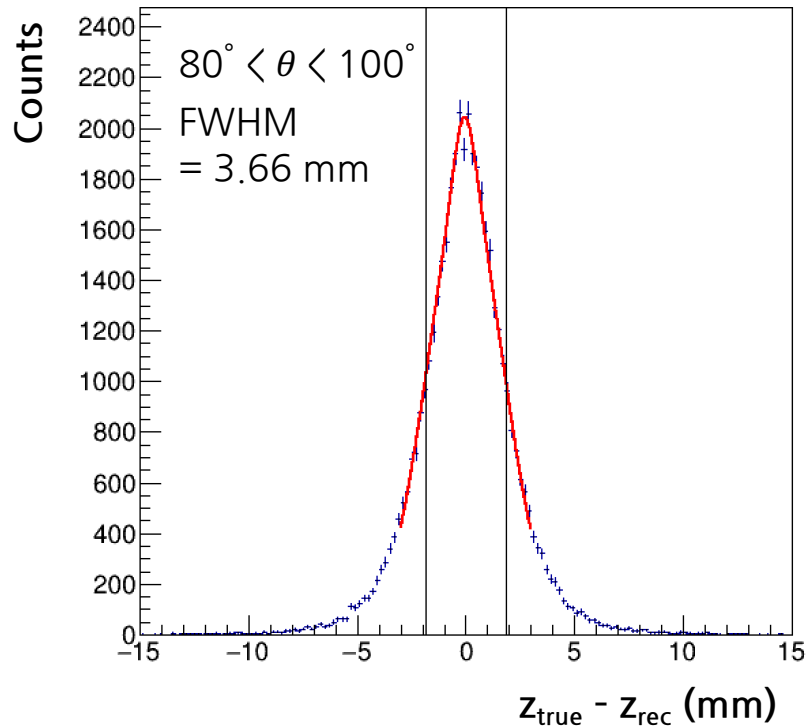


Status of the new benchmarks

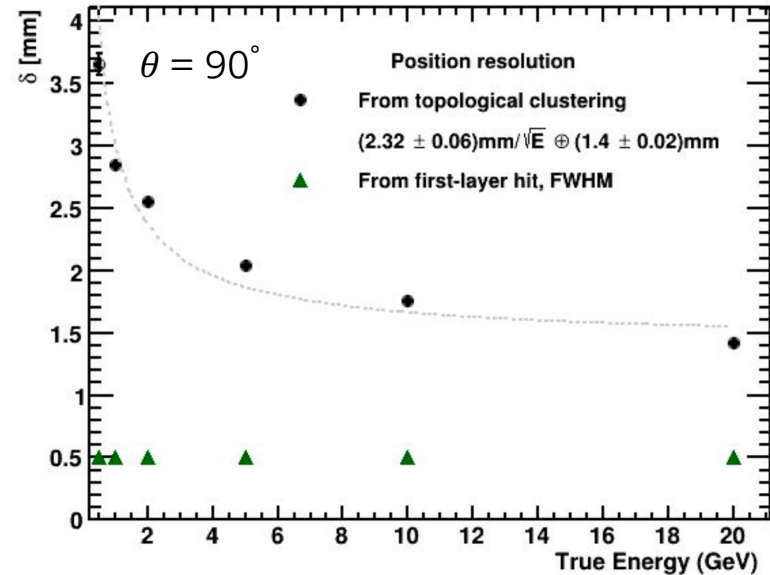
July 16
Minho Kim

Position resolution

10 GeV photon



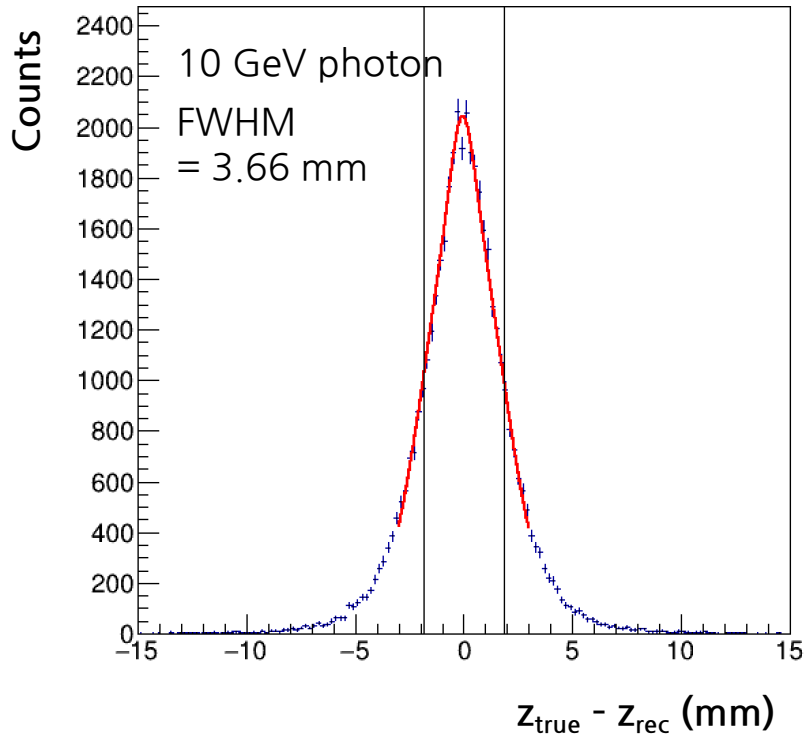
Position resolution for photons



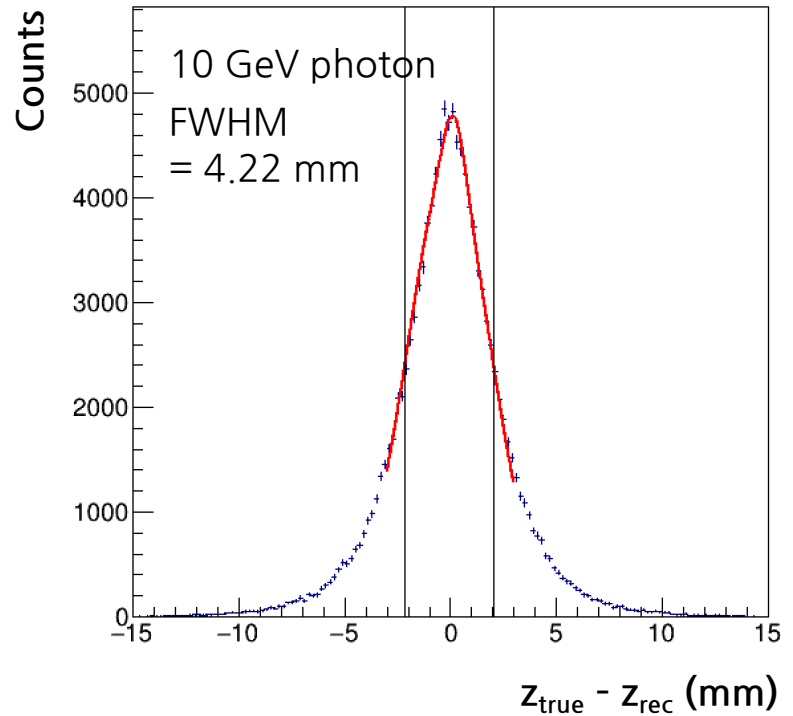
- True and reconstructed incident positions of the BIC were compared assuming inner radius was 783 mm.
- `MCParticles.momentum` and `EcalBarrellImagingClusters.position` were used to calculate the true and reconstructed positions, respectively.
- Two Gaussians were superposed to fit the position difference distribution.

Position resolution

$80^\circ < \theta < 100^\circ$



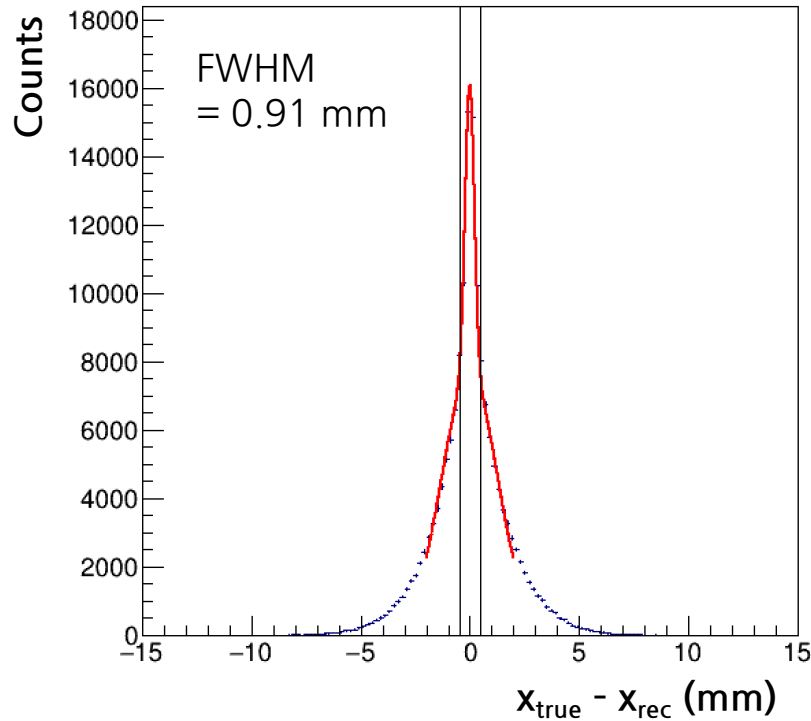
$60^\circ < \theta < 120^\circ$



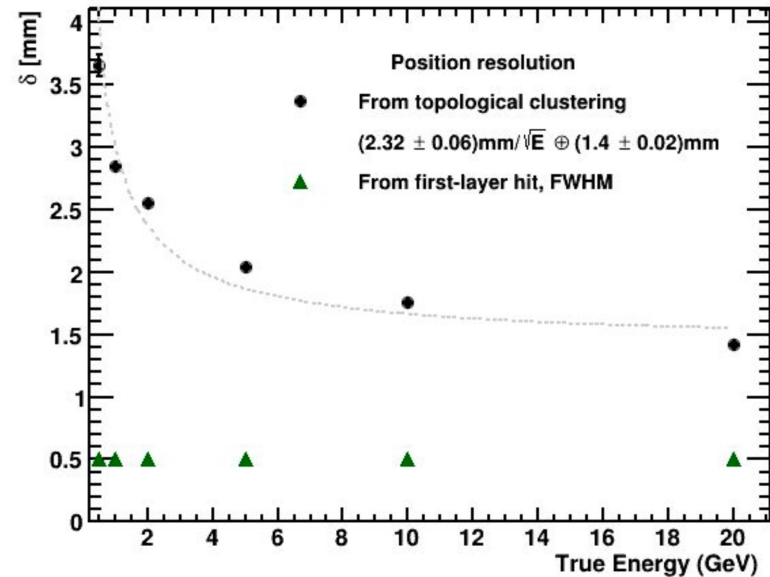
- As the beam direction tilts, position resolution of z gets worse because the shower direction also tilts.

Position resolution

$45^\circ < \theta < 135^\circ$



Position resolution for photons



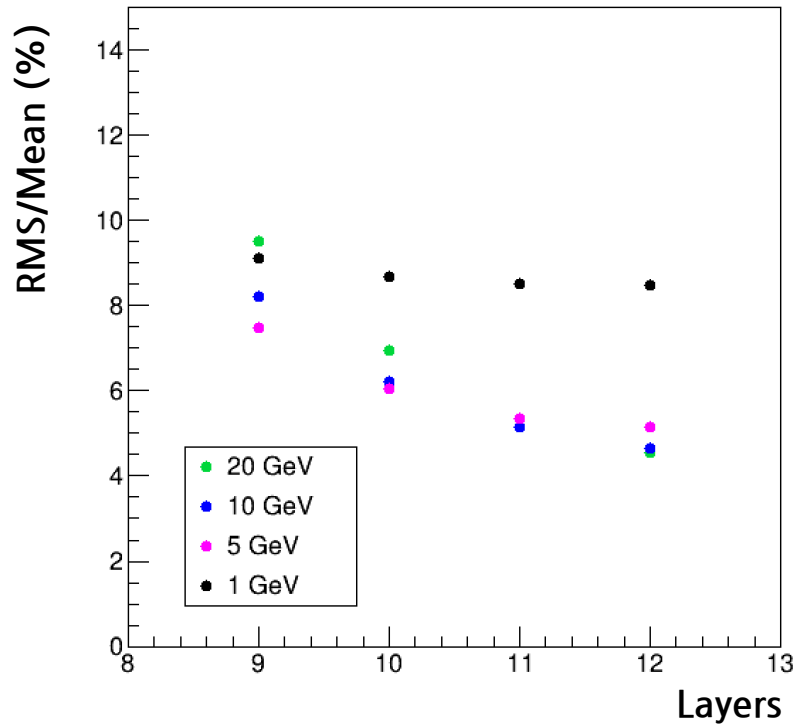
- Position resolutions of x and y were smaller than the one of z because of the constraint: x and y positions lie on a circle with $r = 783 \text{ mm}$.
- It may be better to study the resolutions of θ and ϕ instead of x , y , and z .

Energy resolution plot

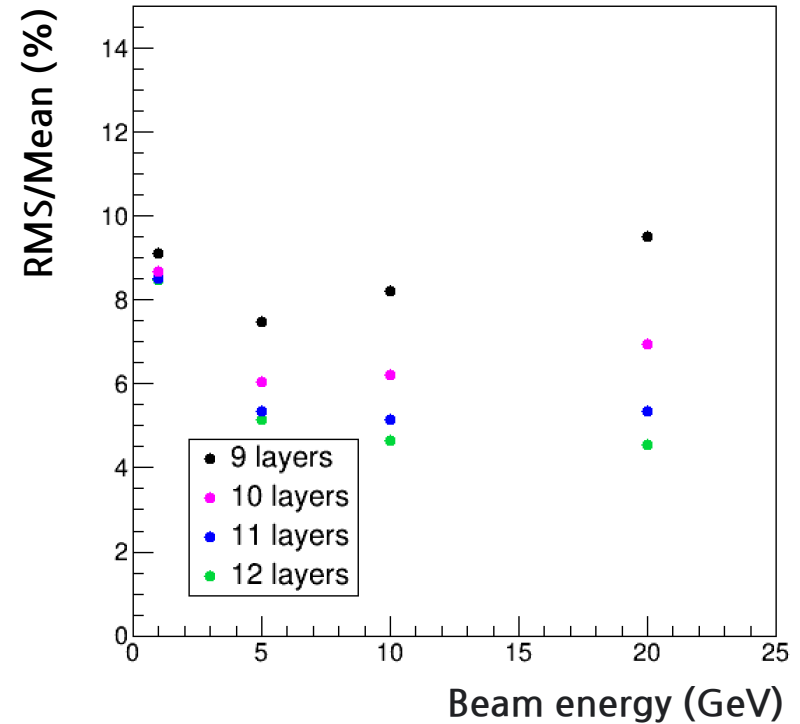
- Will the benchmark draw only one energy resolution plot with 12 ScFi layers?
- Will the benchmark also use the energy deposits on the imaging layers to reconstruct the particle energy?

Plots of the previous study

As a function of layers

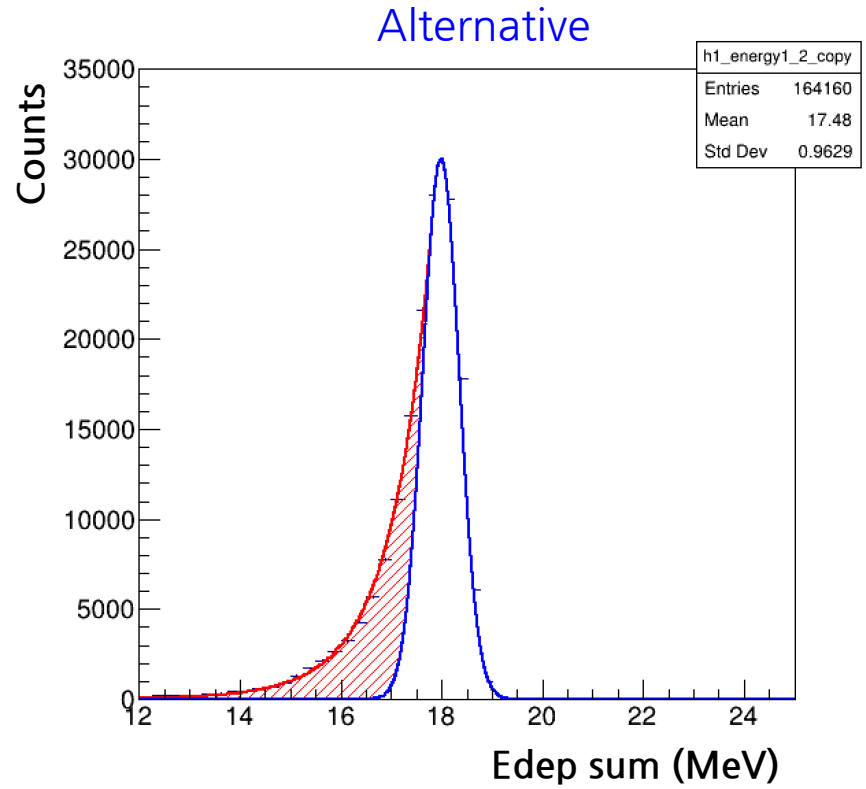
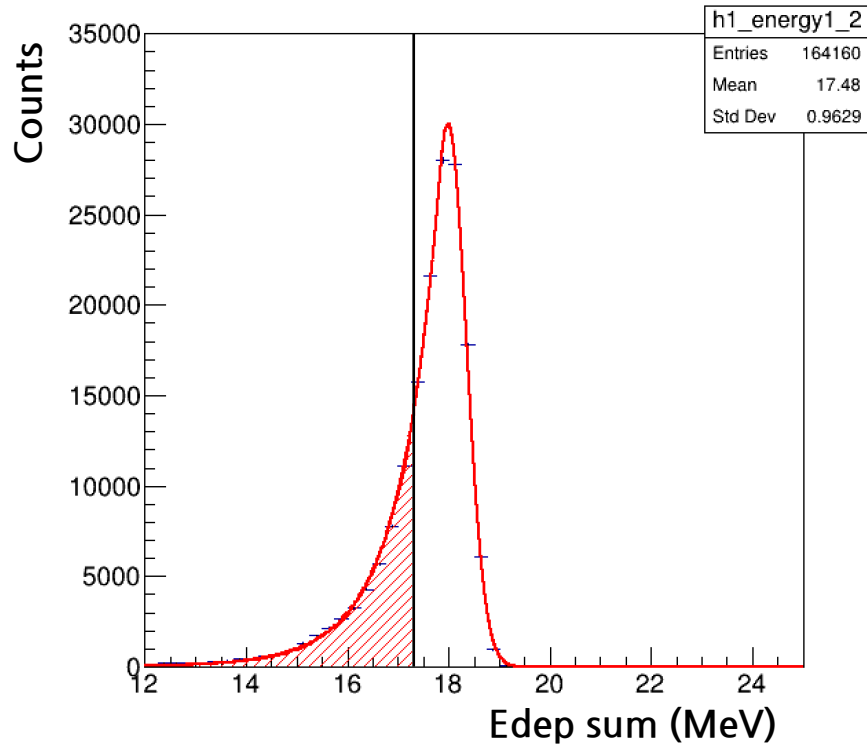


As a function of energy



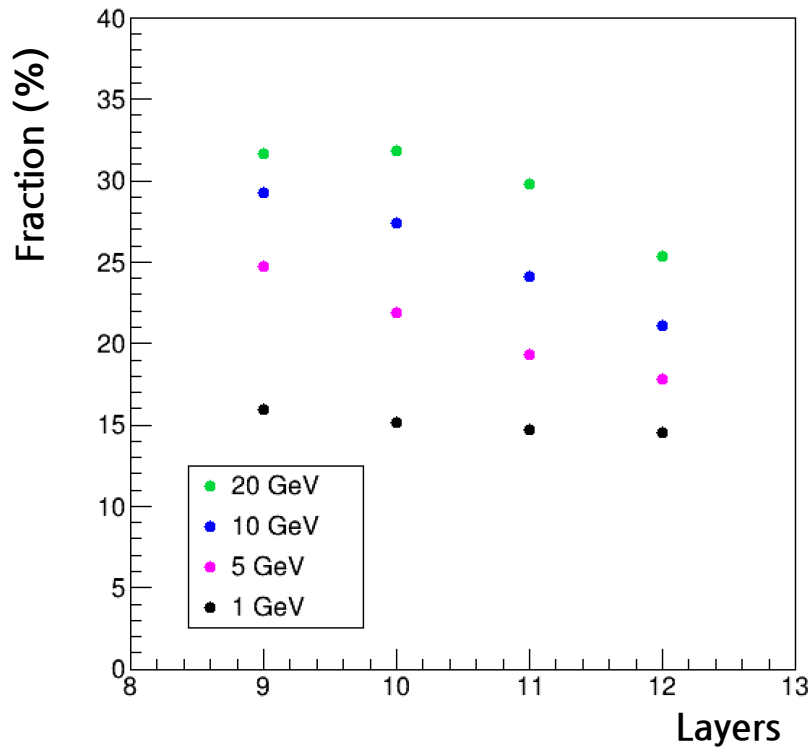
- We can see the effect of the shower leakage clearly from 10 layers.

Plots of the previous study

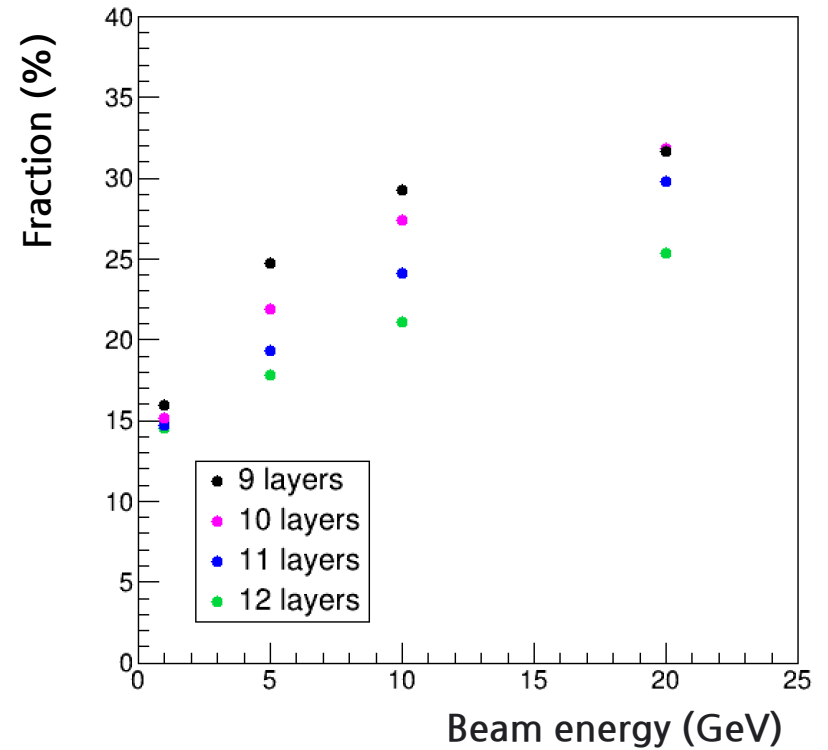


Plots of the previous study

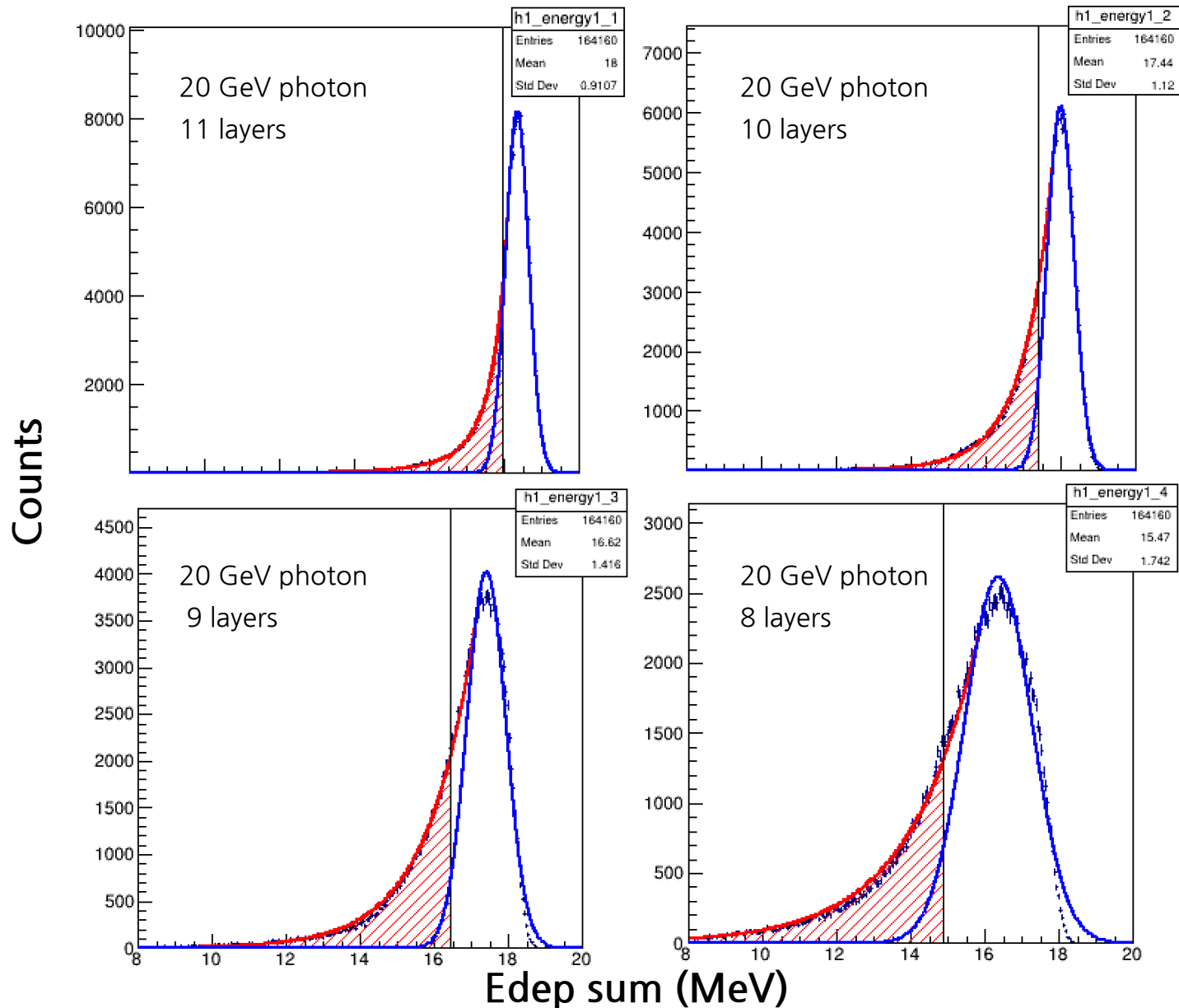
As a function of layers



As a function of energy

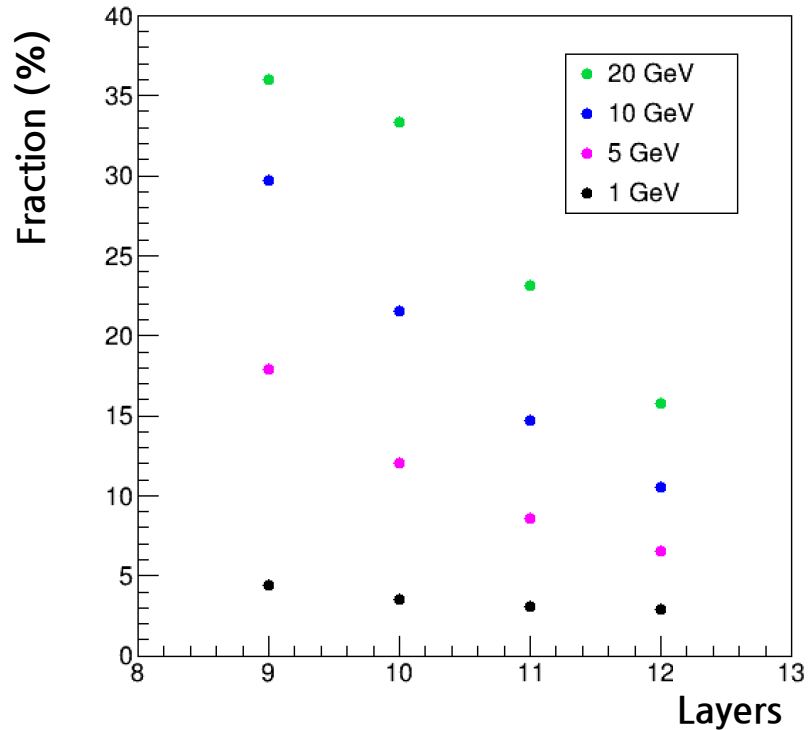


Plots of the previous study



Plots of the previous study

As a function of layers



As a function of energy

