

“Performance test of lead glass

Cherenkov detector with cosmic ray muons”

鉛ガラスチェレンコフ検出器の宇宙線ミュオンを用いた性能測定

- High energy γ ray is often emitted in high energy particle experiments
- Electromagnetic calorimeter measures the γ ray energy

Lead glass Cherenkov detector is one of the electromagnetic calorimeters

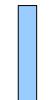
($E = 1 \sim 30$ GeV)

A photon enters lead glass



electron-positron pair creation (電子-陽電子対生成)

An electron and a positron are created



bremsstrahlung (制動輻射)

Cherenkov radiation (チェレンコフ輻射)

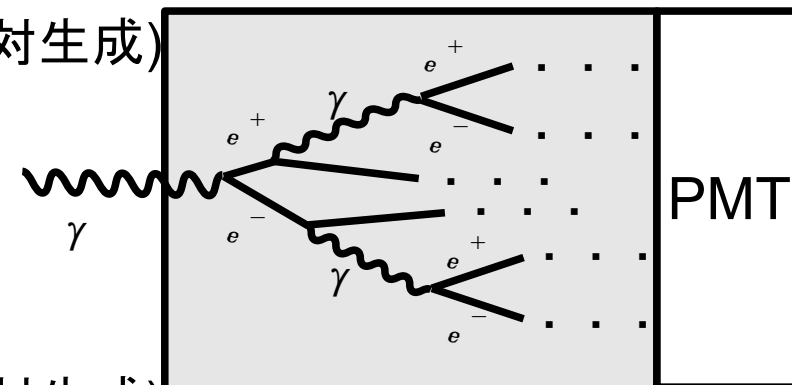
Photons are emitted

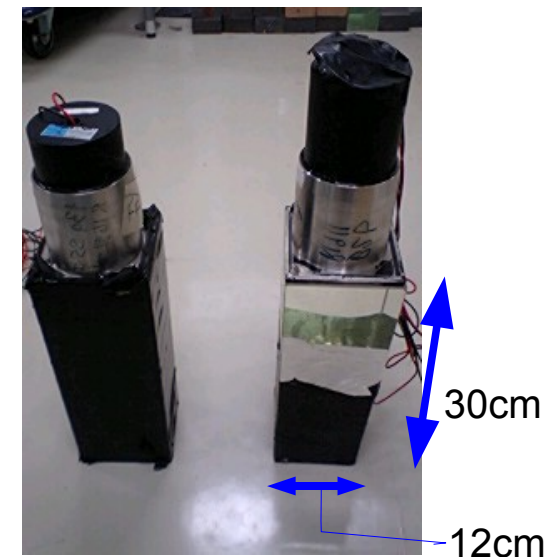
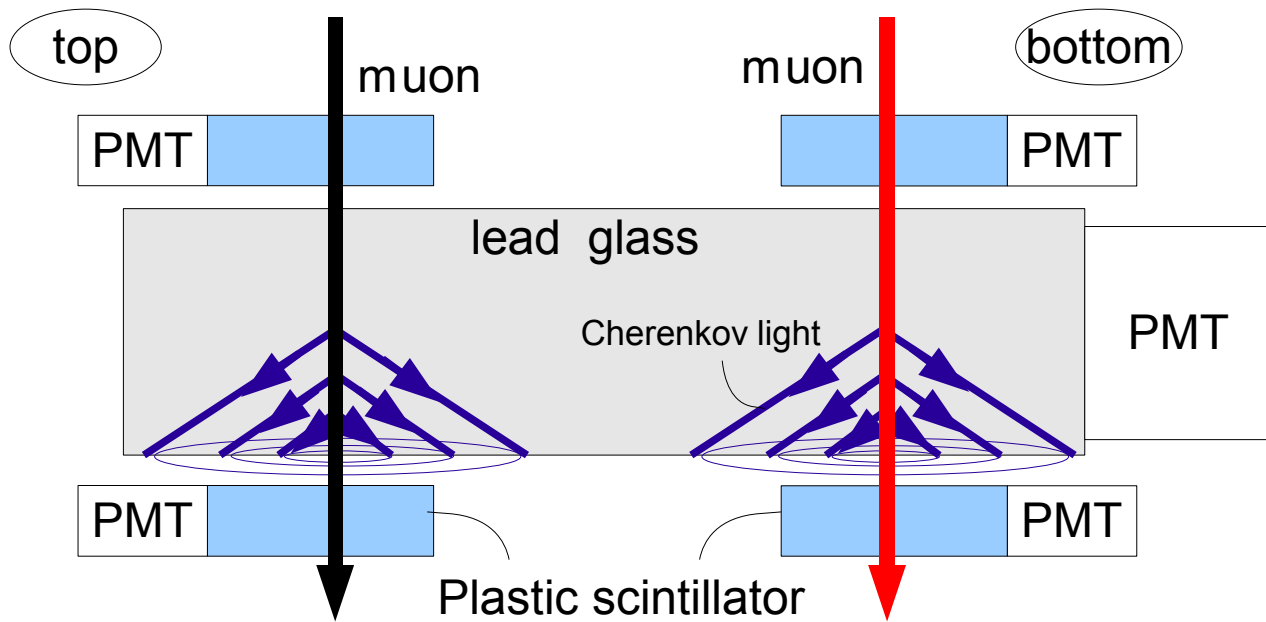


electron-positron pair creation (電子-陽電子対生成)

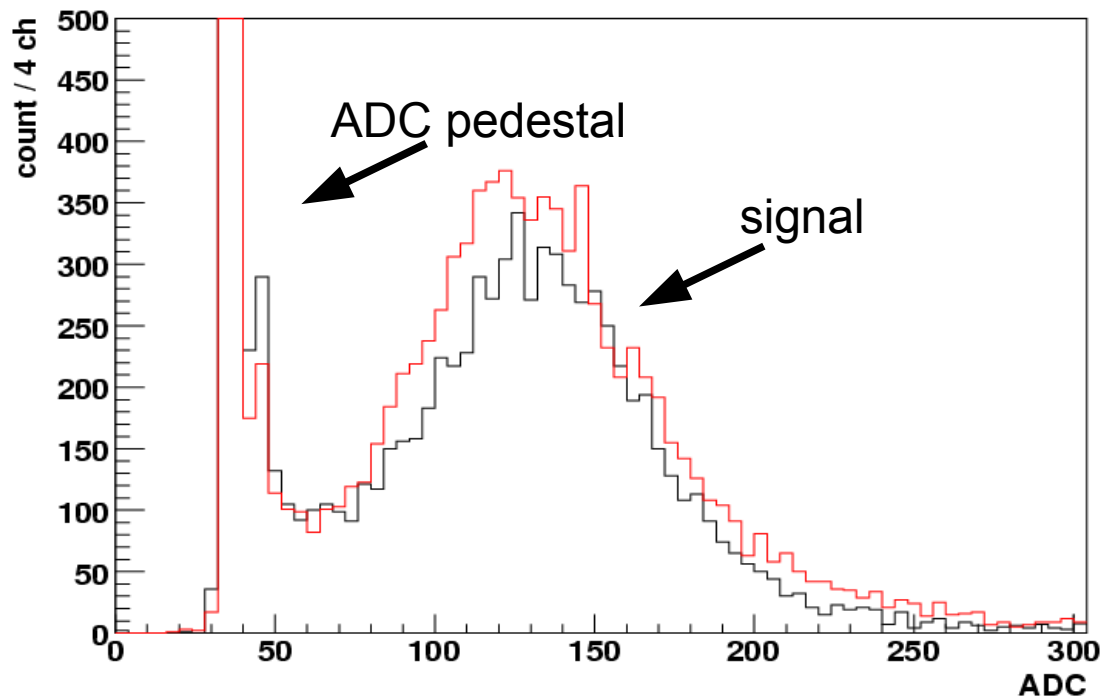


Electromagnetic shower is created





(Fig: Lead glass)



— : histogram at the top side of lead glass
 — : histogram at the bottom side of lead glass

- I measured muons at two different positions at the lead glass detector.

I converted cherenkov light into electric signal, and measured the signal by ADC.



- I analyzed the ADC histogram.
- I investigated the position dependence.