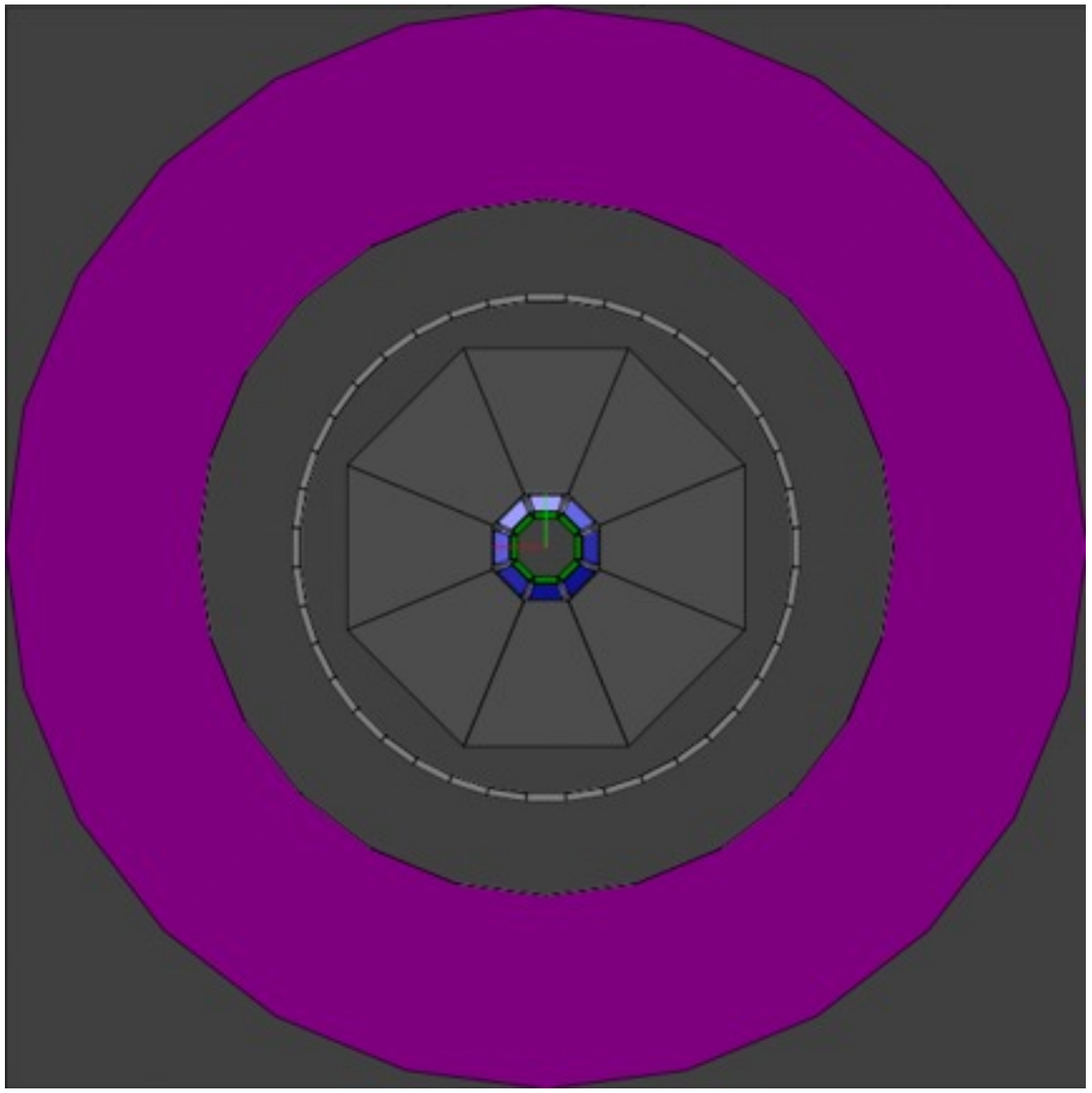
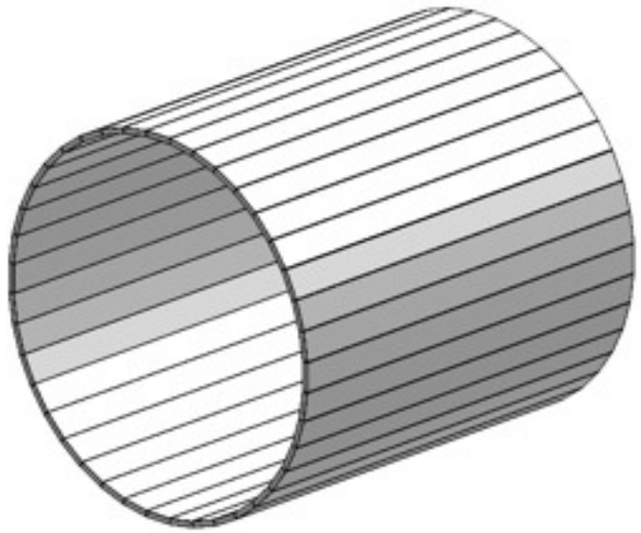
Simulation of Detector surrounding TPC

2012.12.28. Fri.

Go Yeonju

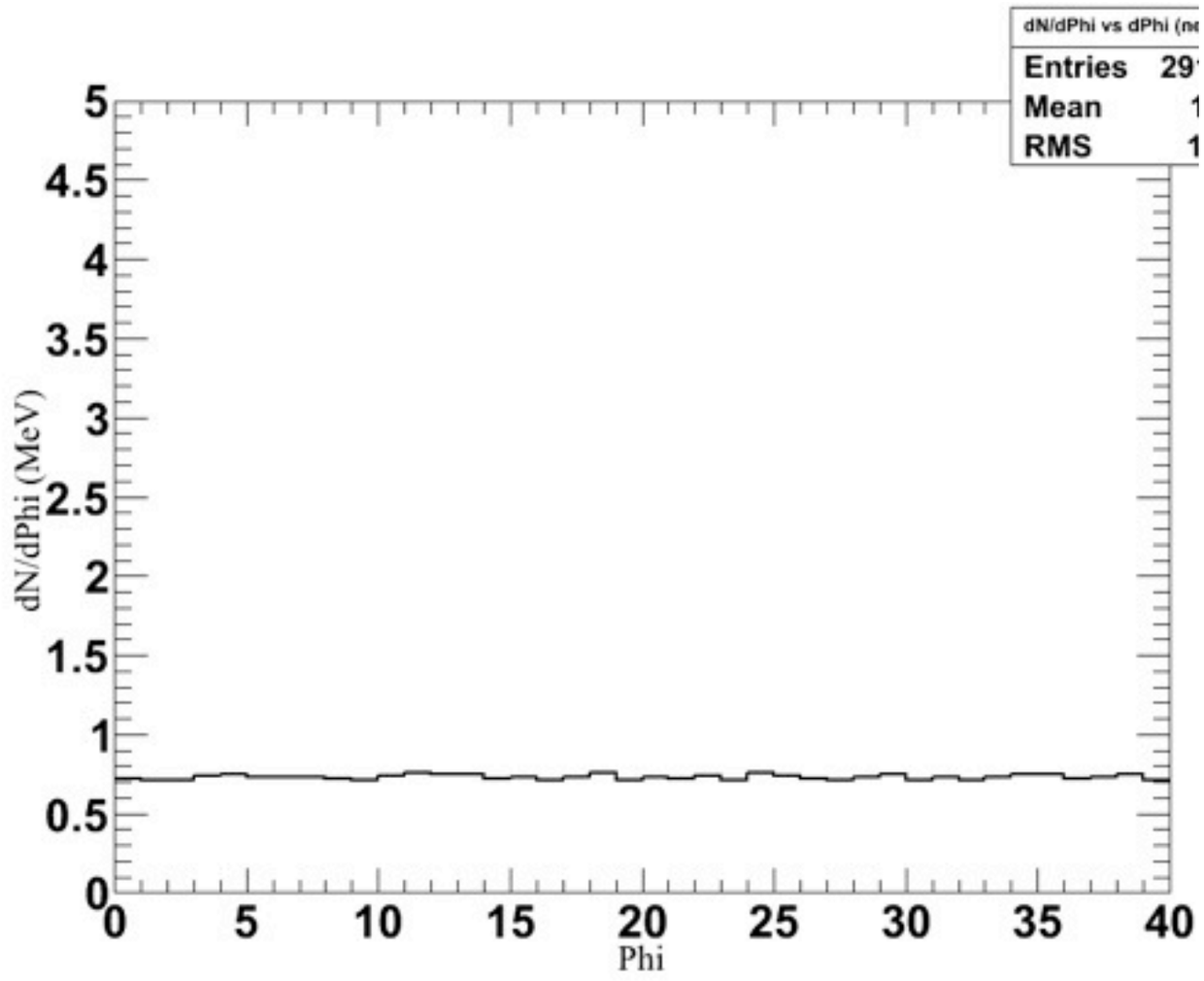
Detector Surrounding TPC

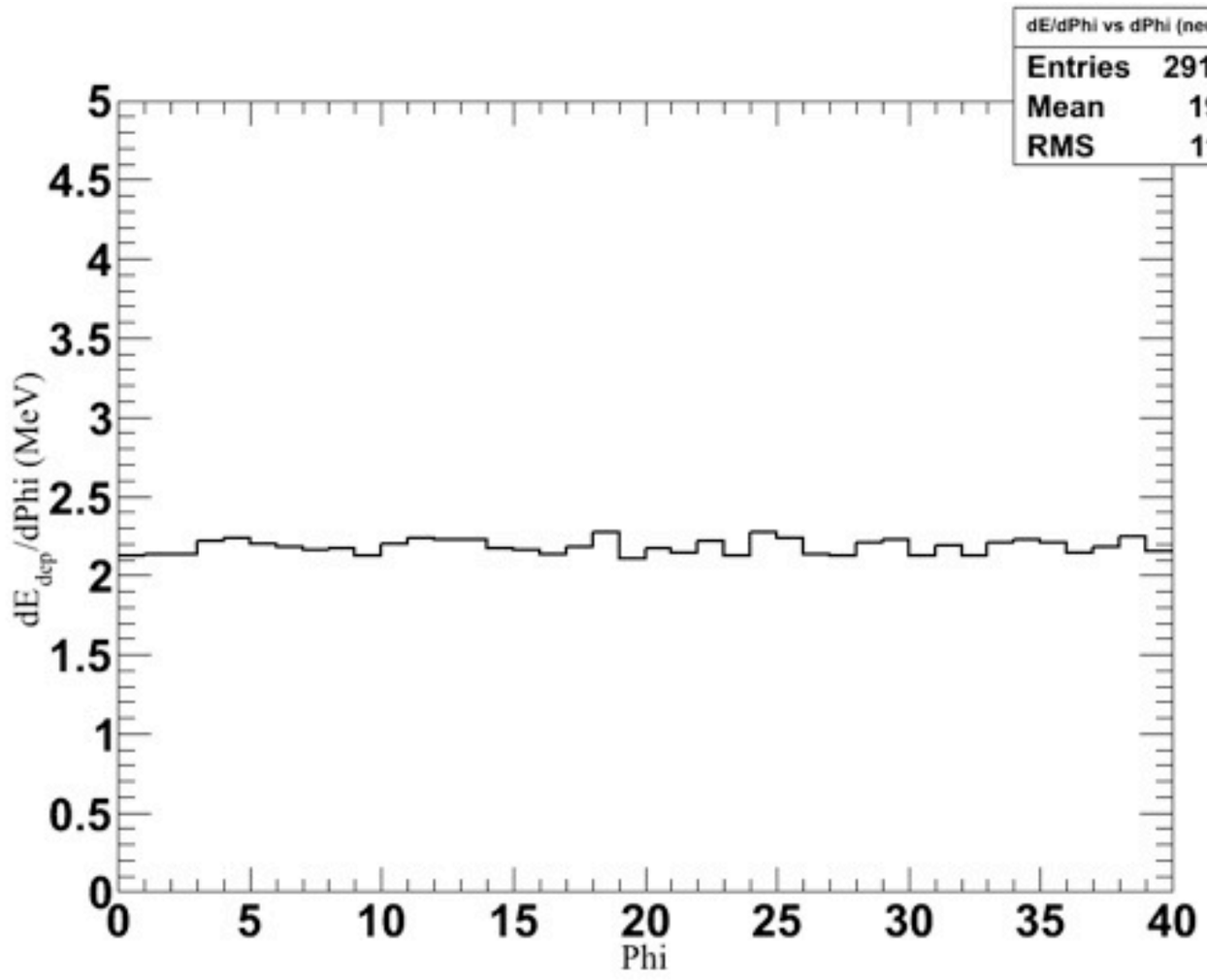


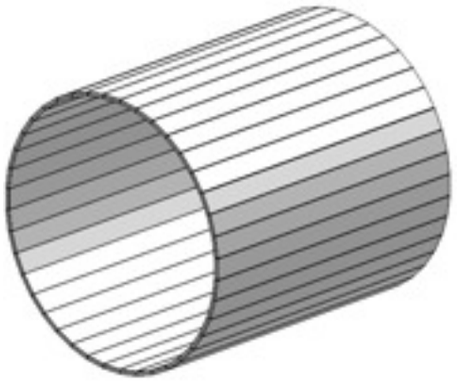


radial length : 20 cm → 2 cm

Neutron



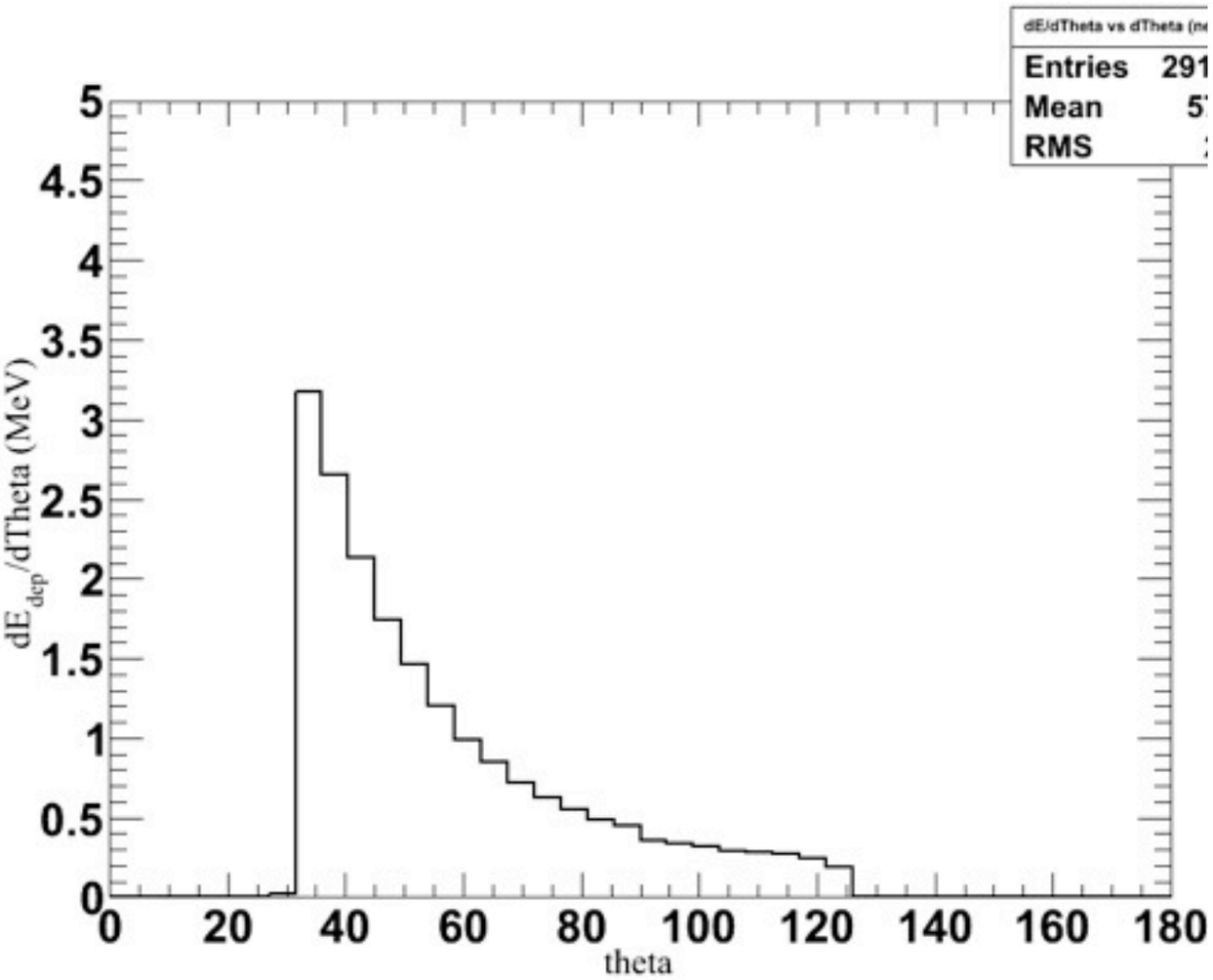


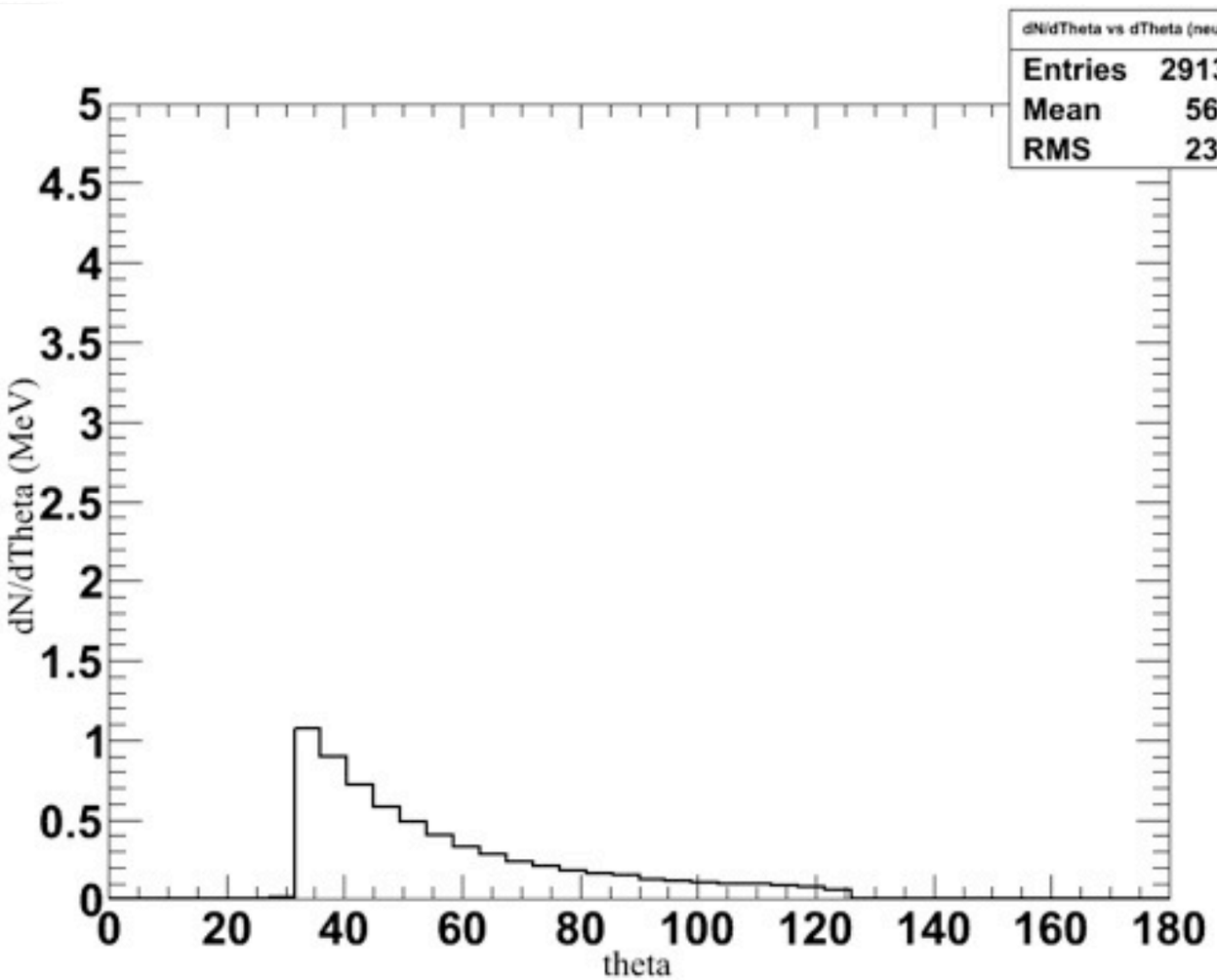


Energy cut : 1 MeV

1 bin = 1 module

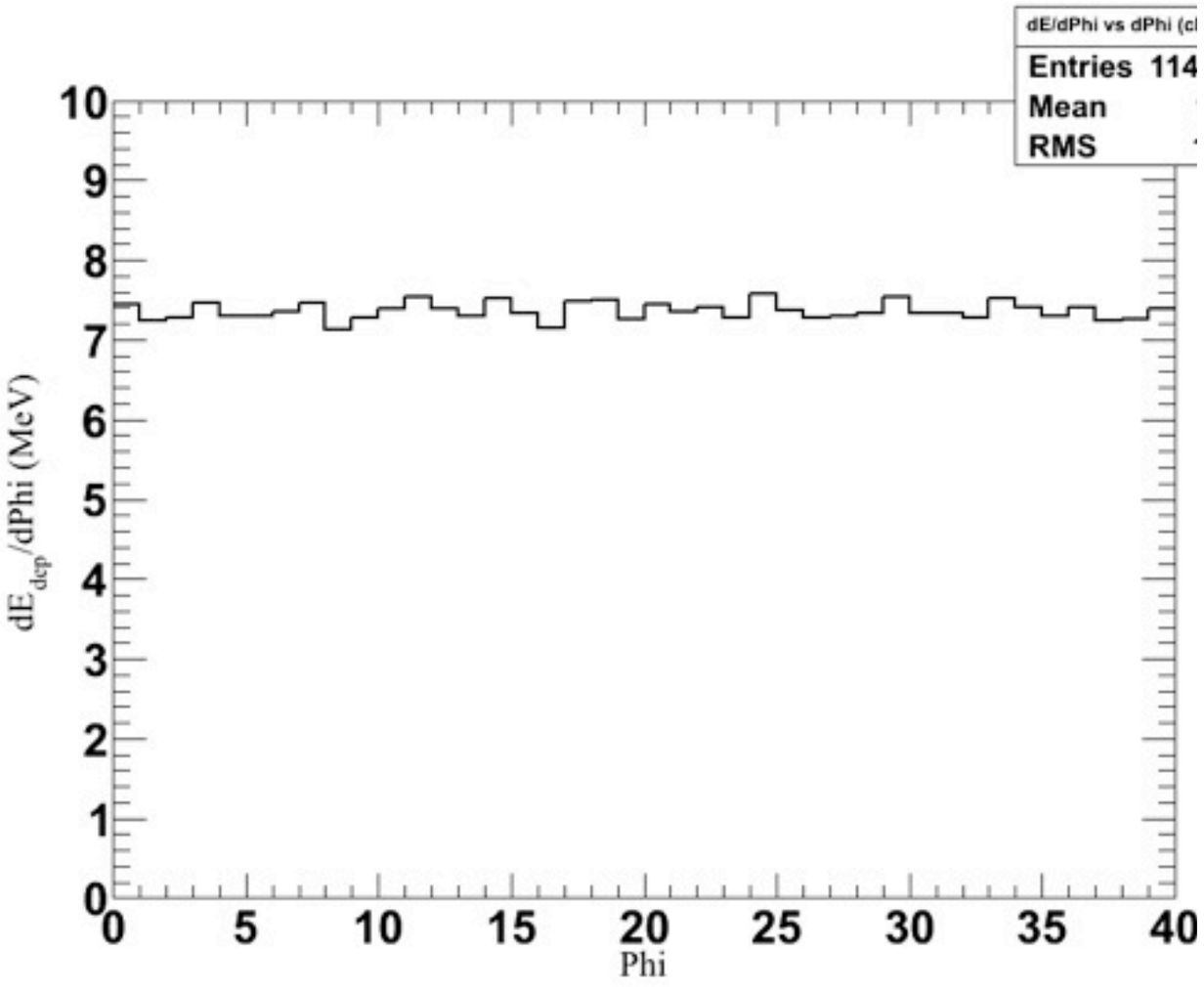
Neutron

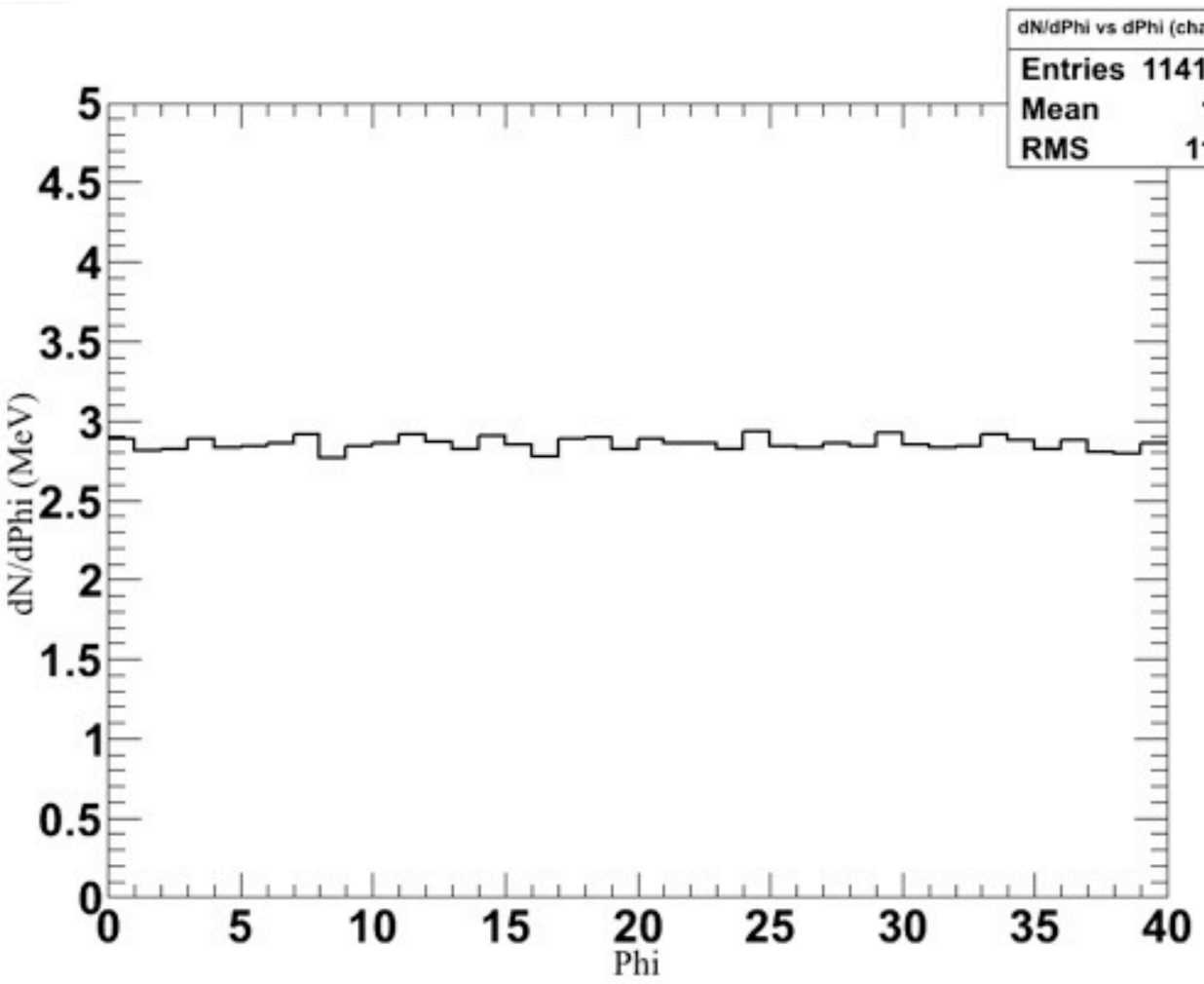




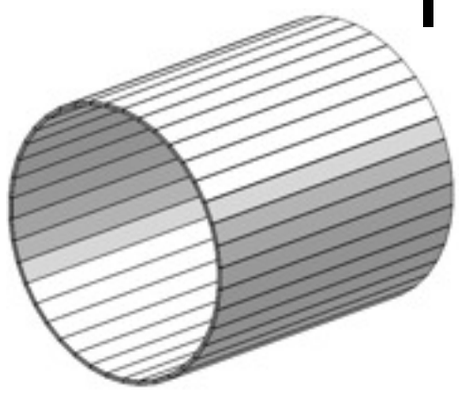
Energy cut : 1 MeV

Charged Particles



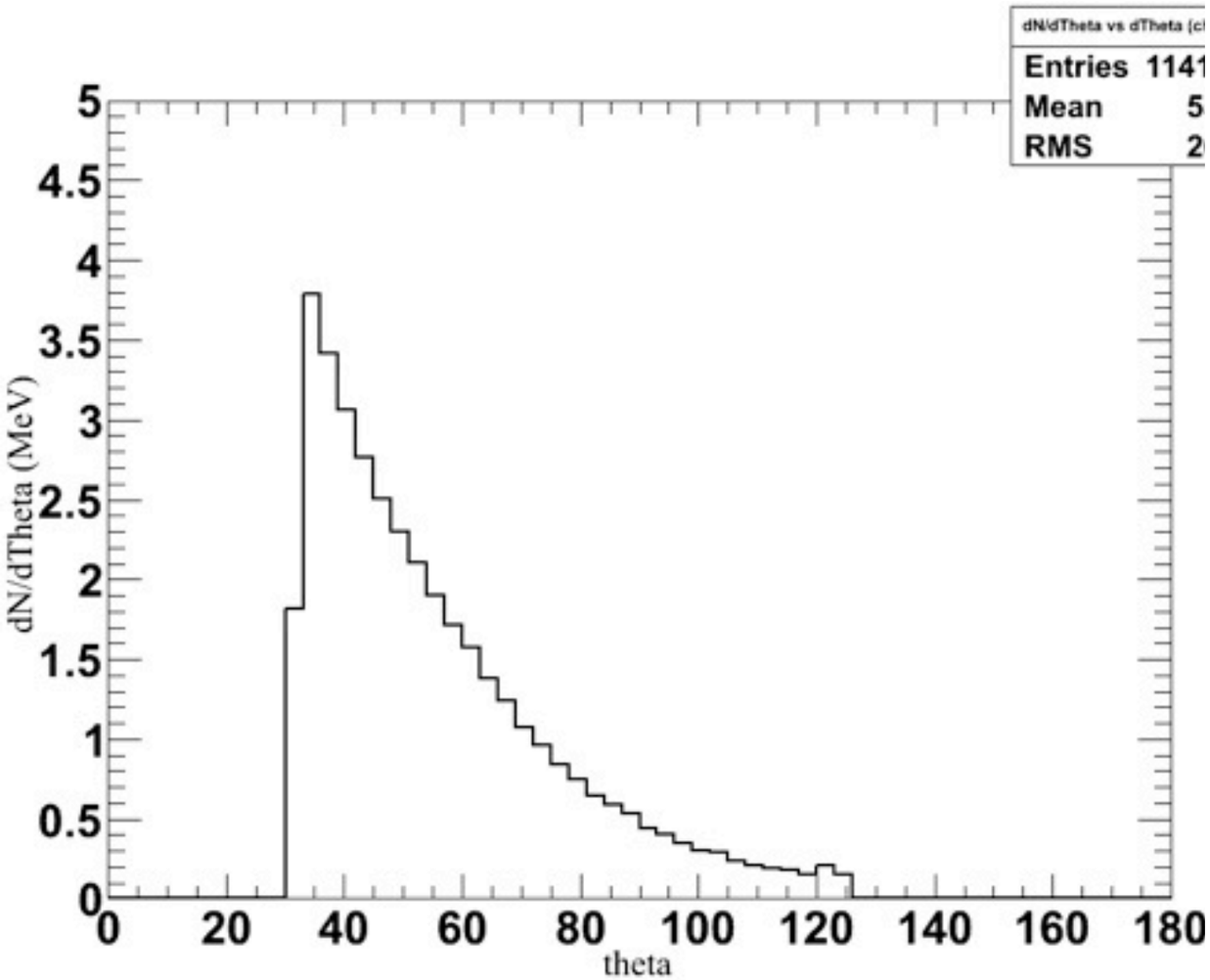


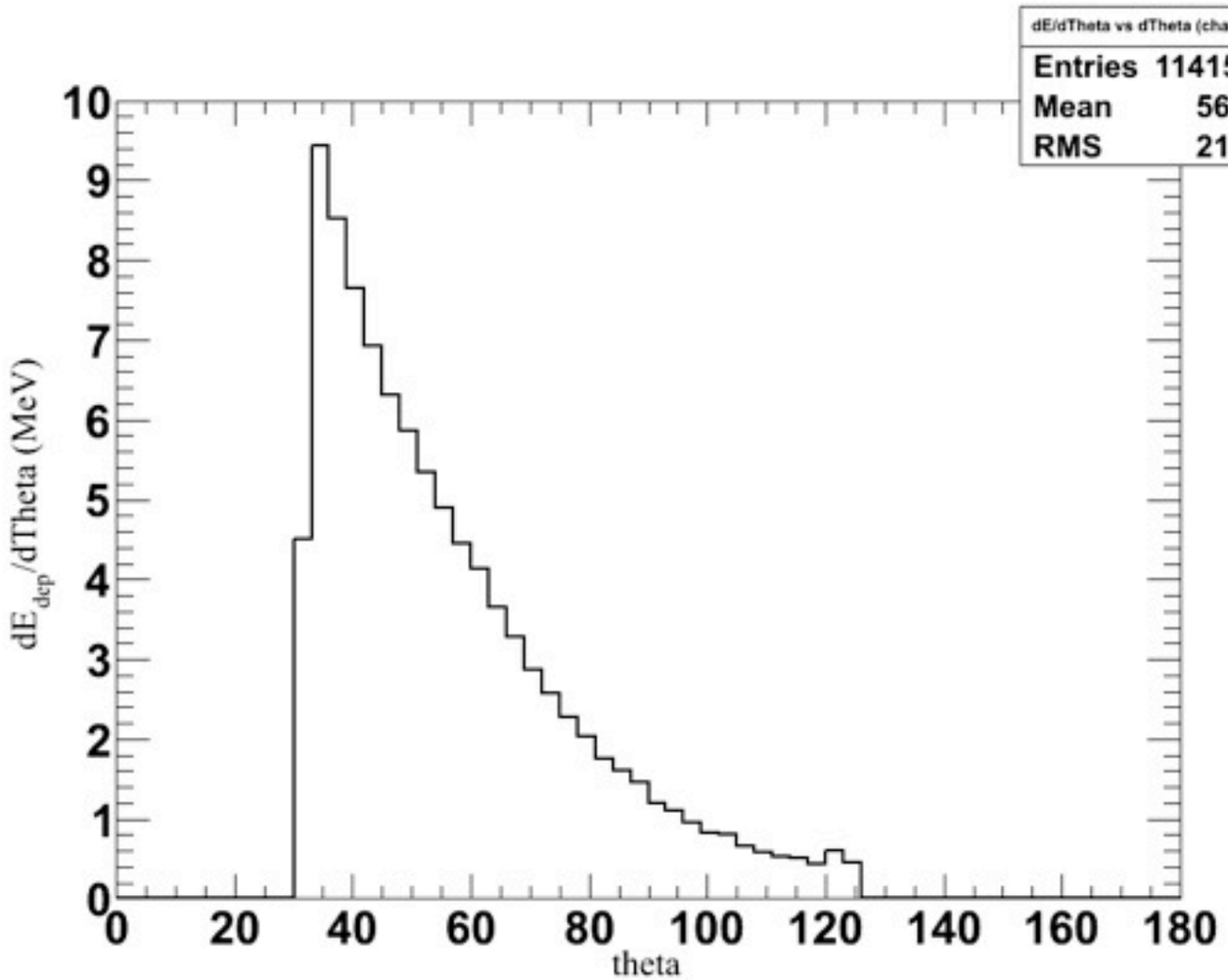
1 bin = 1 module



Energy cut : 1 MeV
except for electrons and muons

Charged Particles





Energy cut : 1 MeV
except for electrons and muons

Simulation for Making Neutron Beam

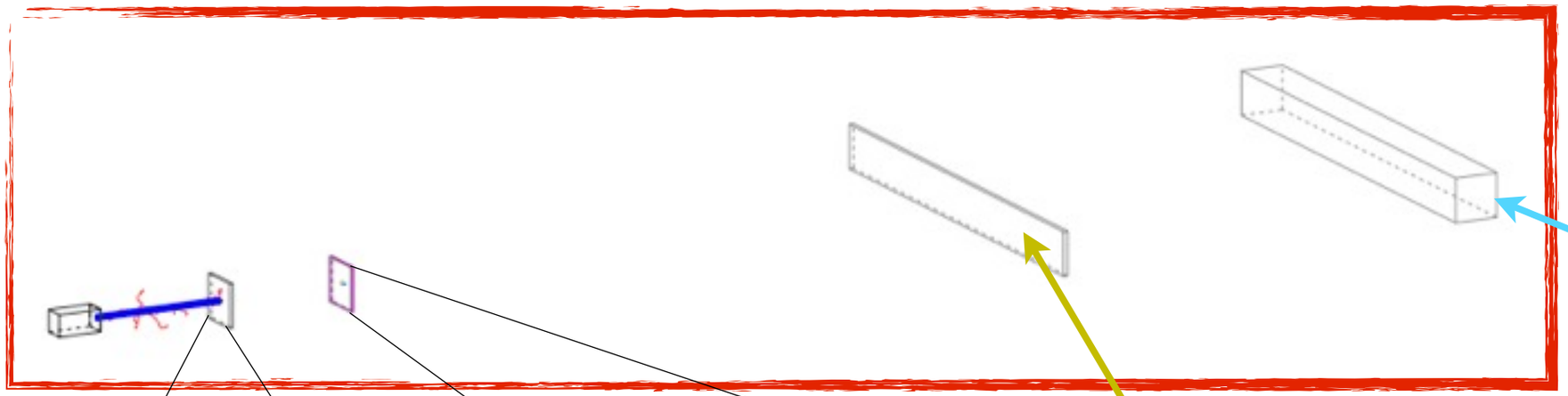
2012.12.28. Fri.

Go Yeonju

12년 12월 28일 금요일

<last slide>

System Layout



Neutron Detector
Scintillator
0.1 x 0.1 x 1 (m)

Veto Counter
Scintillator
thickness : 10 mm

Matrix
Iron
w/ hole at the center
for diminishing beam dose

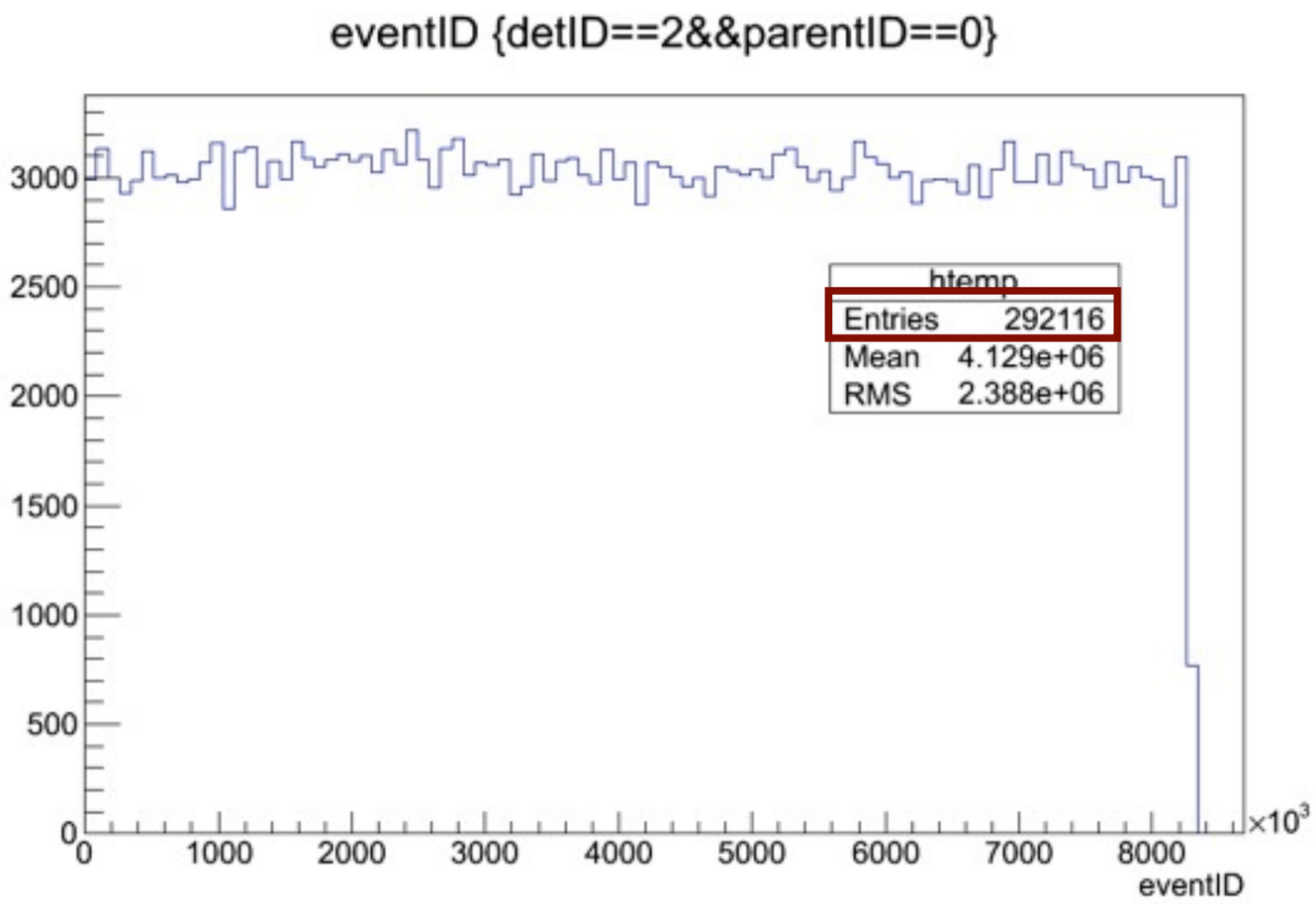
Beryllium
thickness : 1 mm

Hole
diameter : 1 mm

Trigger Detector
Scintillator
thickness : 6 mm

<last slide>

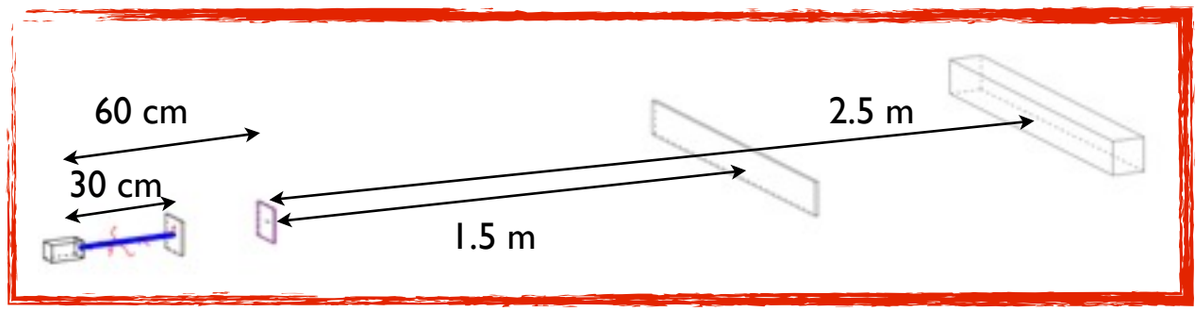
Proton passing through Matrix



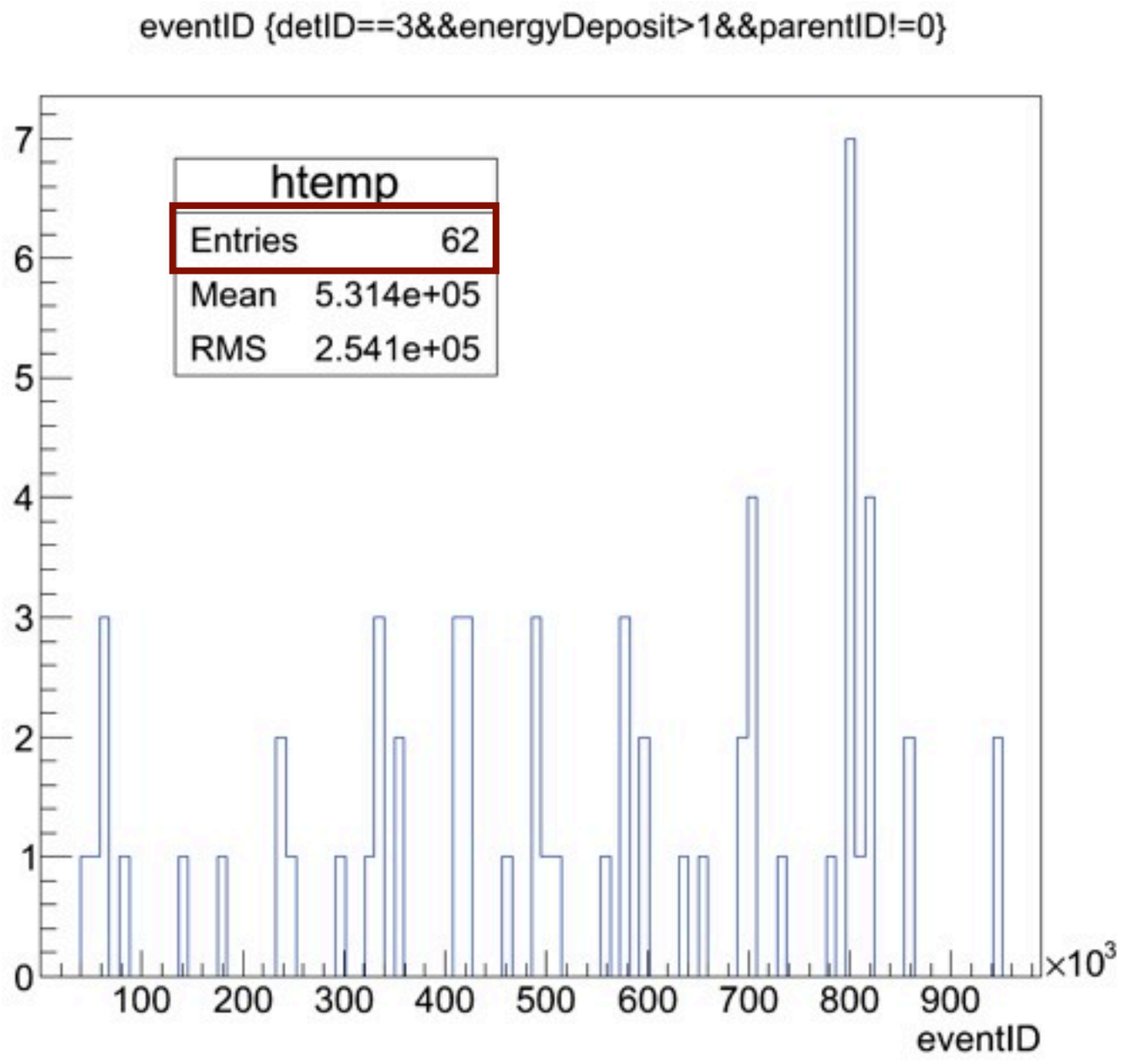
Beam diminished by Holepad

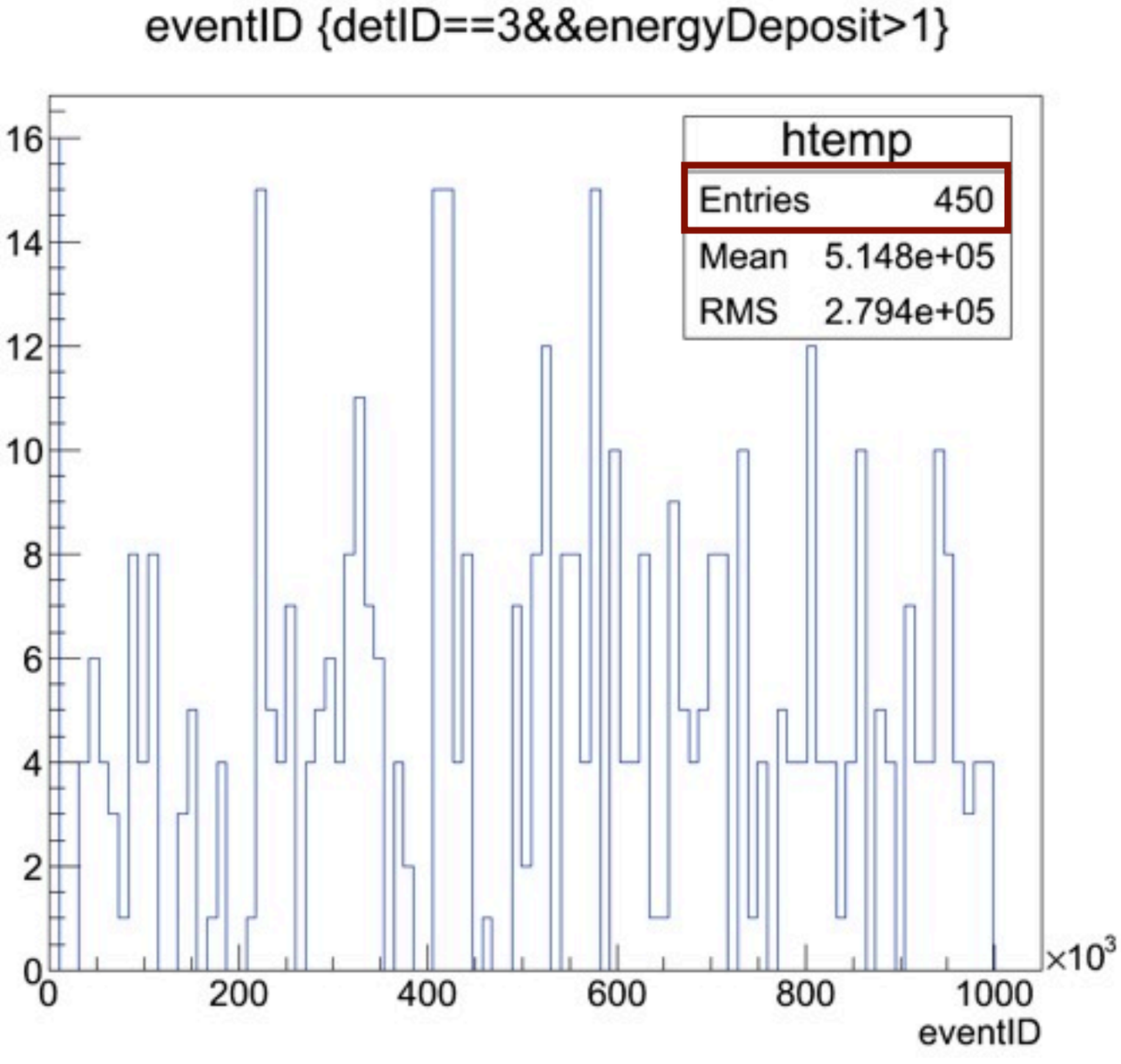
approx. 10^7 proton

→ 10^5 proton



1mm Beryllium



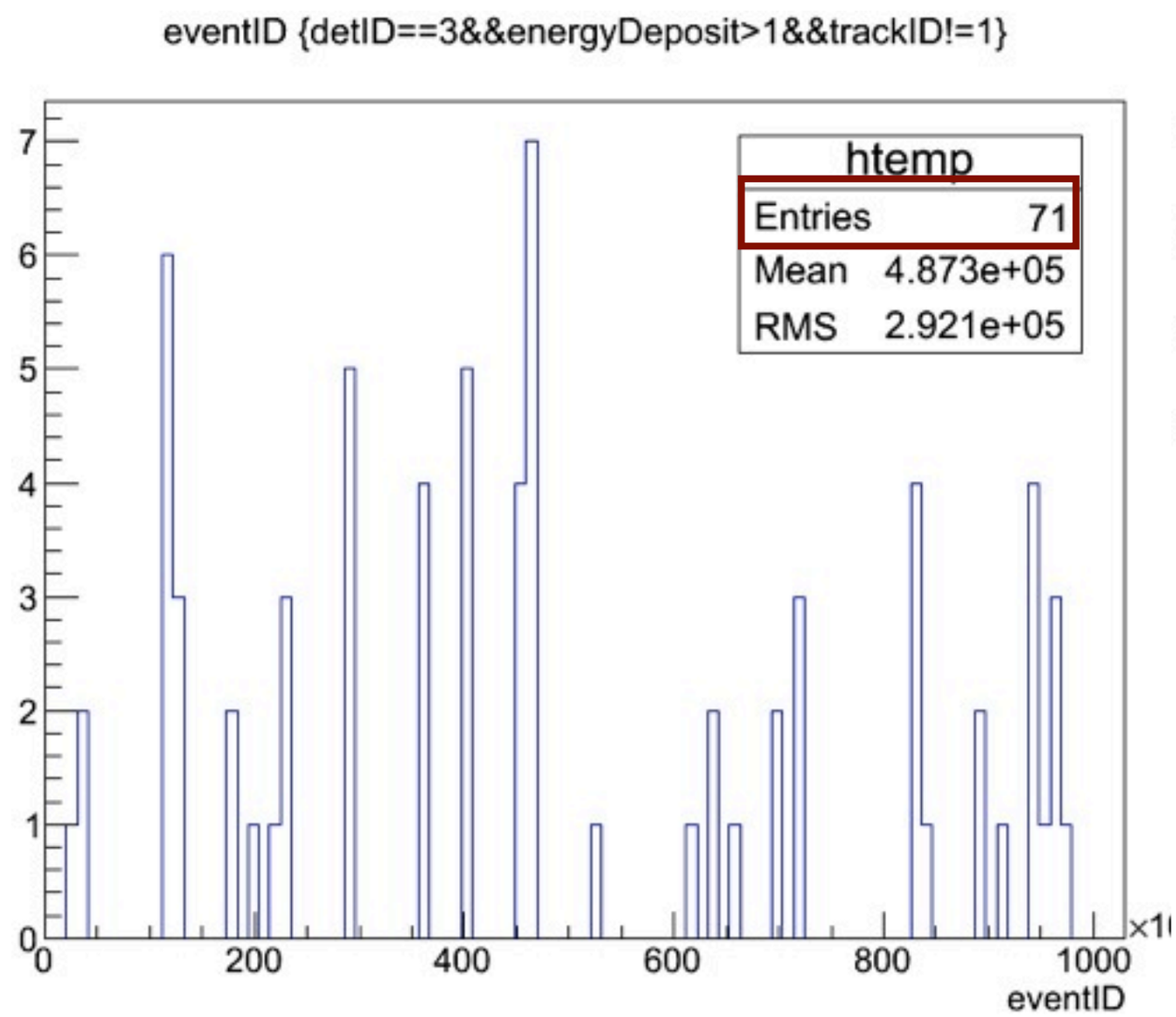


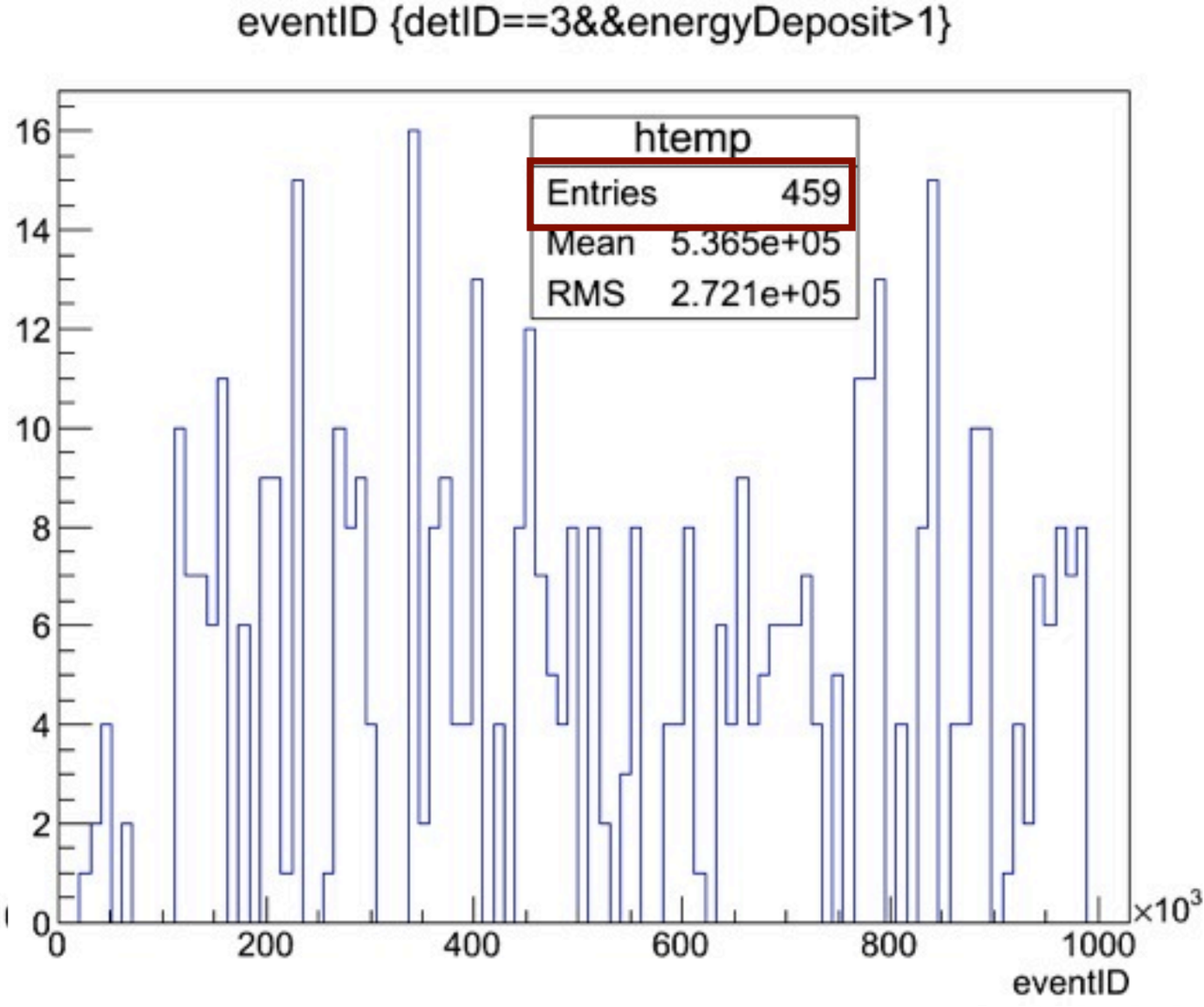
event number : 10^6 energy cut : 1 MeV

The number of proton hits which are <u>not</u> generated from target is 388!

1mm Beryllium

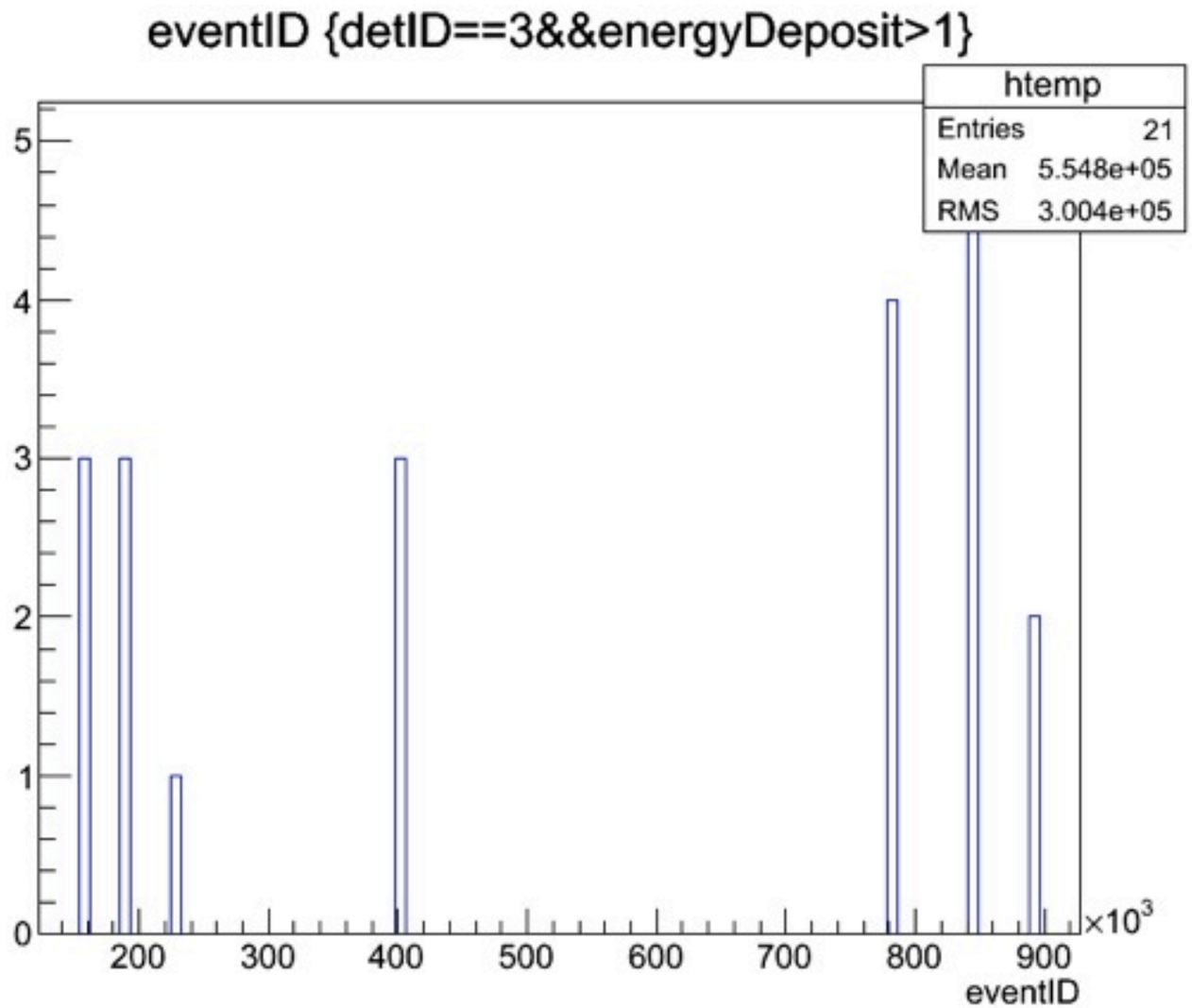
Veto 10mm ⟶ 30 mm

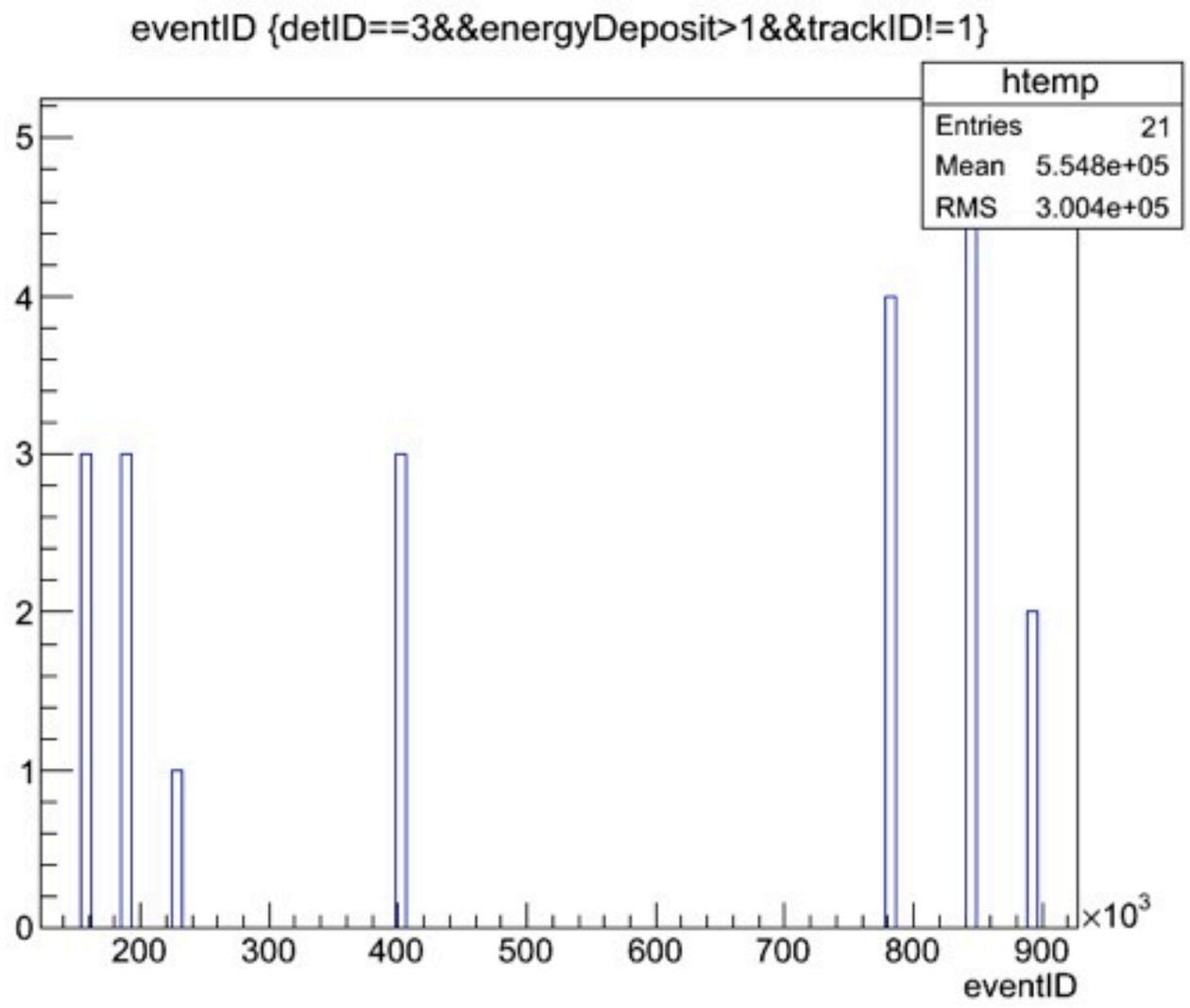




energy cut : 1 MeV

5mm Iron





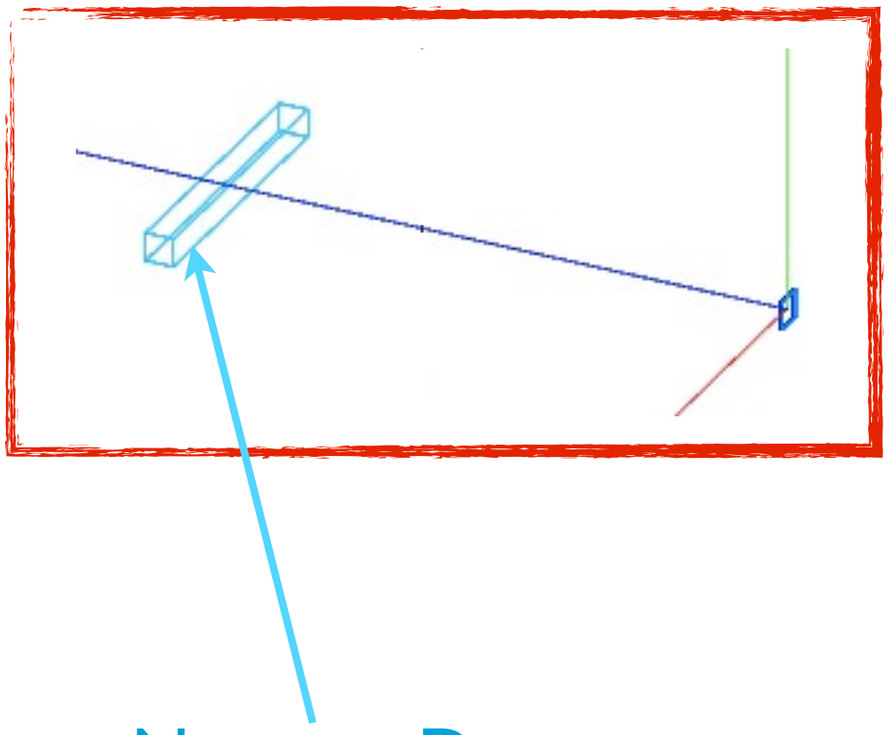
event number : 10^6 energy cut : 1 MeV

Iron seems to be better than Beryllium.

BACK UP

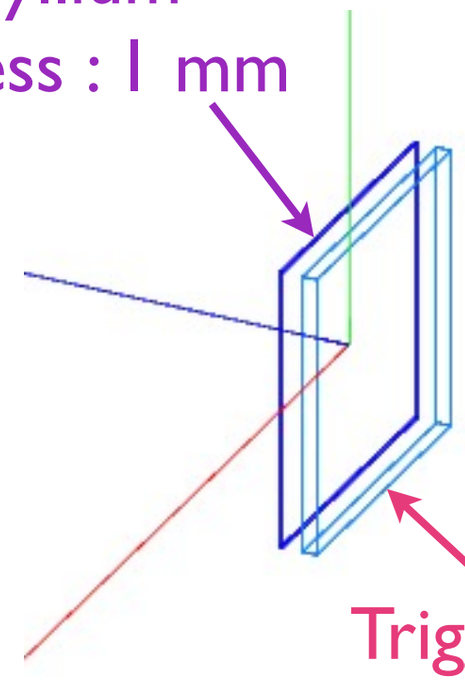
12년 12월 28일 금요일

System Layout



Neutron Detector
Scintillator
0.1 x 0.1 x 1 (m)

Beryllium
thickness : 1 mm



Trigger Detector
Scintillator
thickness : 6 mm

On average, proton 45MeV deposit 10 MeV in Beryllium target.