

Digitization

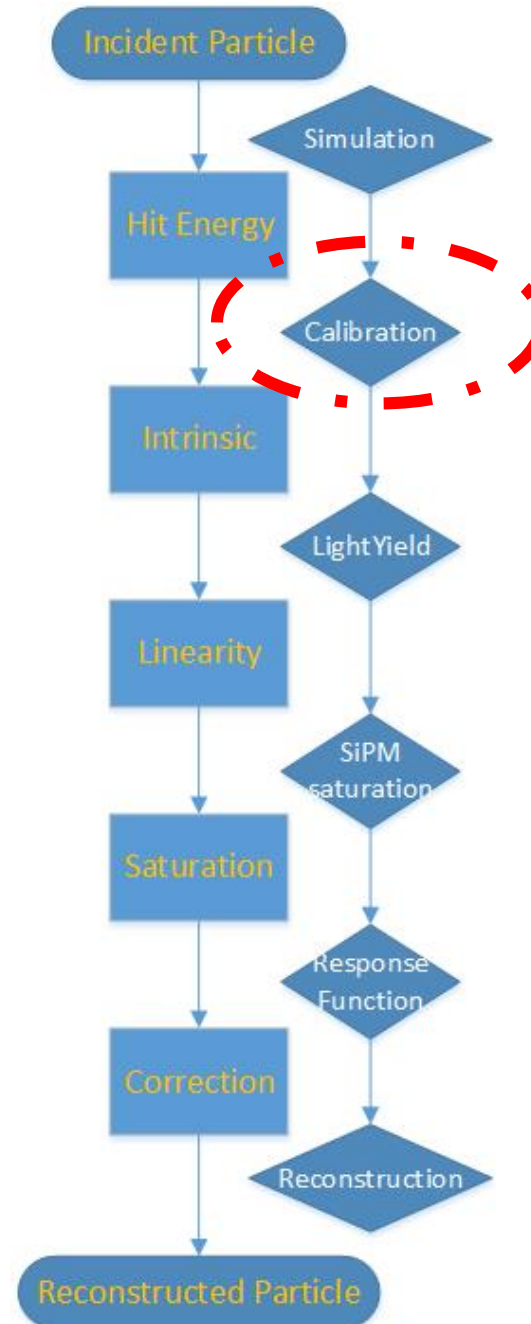
——牛亚洲

11/2/2018

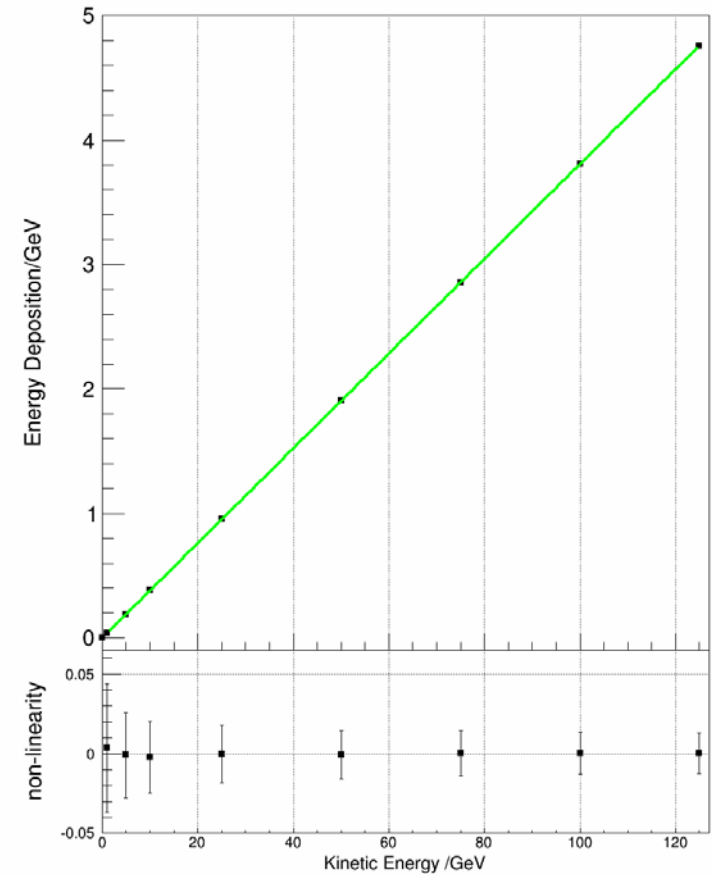
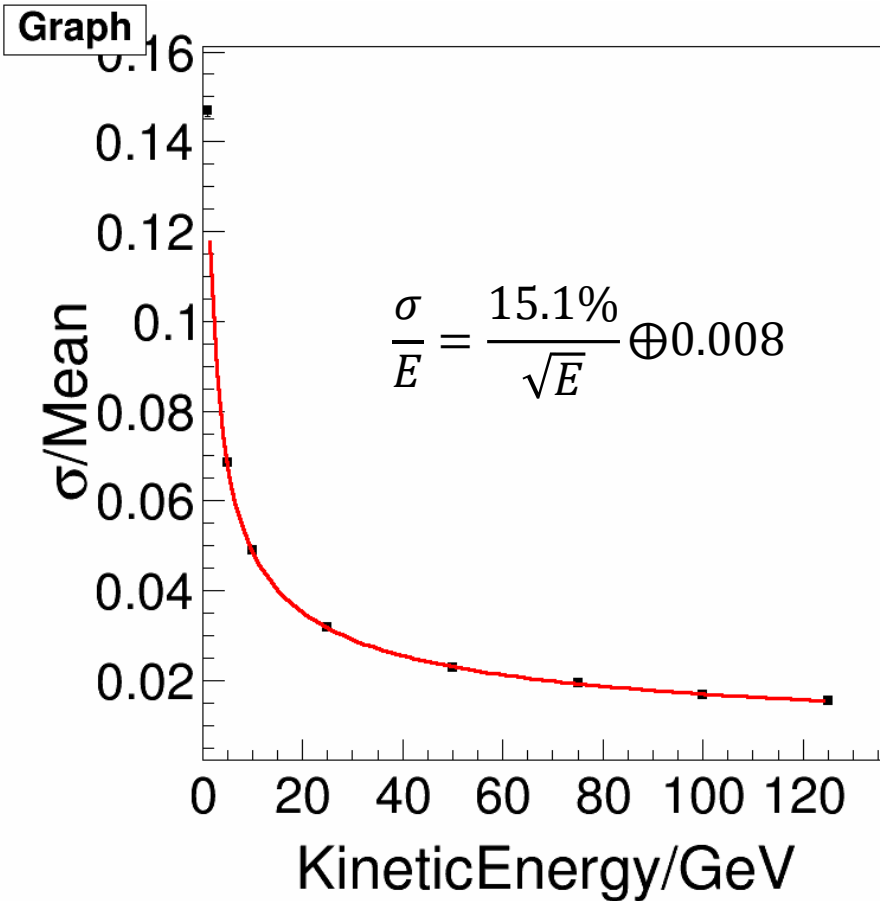
SimplifiedGeo-ScintECAL

- Layer: 30
- Geometry: Barrel + Endcap
- Scint: $5mm \times 45mm \times 2mm$
- Absorber(W): $2.8mm$
- PCB: $2mm$

Digitization

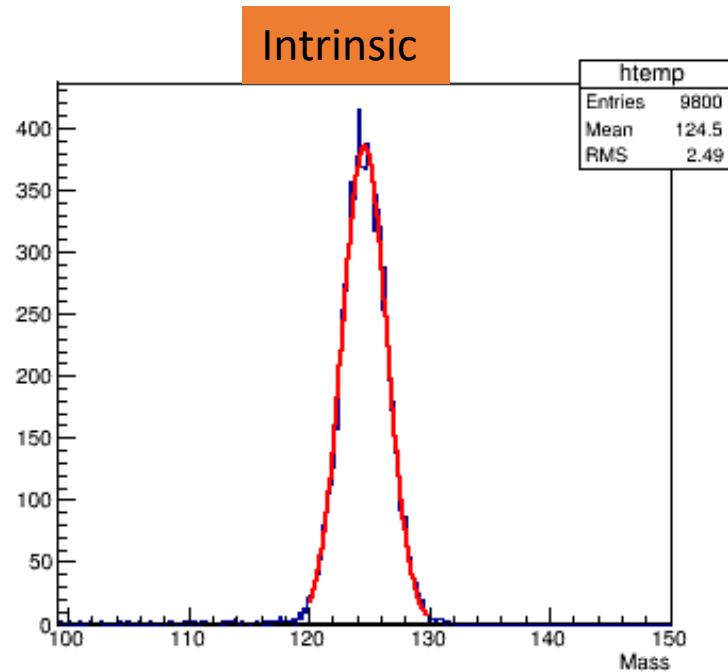
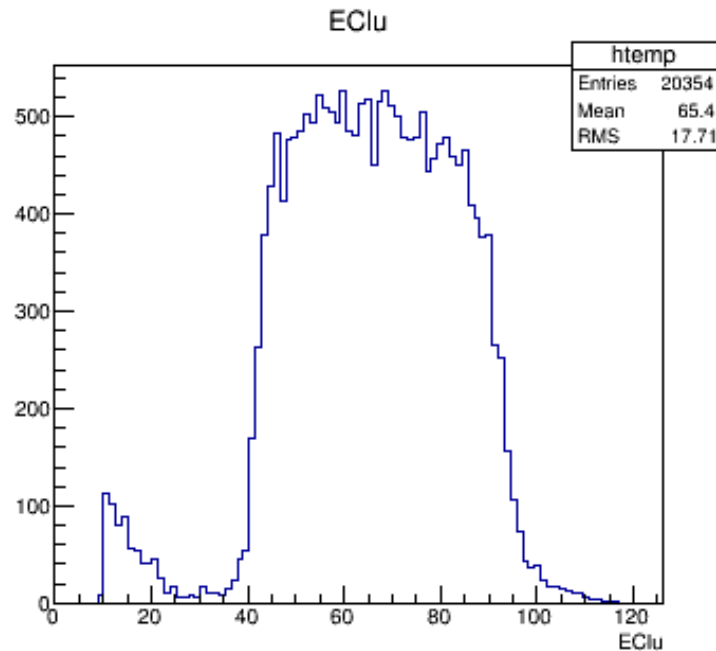


Single Photon



$$E_{\text{dep}} = (3.81 \times E_{\text{kinetic}} - 0.012) \times 10^{-2}$$

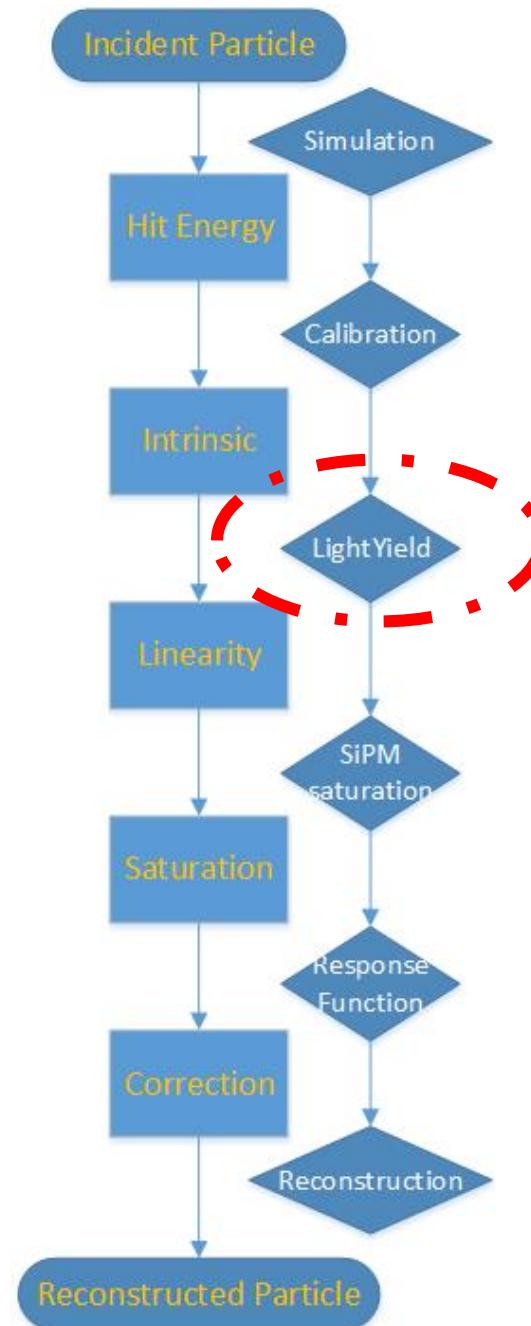
vvhaa reconstruction



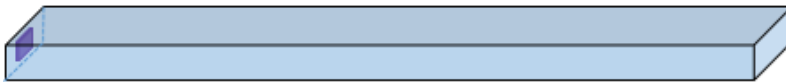
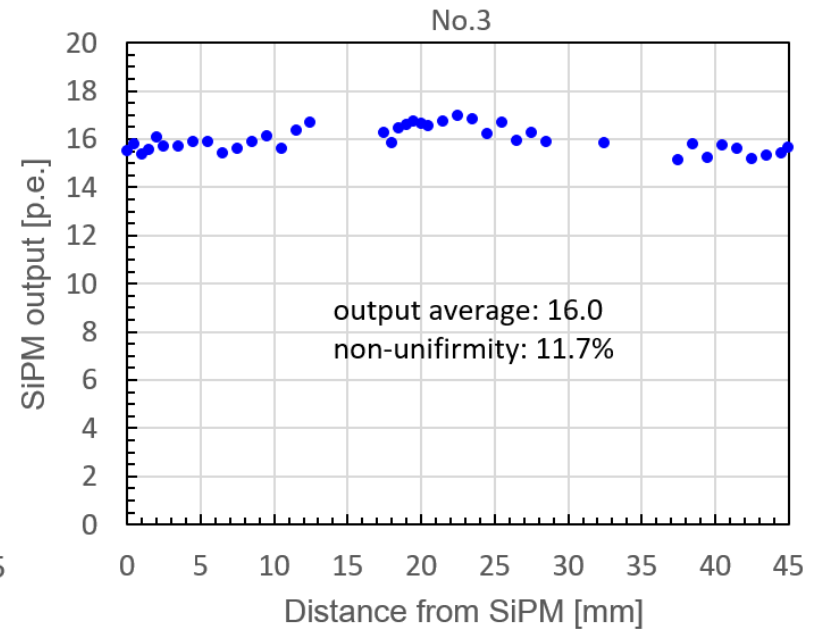
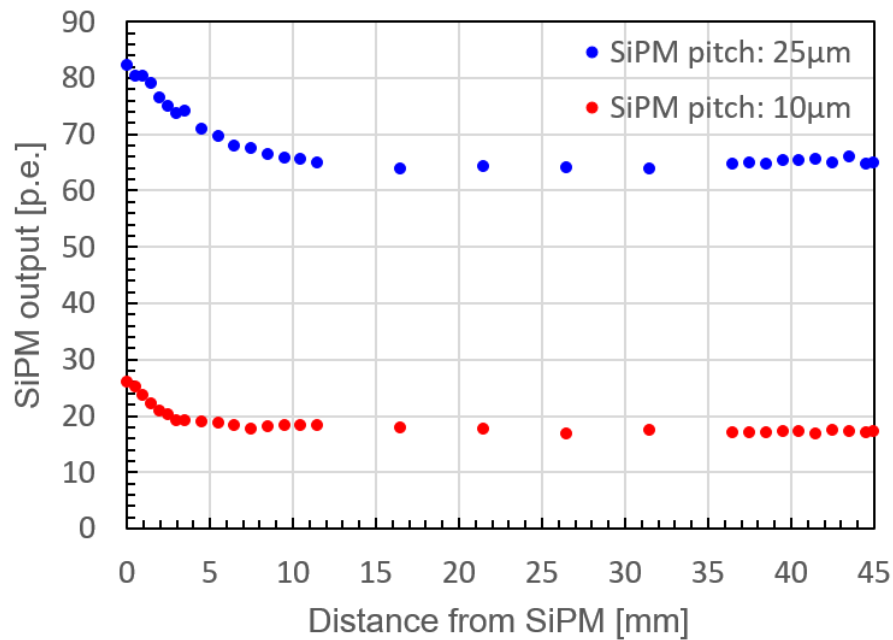
Mean = 124.6

Sigma = 1.86

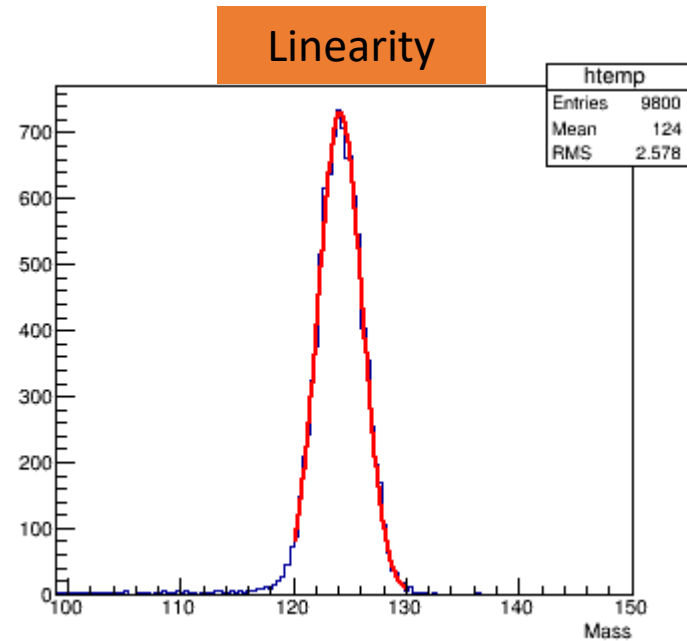
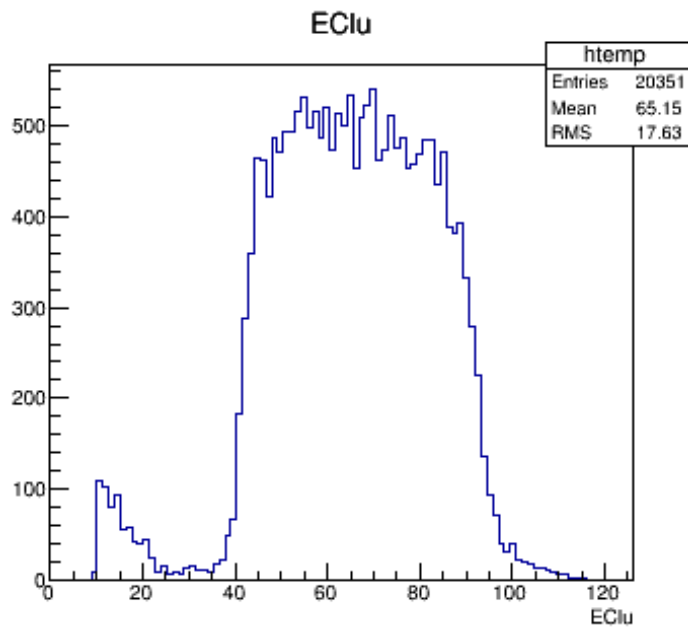
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Light yield



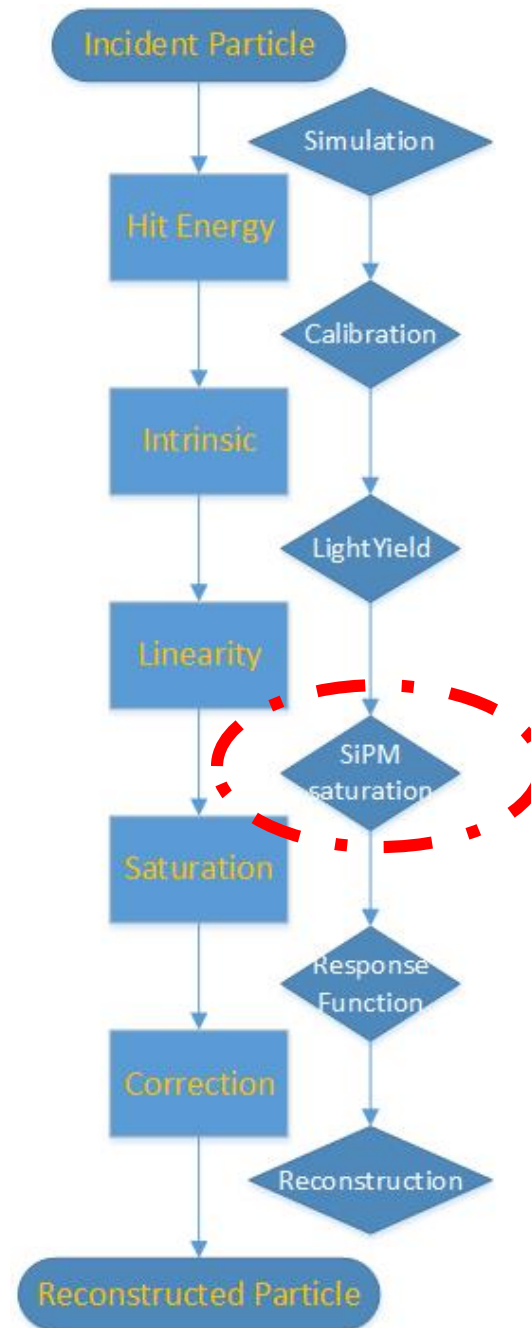
vvhaa reconstruction



Mean = 124.2

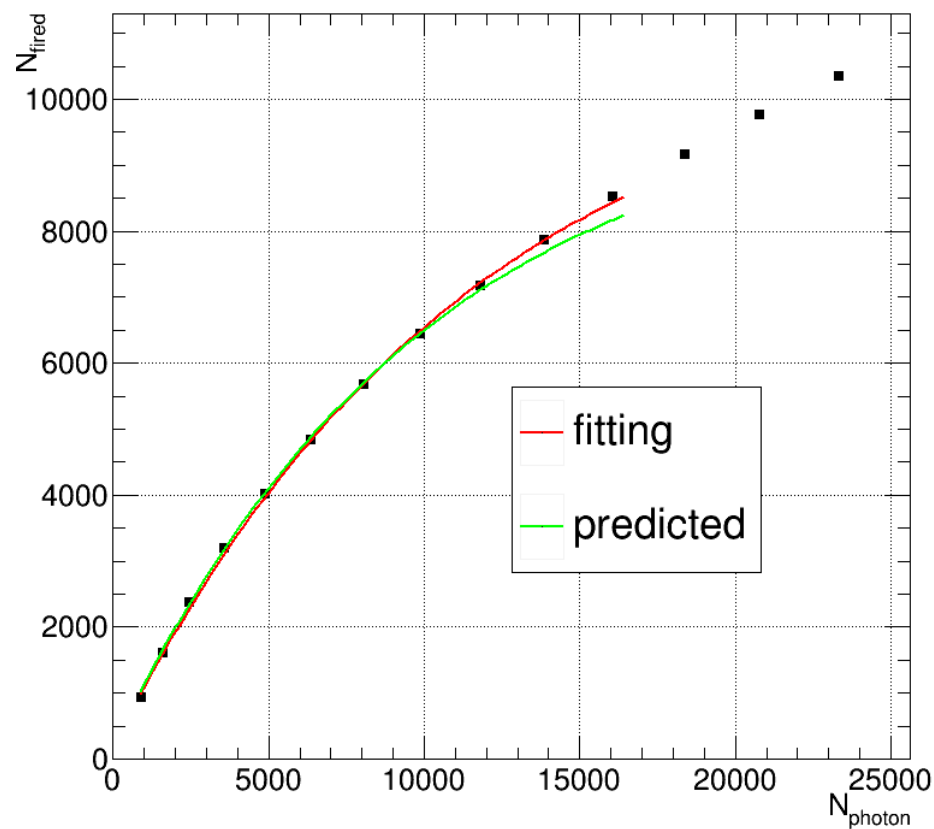
Sigma = 1.96

Digitization

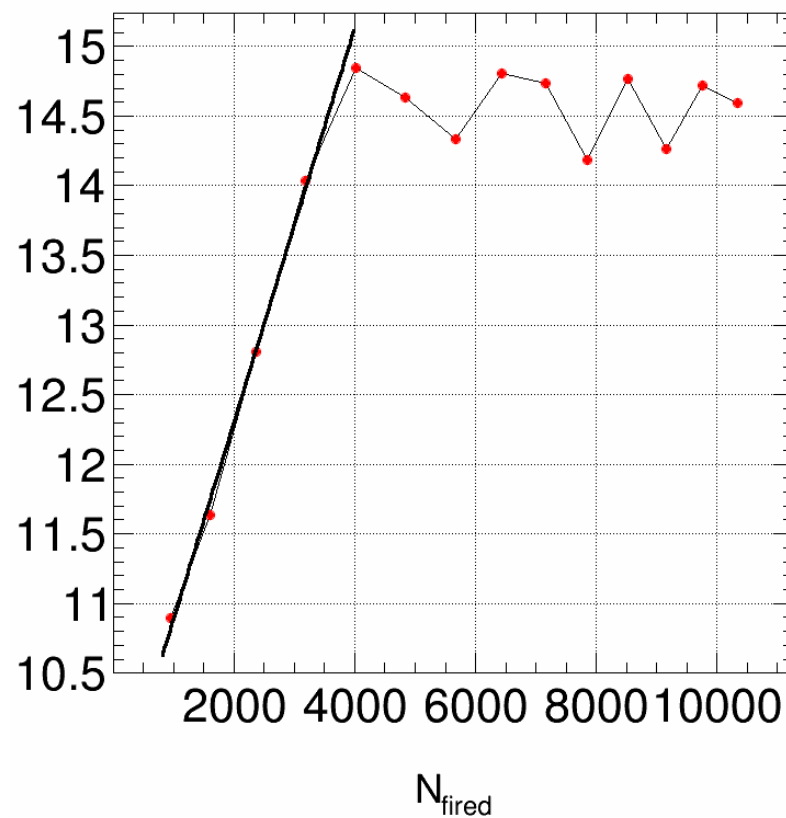


SiPM saturation curve

5ns PW

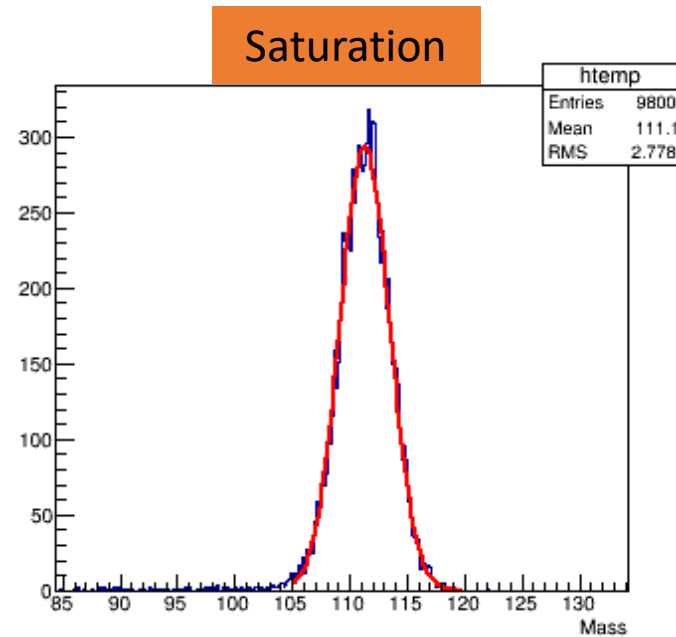
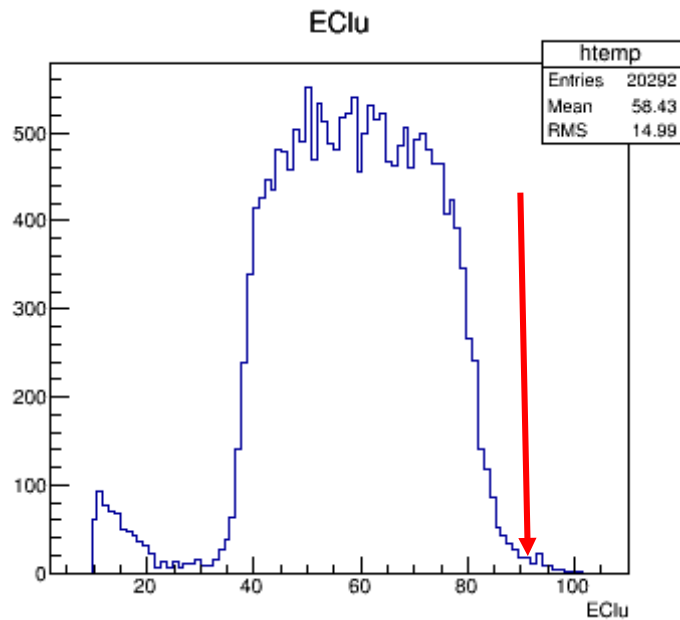


$$N_{fired} = 11010 \cdot \left(1 - e^{\frac{-N_{photon} \times 0.95}{11010}}\right)$$



$$\sigma = 0.0014156 \times N_{fired} + 9.47$$

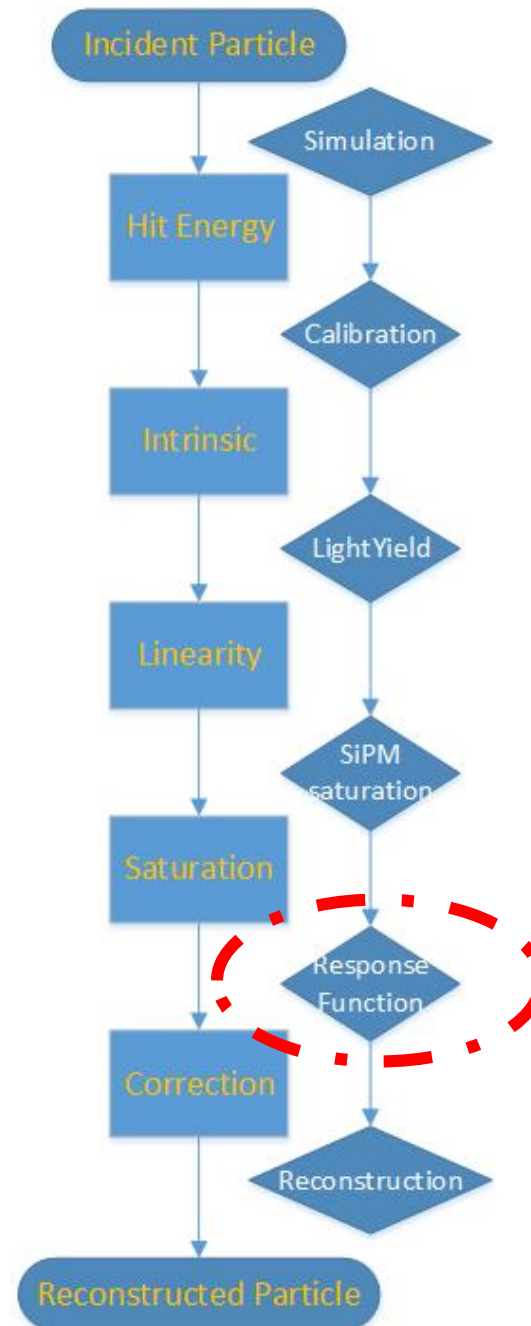
vvhaa reconstruction



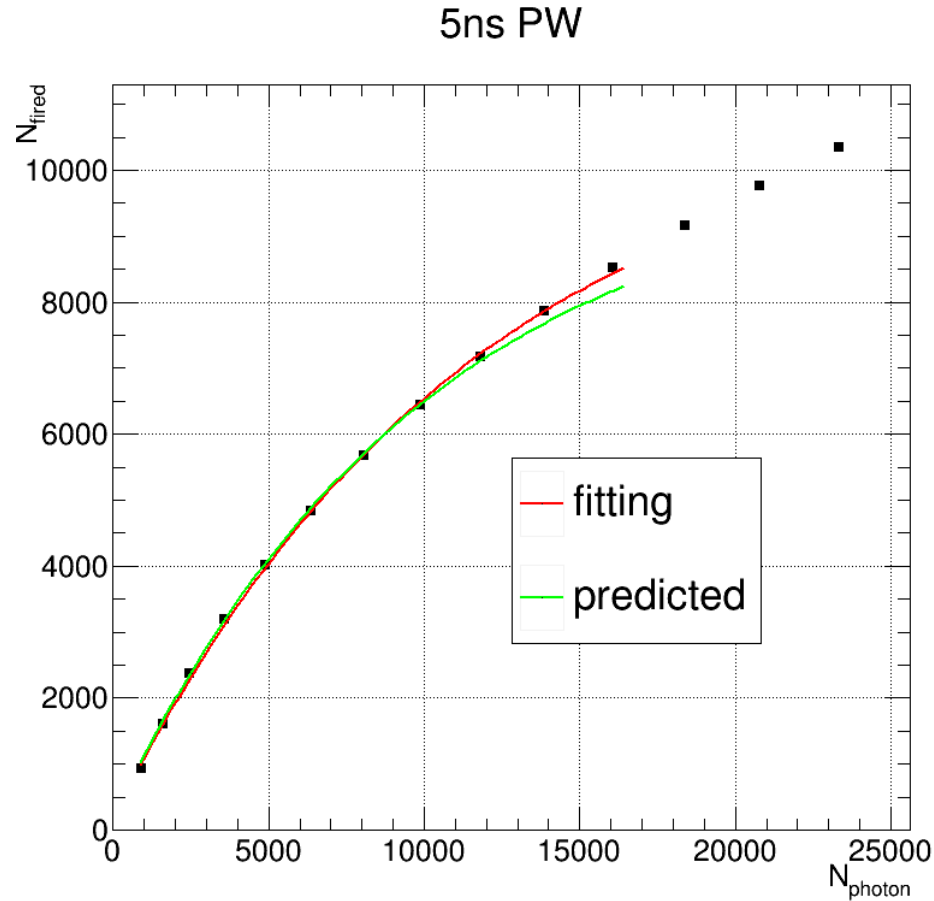
Mean = 111.3

Sigma = 2.17

Digitization

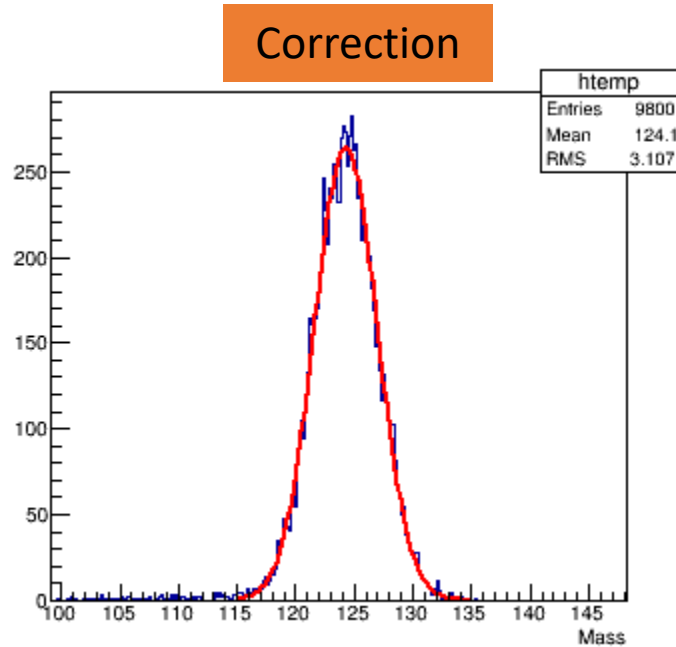
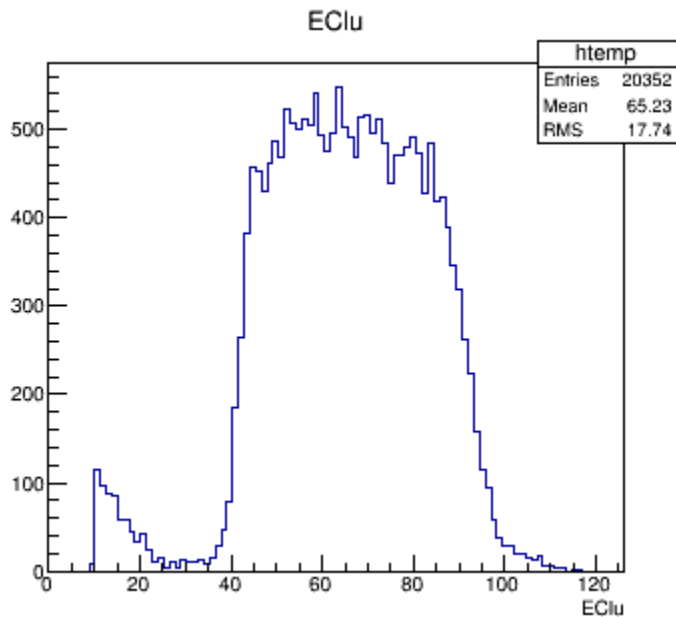


SiPM saturation curve



$$N_{fired} = 11010 \cdot \left(1 - e^{\frac{-N_{photon} \times 0.95}{11010}}\right)$$

vvhaa reconstruction



Mean = 124.3

Sigma = 2.68

Plan

- Adjust digitization parameters
- Reconstruction others physics process