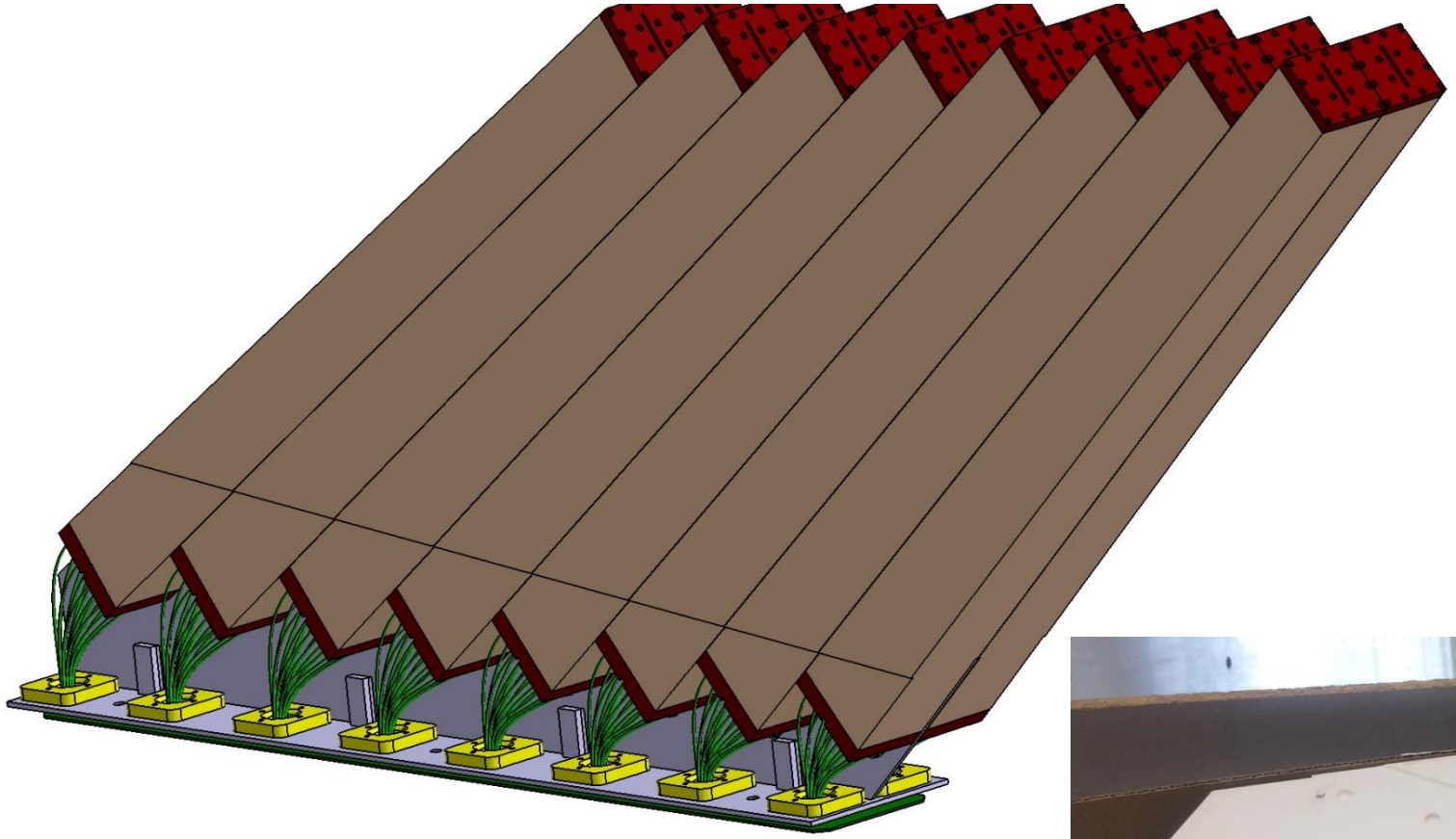


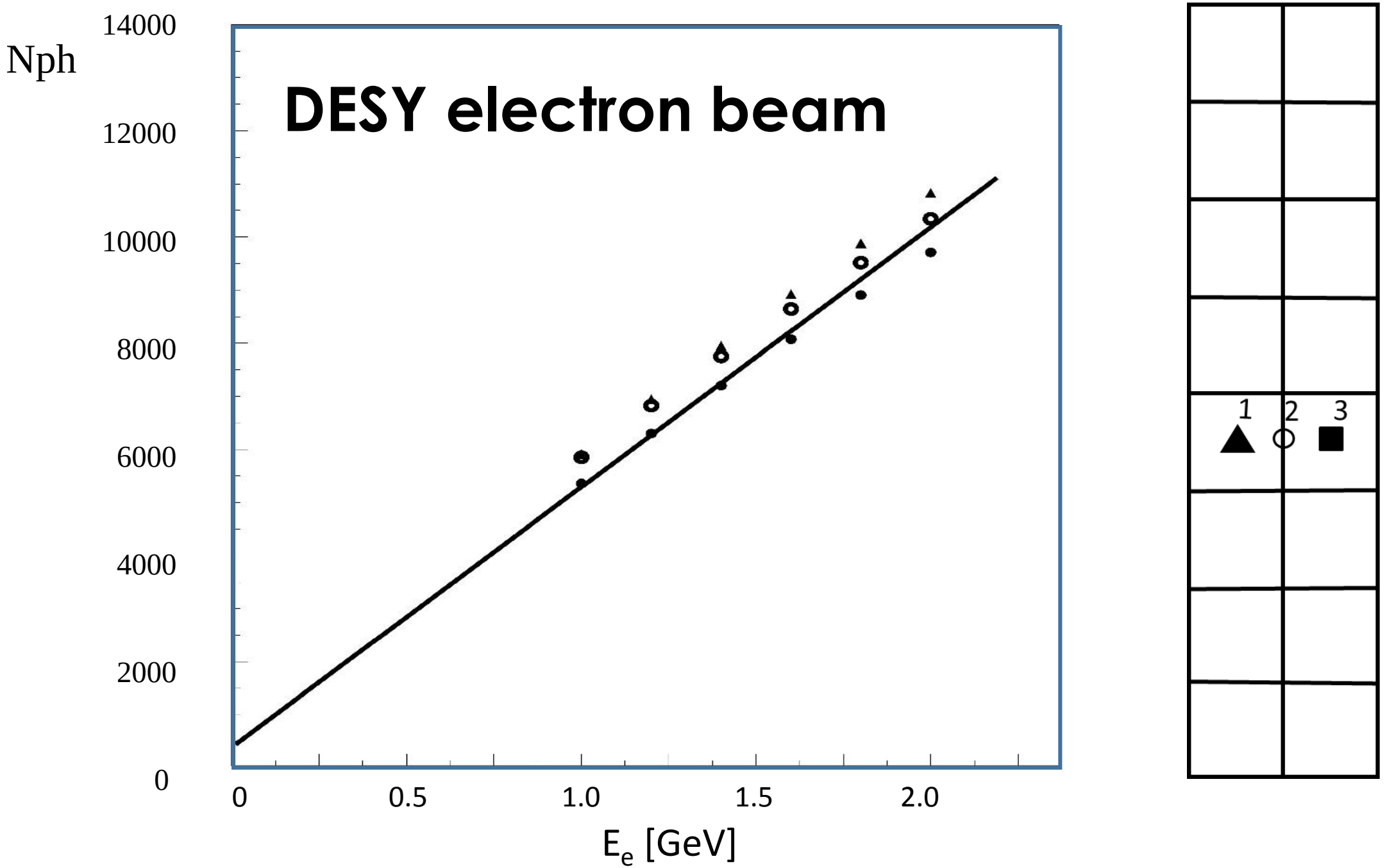
MPD ECal

First module with projective geometry

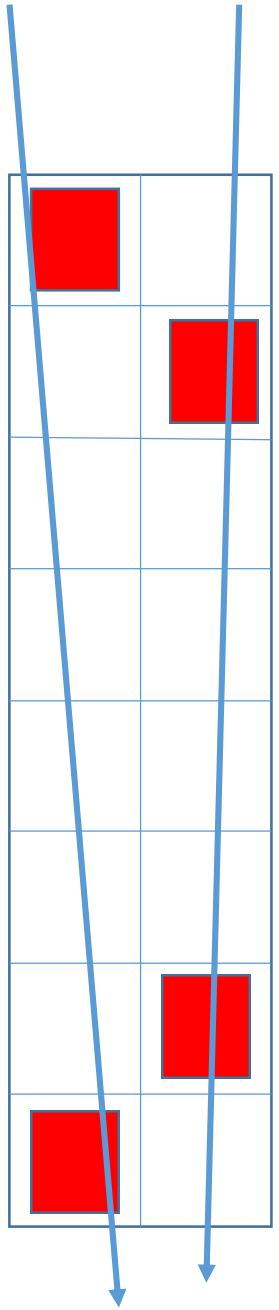
Beam tests

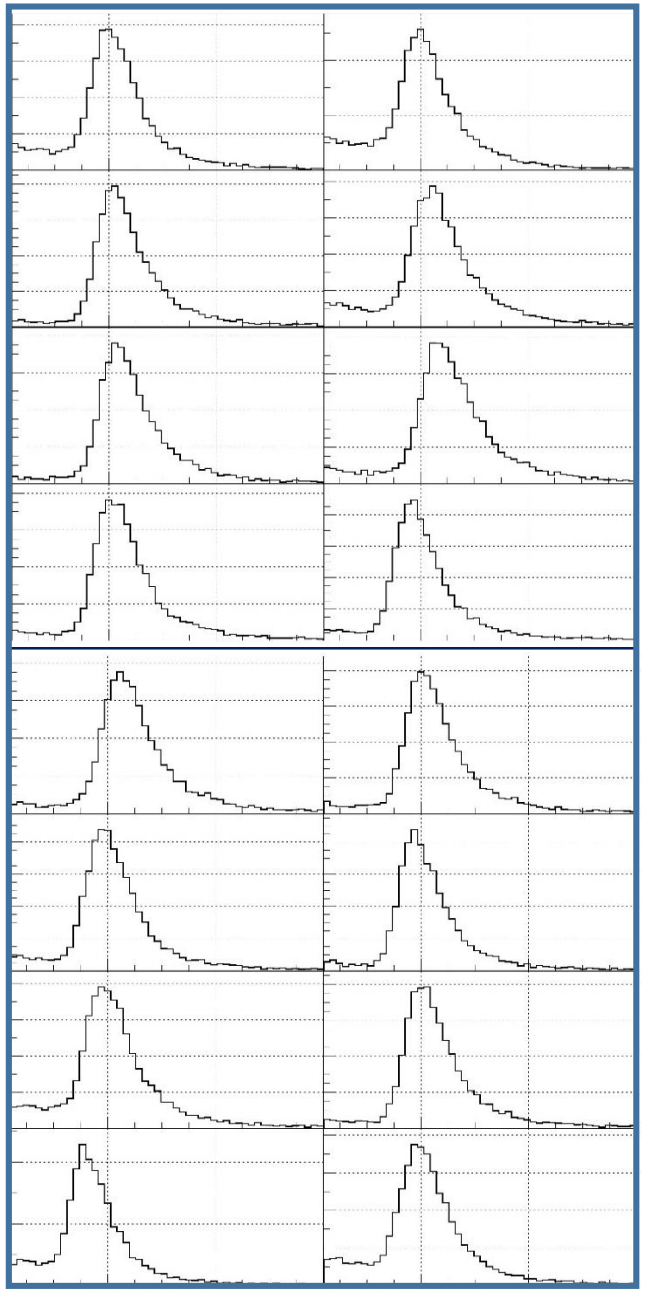
Dubna
October 2018

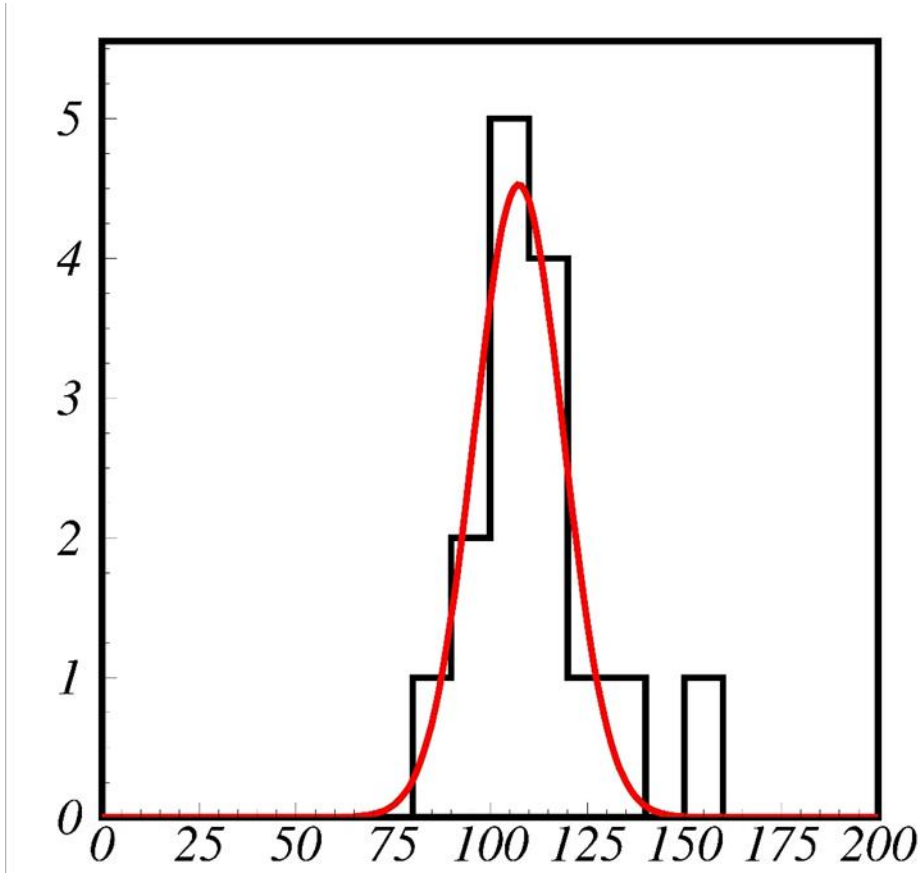



Nph
14000
12000
10000
8000
6000
4000
2000
0
DESY electron beam
0
0.5
1.0
1.5
2.0
E_e [GeV]
1
2
3

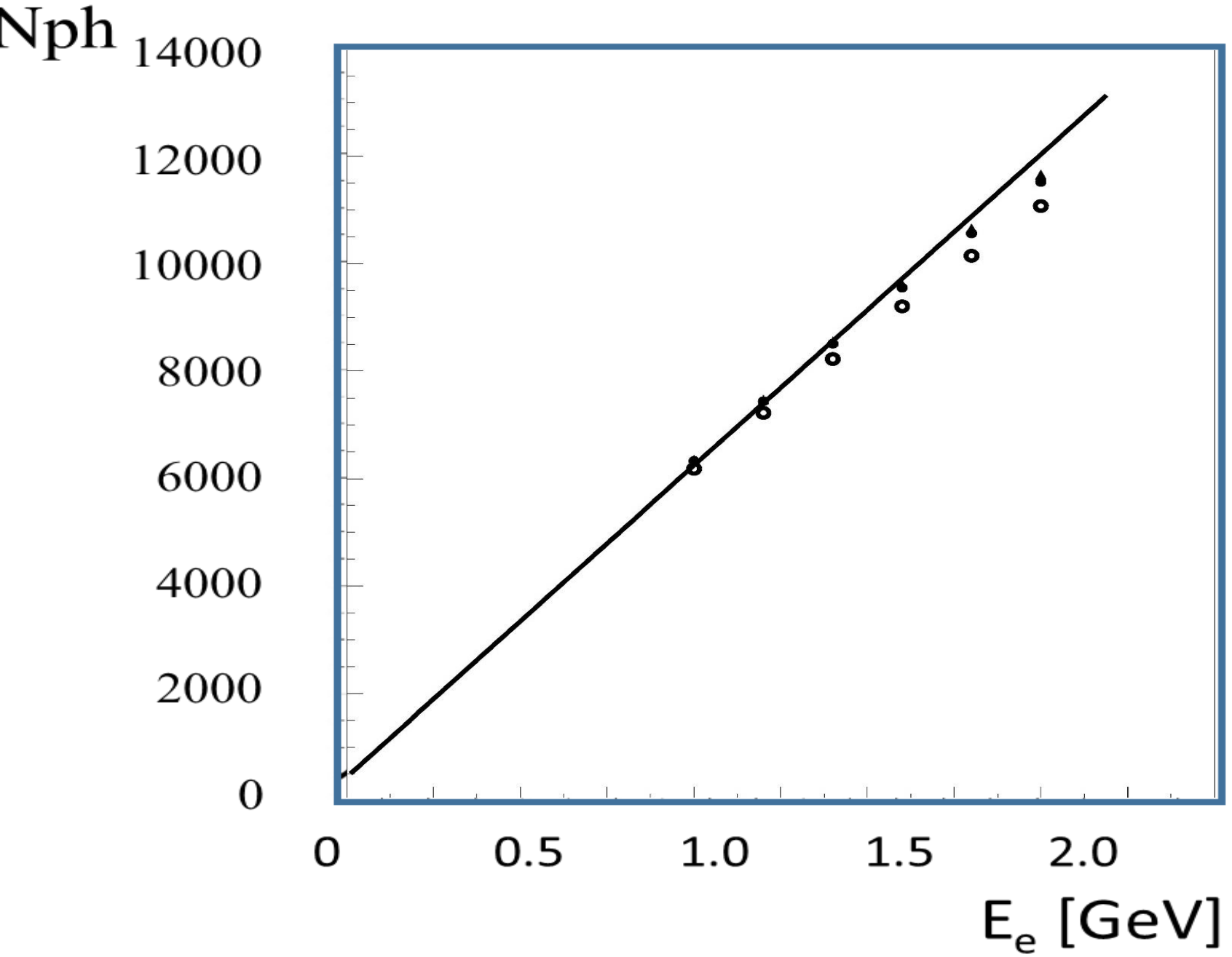
Cosmic calibration

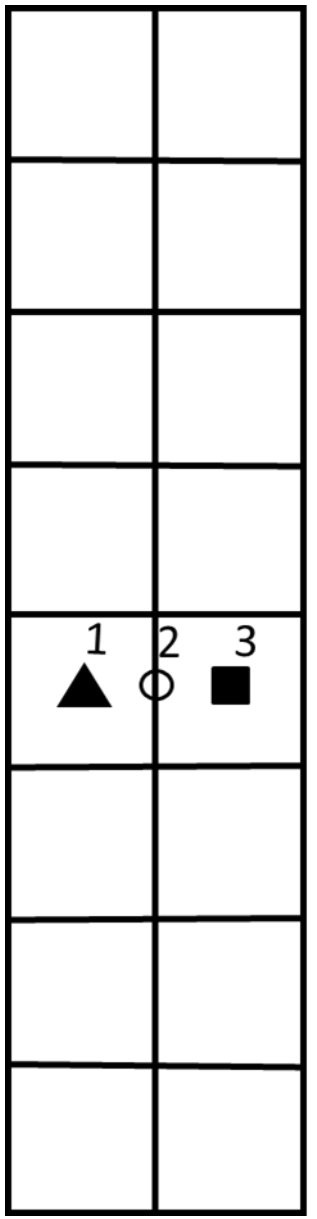




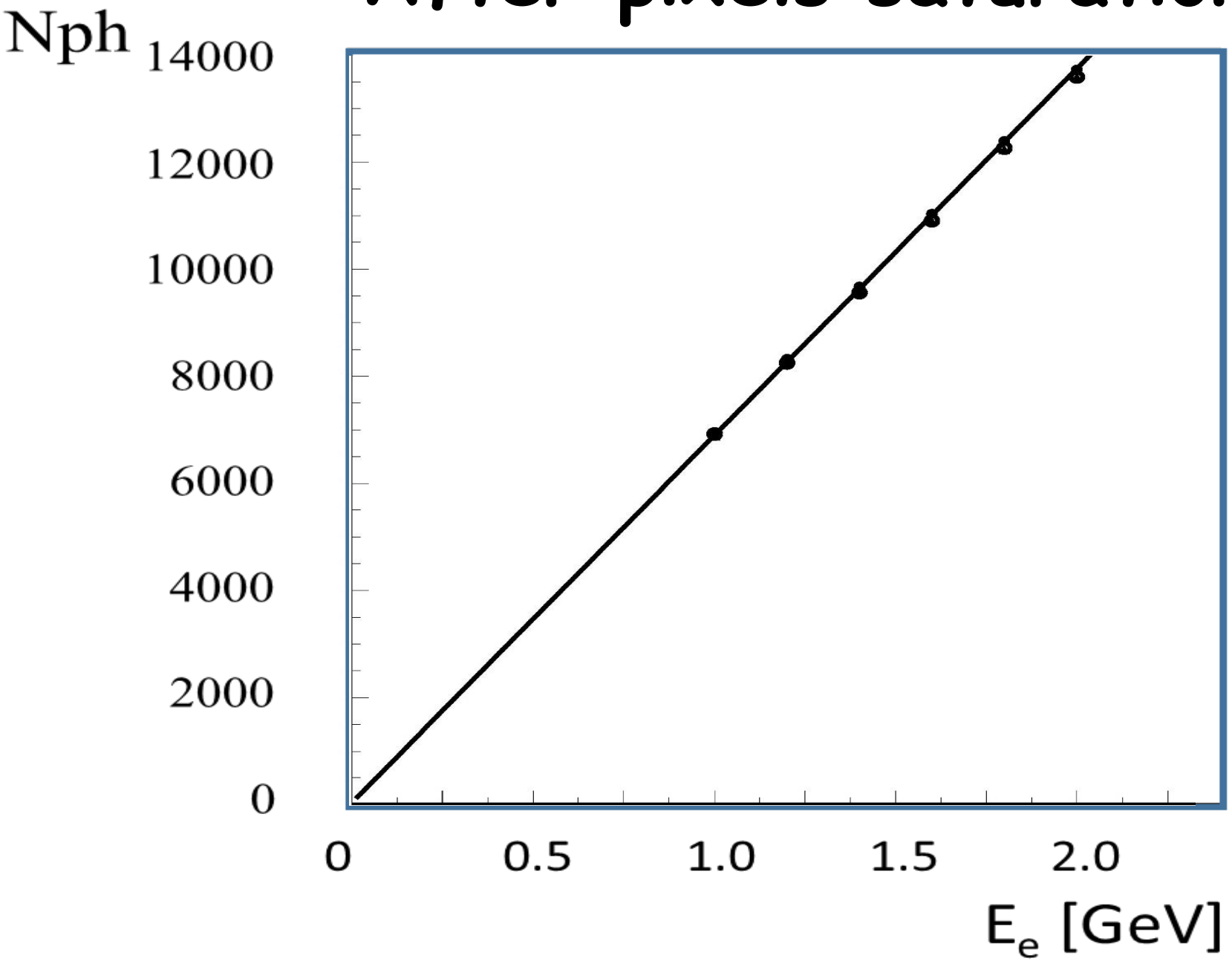


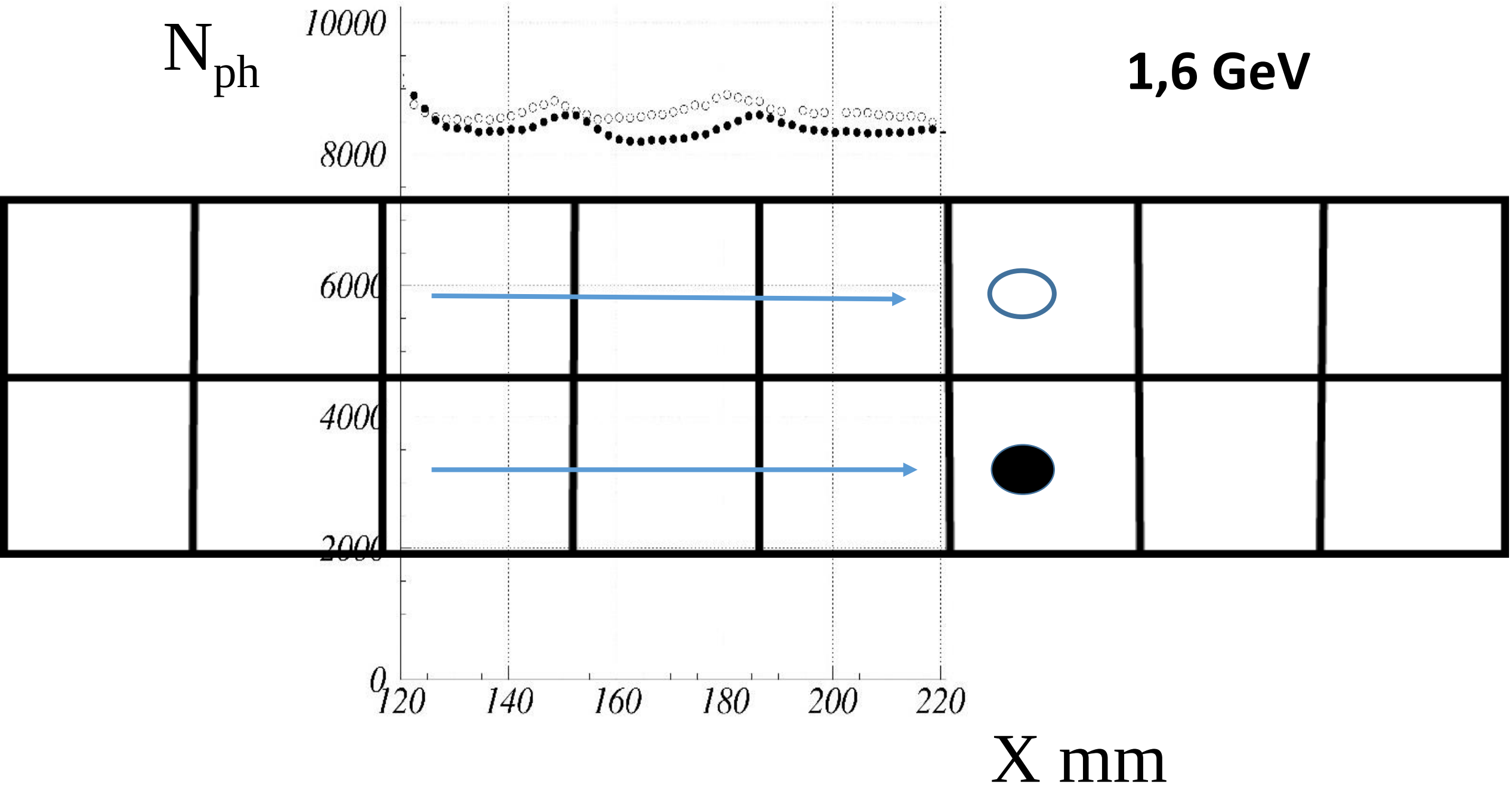
After calibration corrections applied



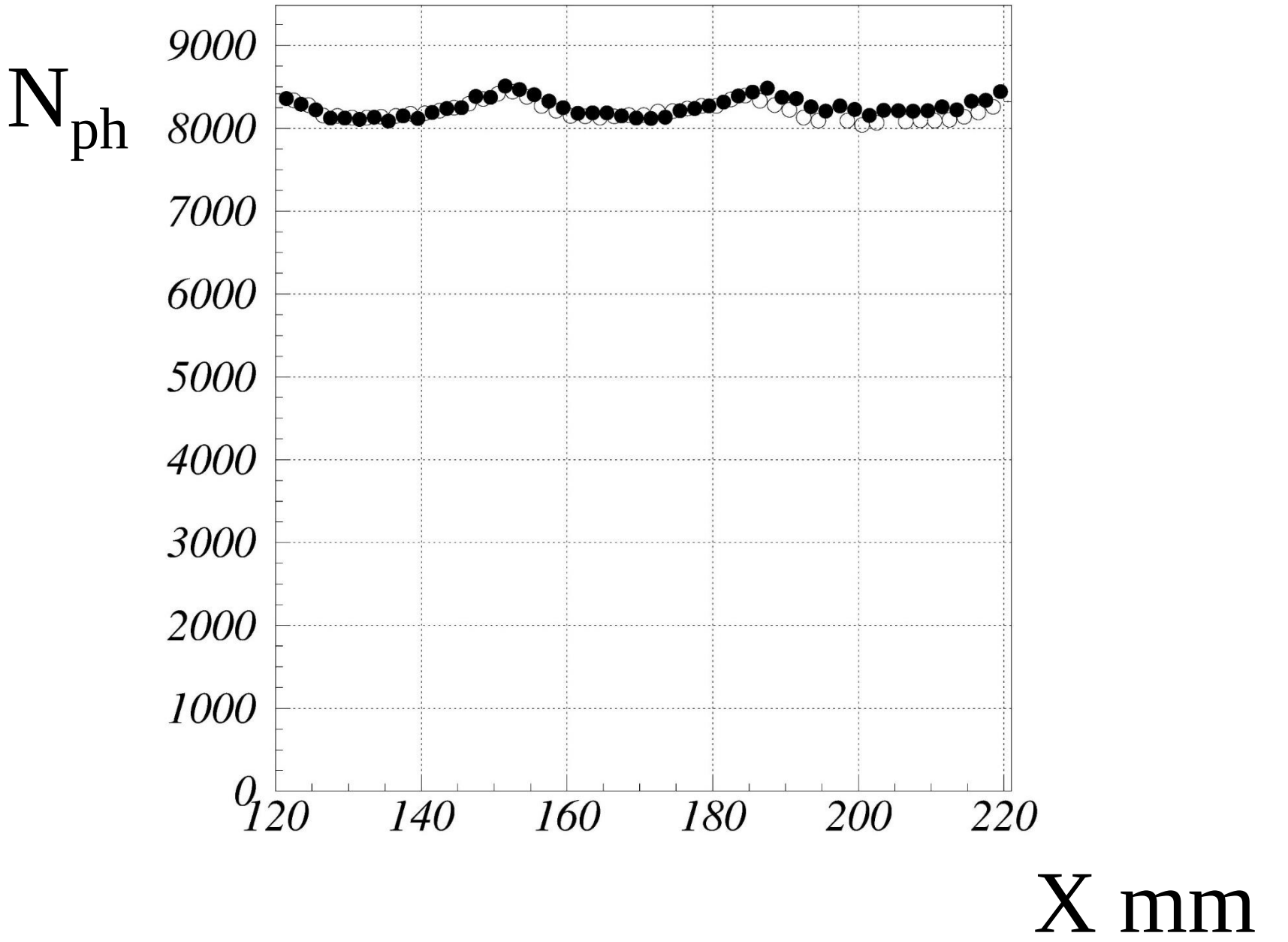


After pixels saturation corrected

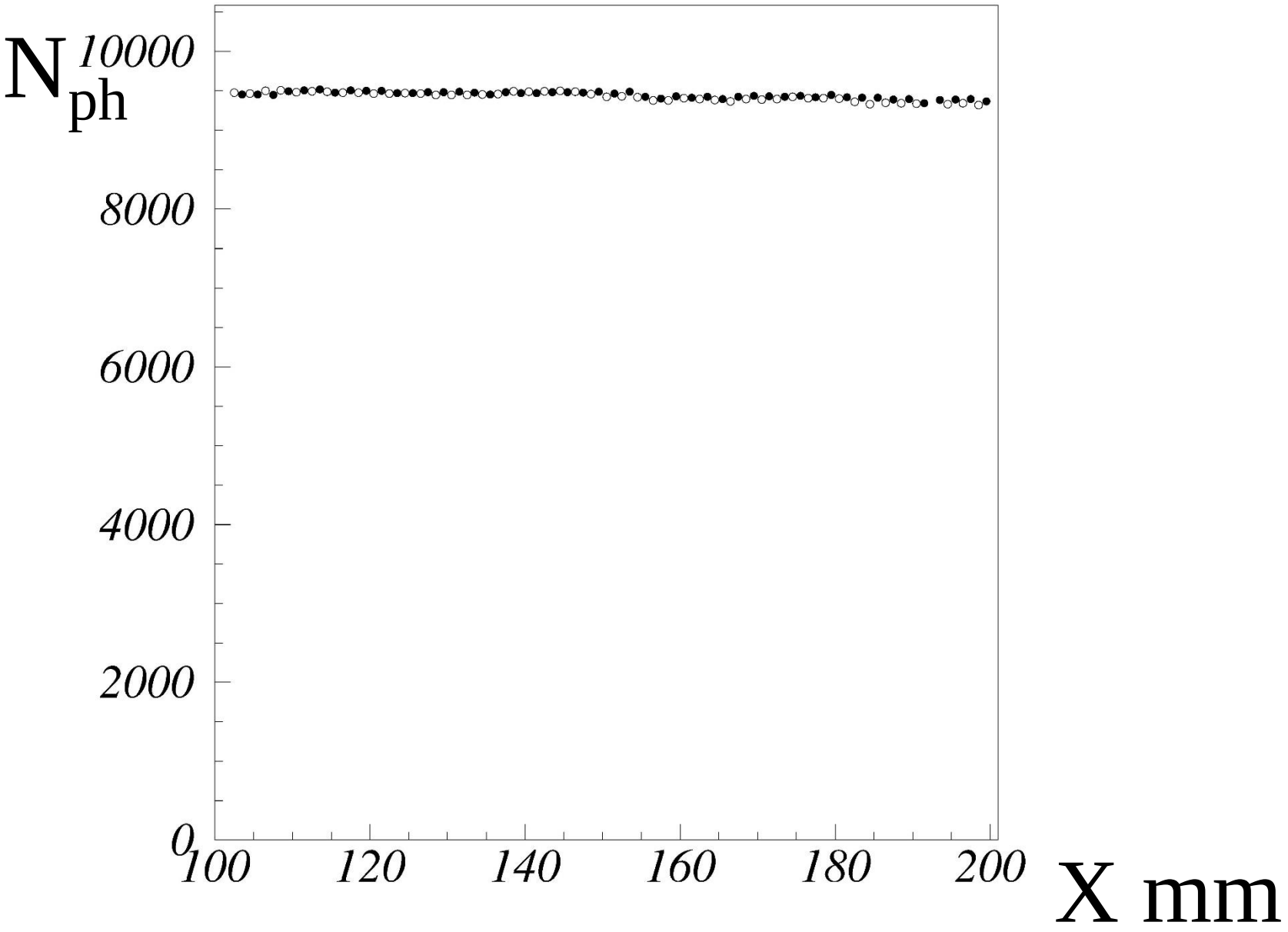


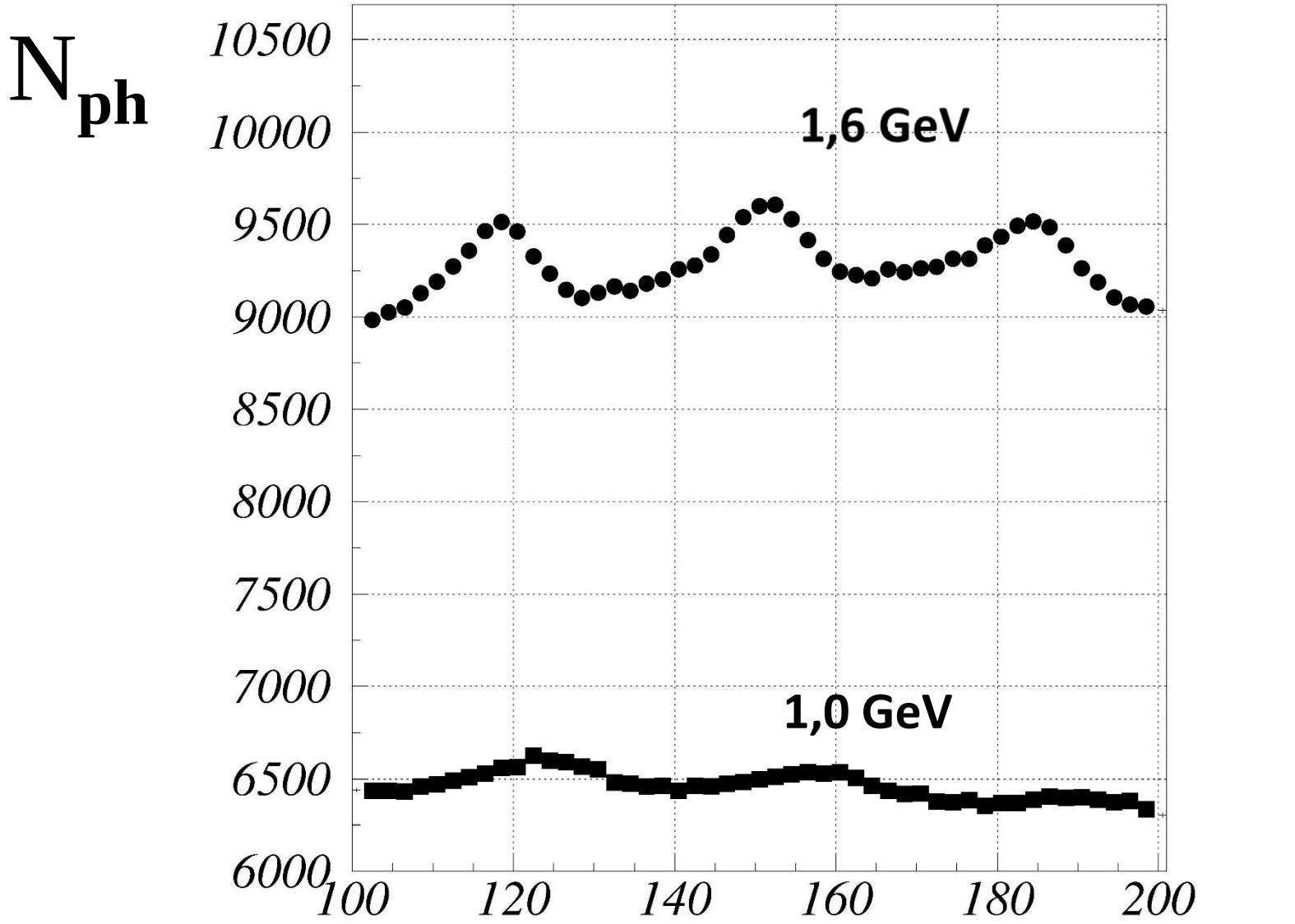

N_{ph}
10000
8000
6000
4000
2000
0
120
140
160
180
200
220
X mm
1,6 GeV

After calibration corrections applied



After pixels saturation corrected




N_{ph}
10500
10000
9500
9000
8500
8000
7500
7000
6500
6000
100
120
140
160
180
200
1,6 GeV
1,0 GeV
X [mm]

Conclusions

1. Three groups already built test modules.
   We are ready to start mass production of ECal modules
2. Supporting frame from the composite materials may be ready in time
3. First, most complicated, module have been constructed and tested.
4. Sensitivity to the electromagnetic shower is shown on the level of previously constructed devices
5. Easy method of the channels calibration by means of cosmic muons have been tested
6. Effect of numerical saturation of the SiPM was studied and found to be well in the agreement with expectations