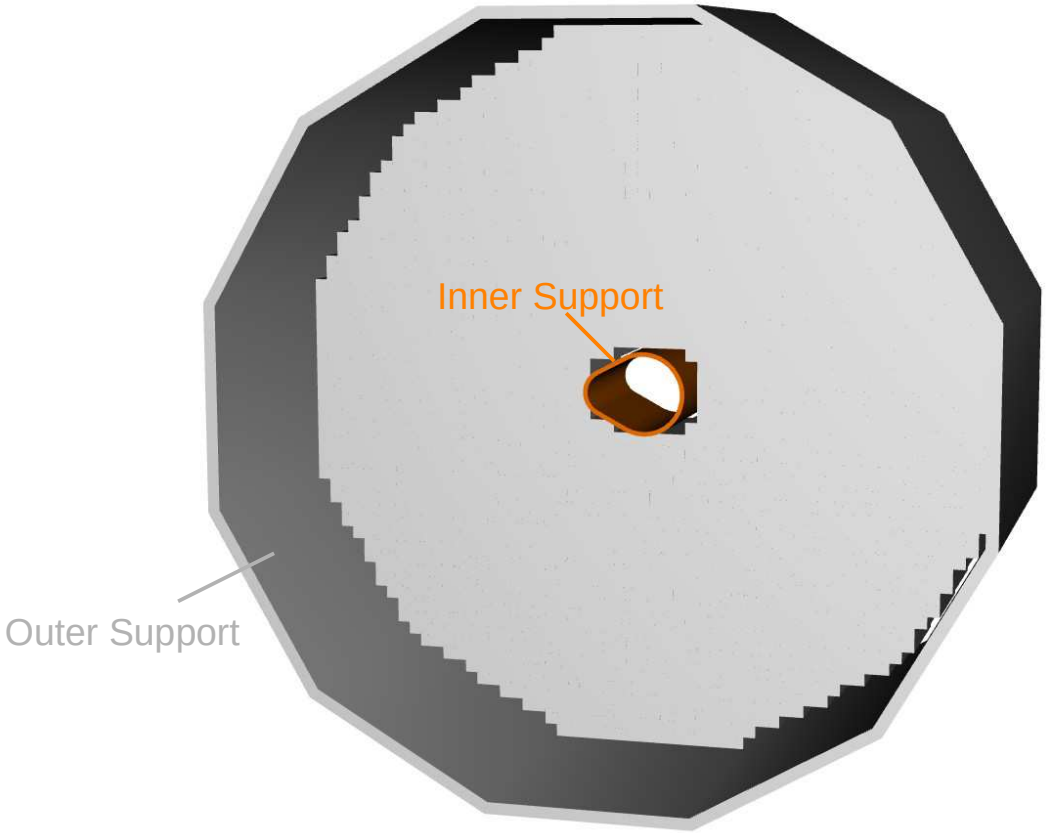
A. ALIKHANYAN National Laboratory

Test Beam Prototype Simulations

Artur Hoghmrtsyan



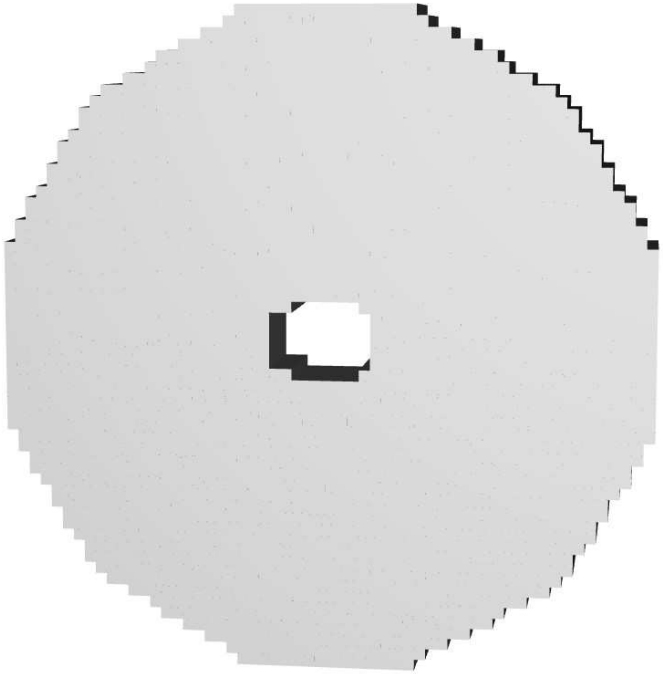
https://github.com/eic/epic/tree/main/build/epic_eeemcal_only.xml

Includes:

https://github.com/eic/epic/tree/main/compact/ecal/backward_PbWO4.xml

Created by:

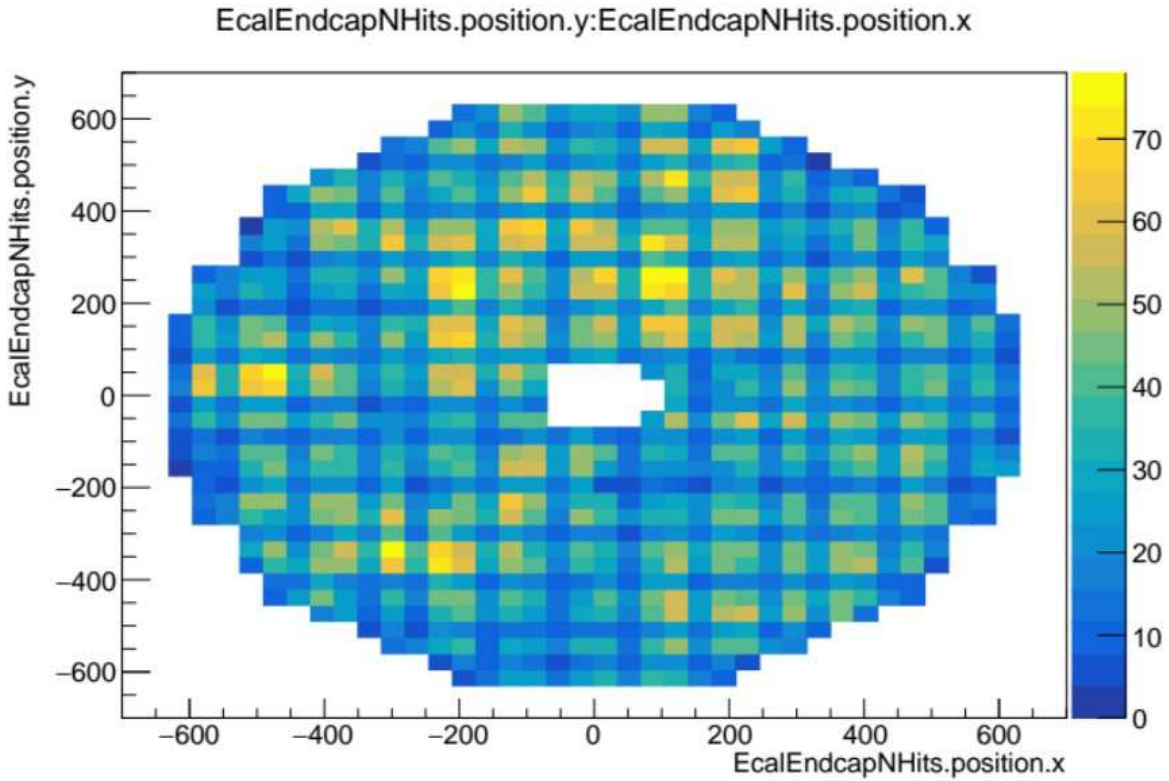
https://github.com/eic/epic/blob/main/src/HomogeneousCalorimeter_geo.cpp

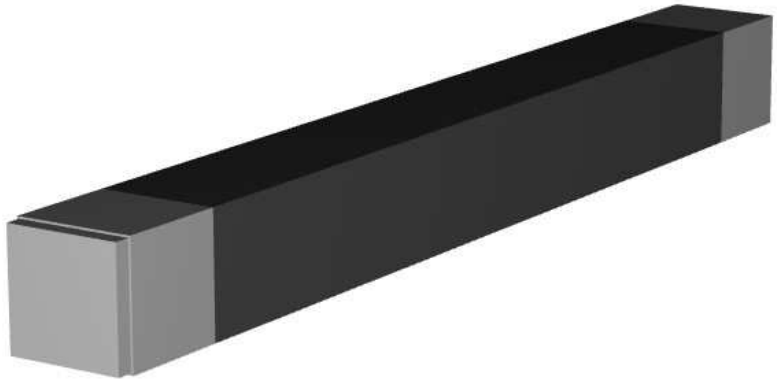


Inner and Outer supports were excluded.

Modules are placed in a 12 surface disk, with

Inner ring - 25 cm
Outer ring - 65 cm


EcalEndcapNHits.position.y:EcalEndcapNHits.position.x
EcalEndcapNHits.position.y
600
400
200
0
−200
−400
−600
−600
−400
−200
0
200
400
600
EcalEndcapNHits.position.x
70
60
50
40
30
20
10
0

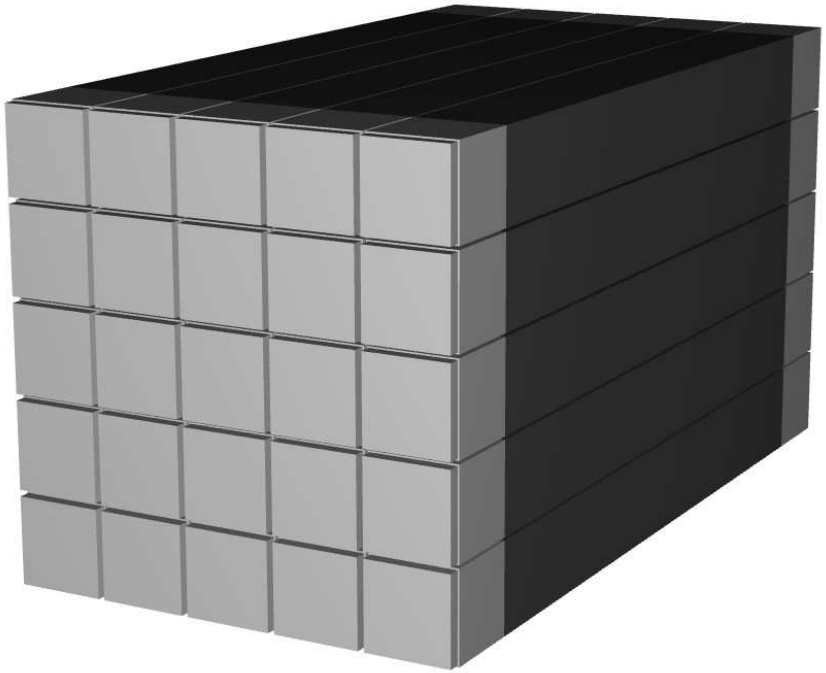


Crystal

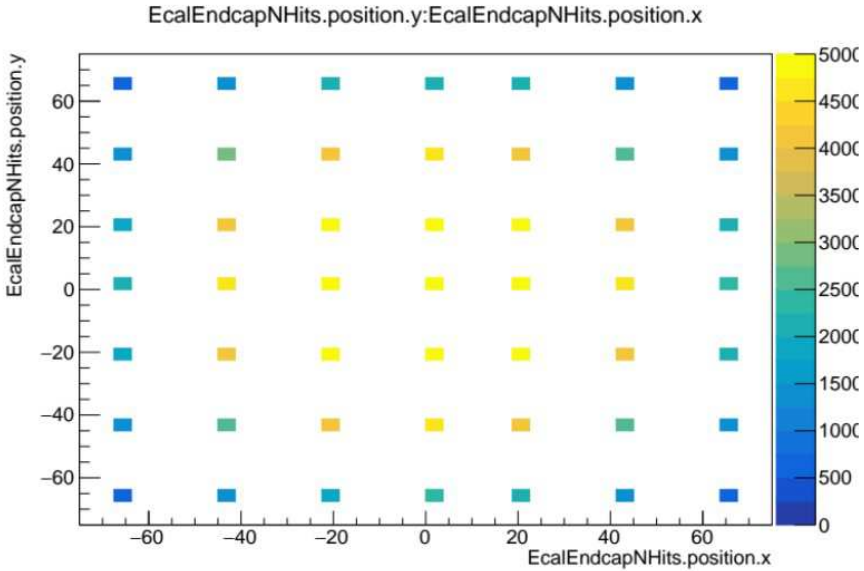
Width - 20.50 mm
Length - 200 mm
CarbonFiber thickness - 0.25 mm
VM2000 thickness - 0.13 mm
PCB thickness - 1.45 mm

Sensor (S14160 SiPM)

Size X - 6.85 mm
Size Y - 7.35 mm
Spacing - 1 mm
Thickness - 1.45 mm
Matrix - 2x2



HomogeneousCalorimeter_geo.cpp and backward_PbWO4.xml have been modified to place modules in a matrix



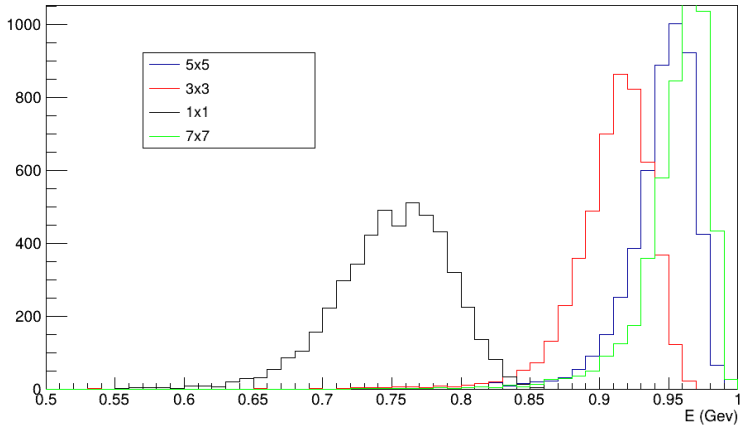
5x5 Matrix is optimal for further analysis

Particle Gun

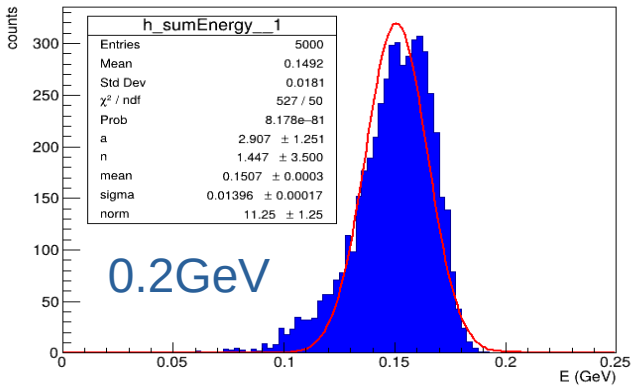
Position (0,0,-40mm)

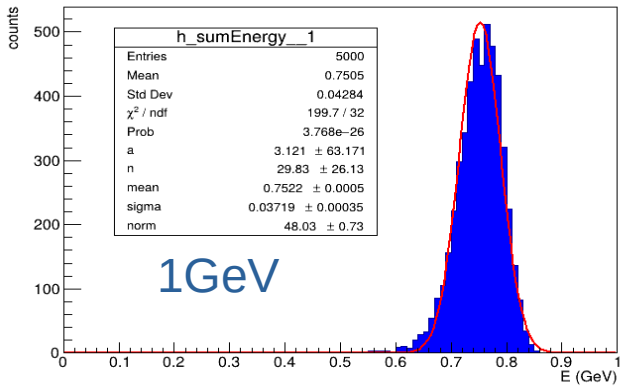
Particle - e^-

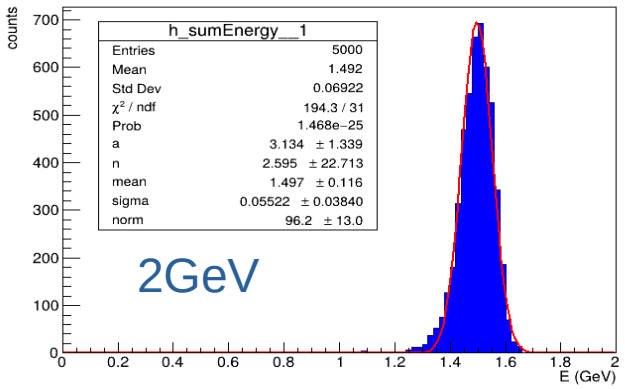
Energy (0.2 ,1 ,2 ,5 , 10)

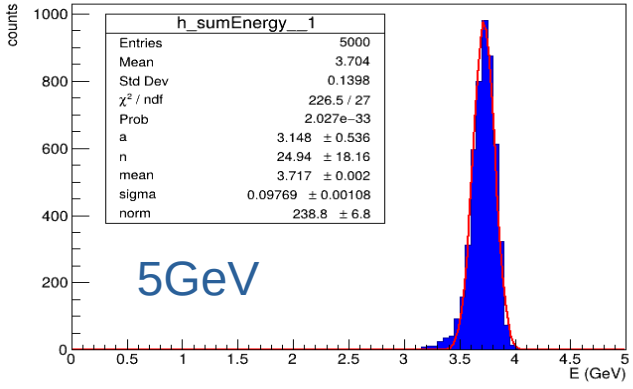


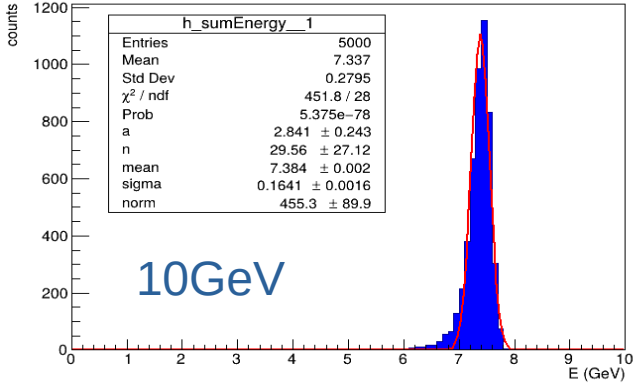
Deposited Energy for 1x1 Matrix for different Gun energies



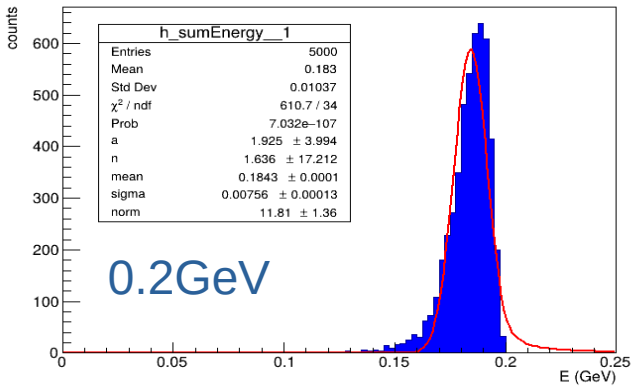


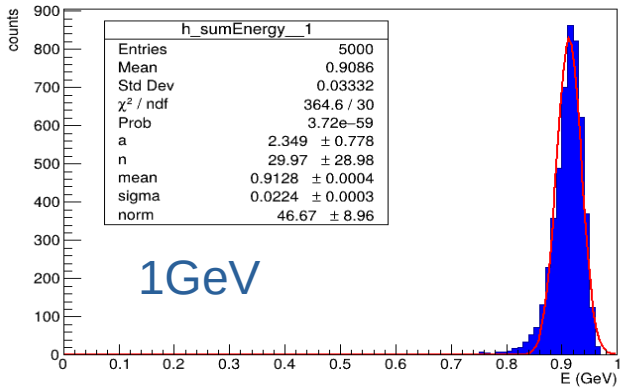


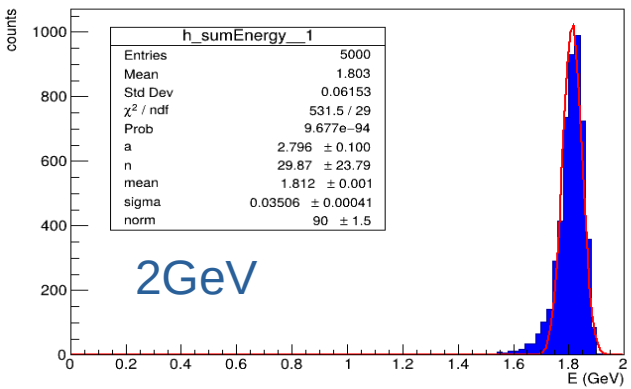


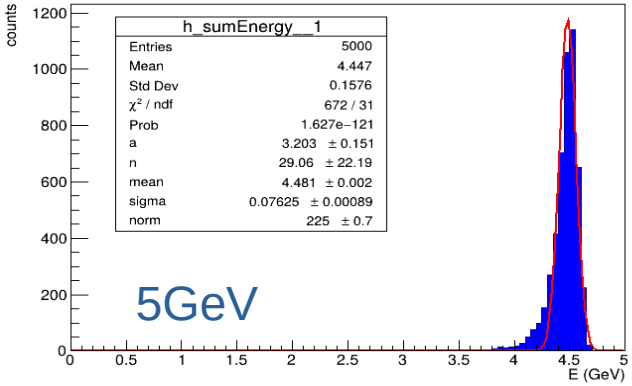


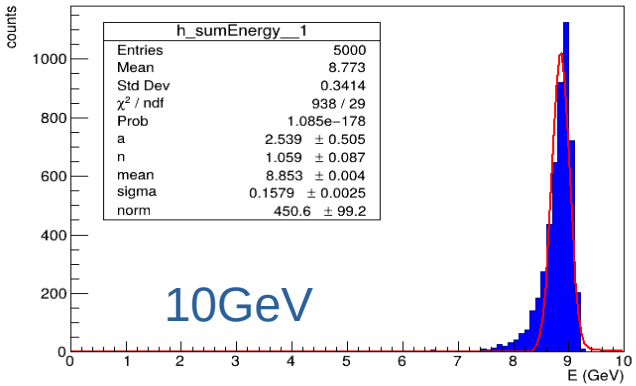
Deposited Energy for 3x3 Matrix for different Gun energies



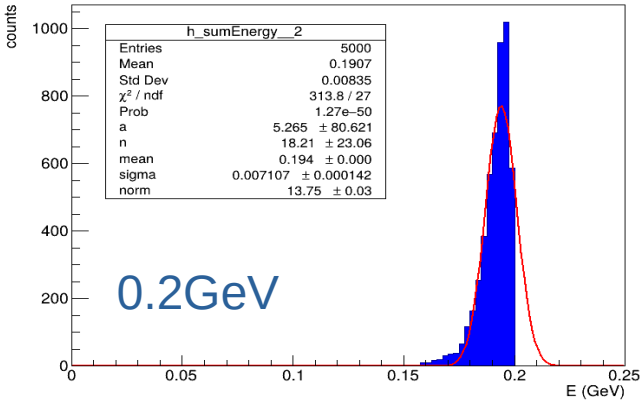


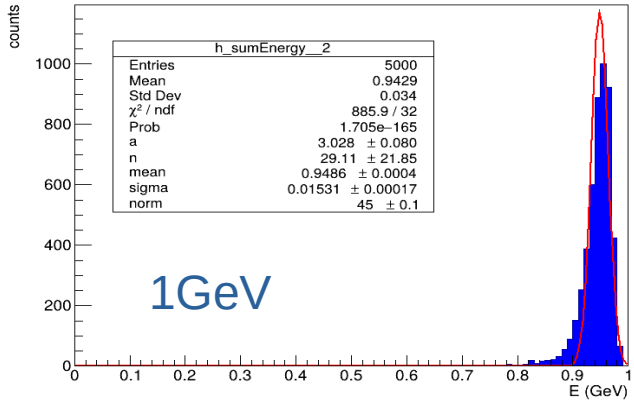


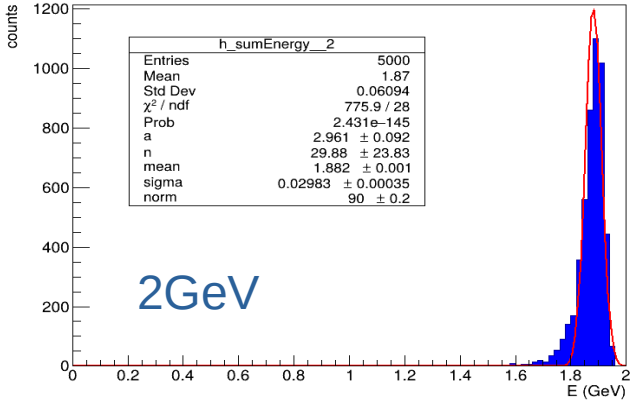


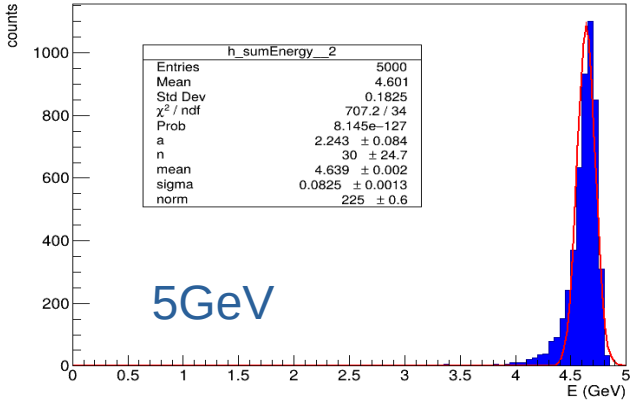


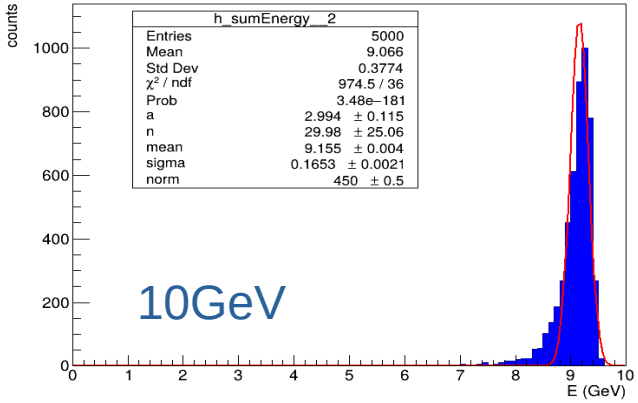
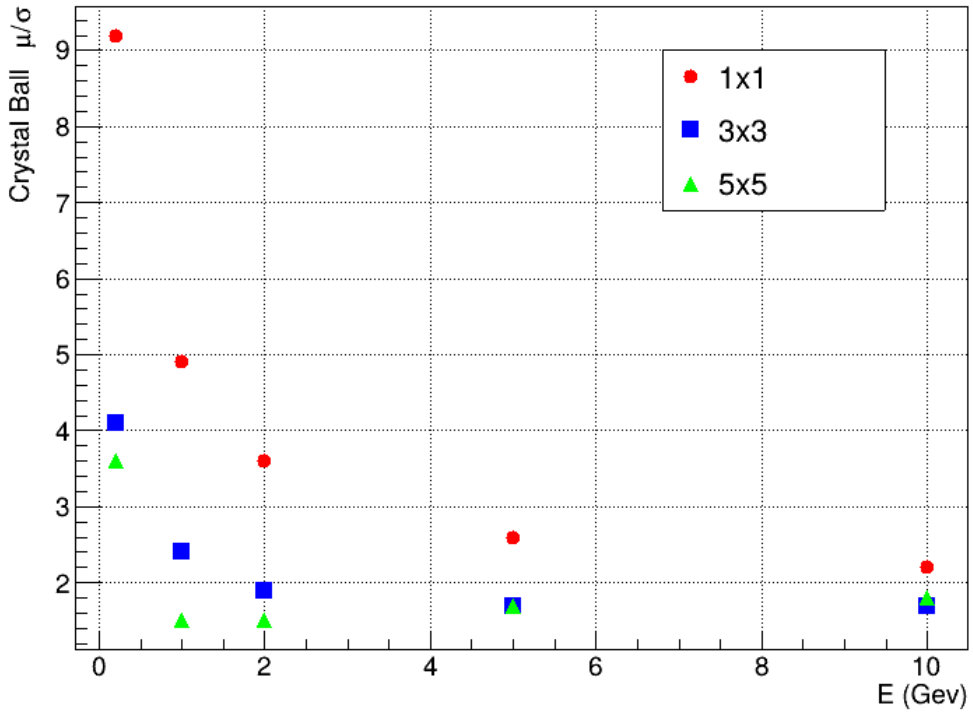
Deposited Energy for 5x5 Matrix for different Gun energies











Energy resolution for different Matrix