



ZDC Simulation

October 17th, 2024

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Previous progresses

- Validity check of my works via comparison with results from the Riverside group
- Hcal(SiPM) neutron energy resolution
- Ecal(LYSO)+Hcal(SiPM) neutron energy resolution



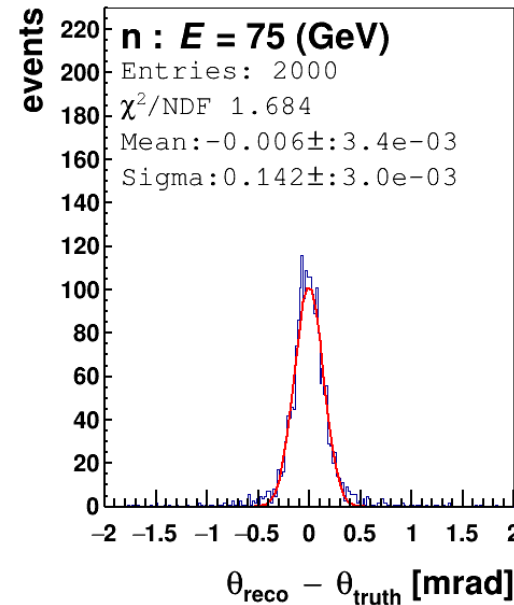
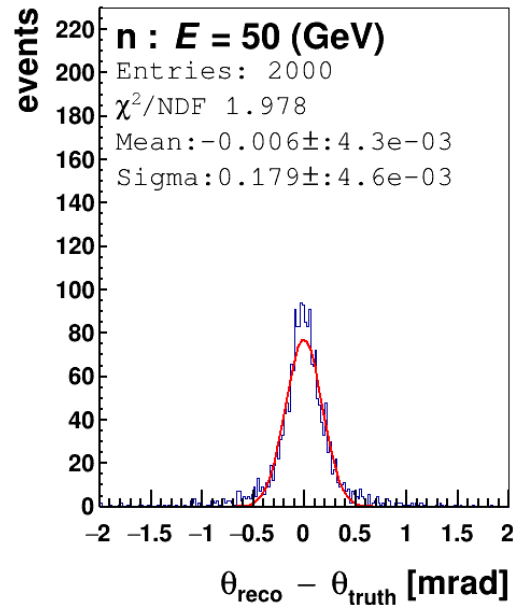
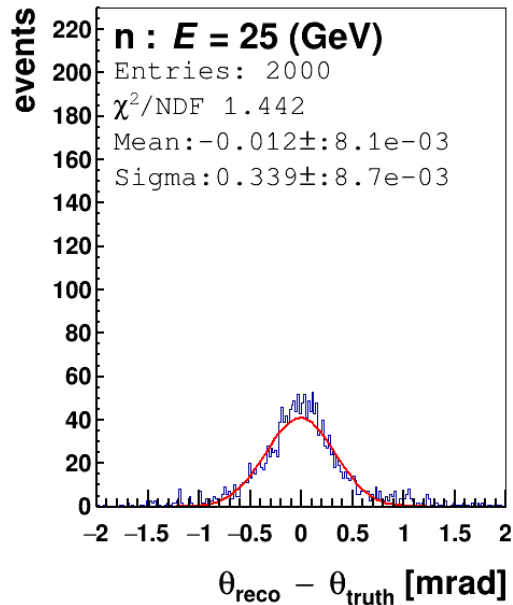
Today's meeting

- Hcal(SiPM) neutron position resolution
- Ecal(LYSO)+Hcal(SiPM) neutron position resolution
- Hcal(SiPM) γ energy/position resolution

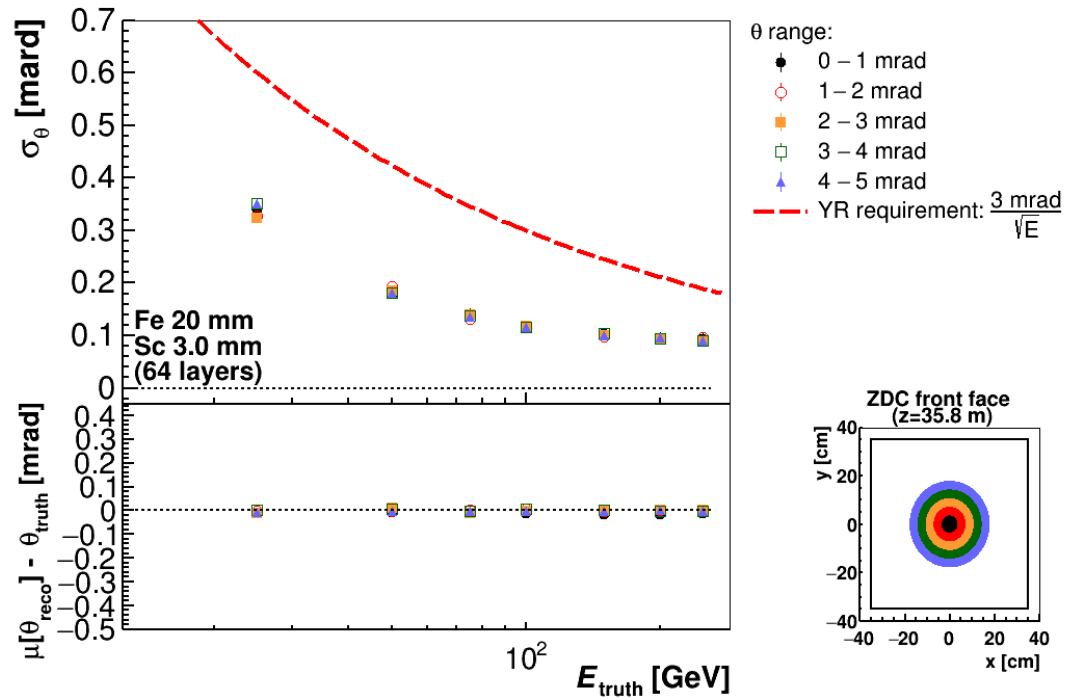
Hcal(SiPM) neutron position resolution

- Log weight method

$$\blacktriangleright \vec{r} = \frac{\sum_i \vec{r}_i w_i}{\sum_i w_i} \quad * \quad w_i = \max(0, w_0 + \ln \frac{E_i}{E_{\text{tot}}}) \quad (w_0 = 4.0)$$

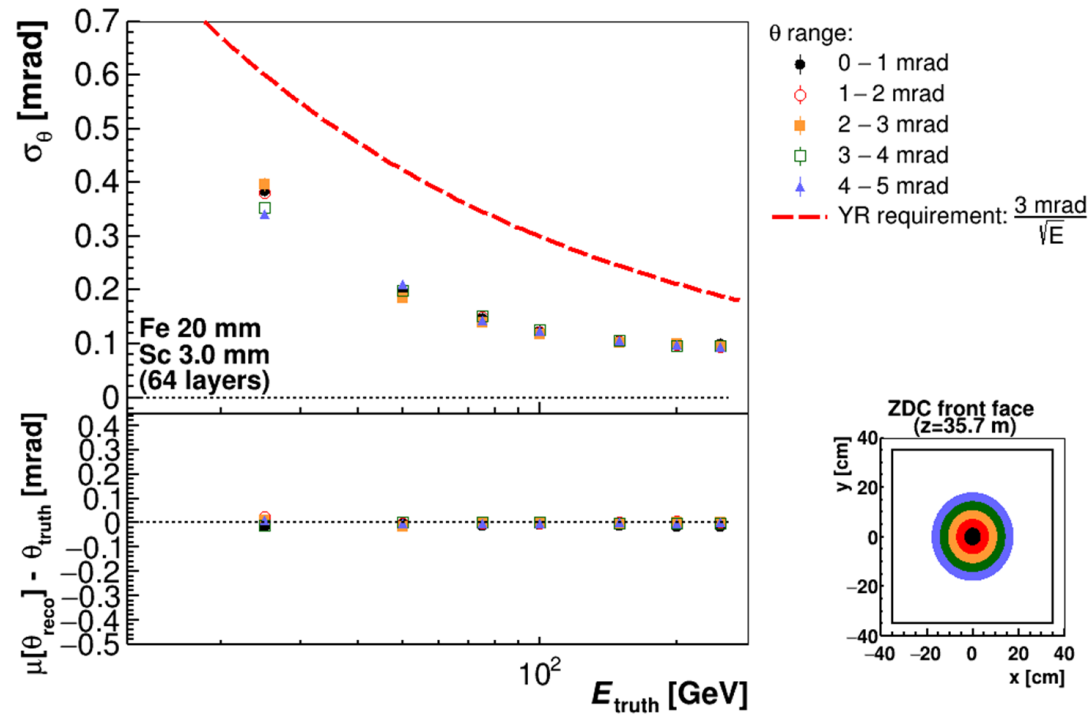


Hcal(SiPM) neutron position resolution



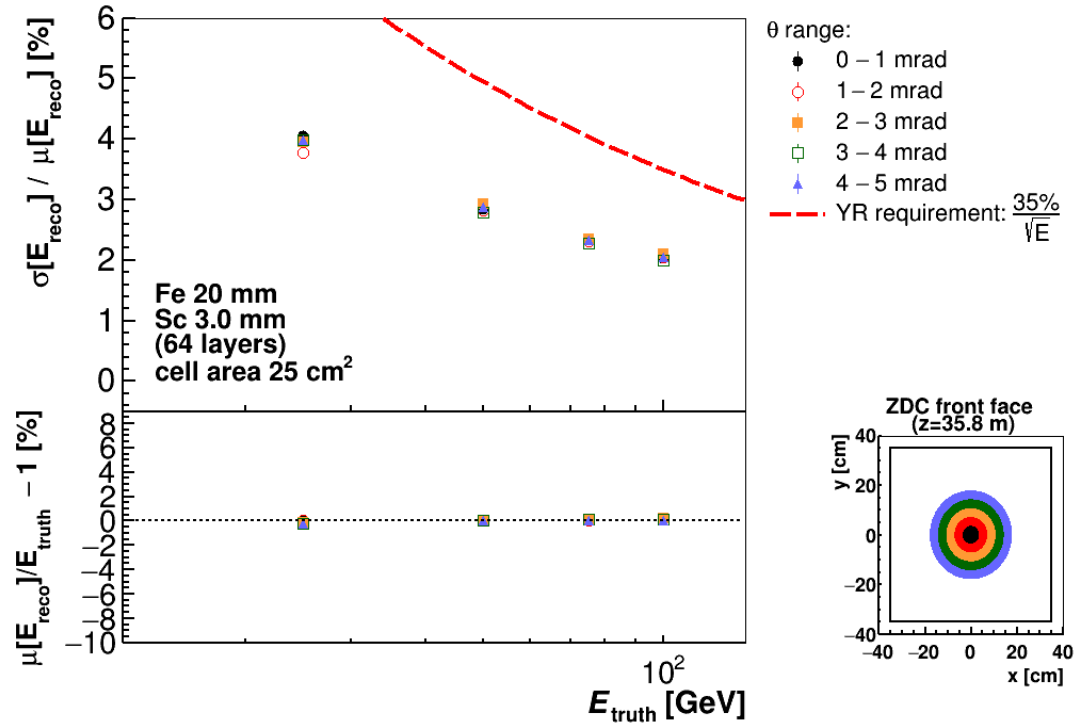
- Hcal position resolution is better than YR requirement
- There is no dependence on theta

Ecal(LYSO)+Hcal(SiPM) neutron position resolution



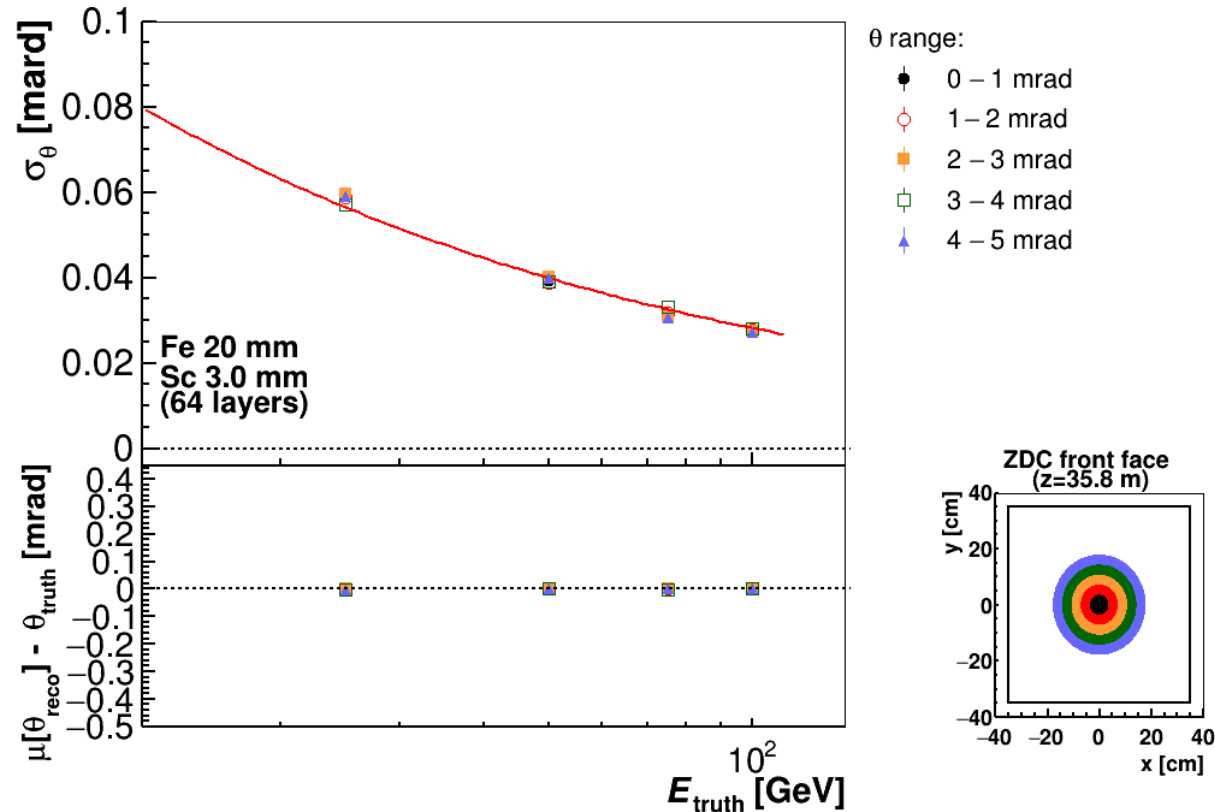
- It is similar to the position resolution of Hcal.

Hcal(SiPM) γ energy resolution



- Hcal position resolution is better than YR requirement
- There is no dependence on theta

Hcal(SiPM) γ position resolution

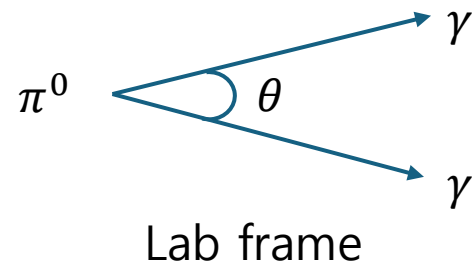


- Fit function = a/\sqrt{E}
a = 0.282 ± 0.00254

- There is no dependence on theta

Future plan

- Ecal(LYSO)+Hcal(SiPM) γ energy/position resolution
- π^0 secondary vertex reconstruction



$$M_{\pi^0} = M_{\gamma\gamma} = \sqrt{2E_{\gamma 1}E_{\gamma 2}(1 - \cos\theta)}$$



BACKUP

