TODOs

- Single Pi0
- Repeat the jet energy resolution
 - RMS90 is smaller than sigma for gaussian case
- De-composite JER degradation (ECAL resolution, HCAL resolution, fragment etc) borrowing work from Yuexin
- With a simplest digitization processor
 - Causality constraint on connector
 - Between starting-hit and any hit in same cluster
 - Between any hit and any hit in the same cluster
 - Re-clustering
 - If time information can help us to separate clusters from different particles, we can merge cluster more aggressively, reducing the fragments
 - Split cluster using time information (can we really do this?)
 - ...
- With a more realistic digitization
- With NN/BDT, we can identify neutral/charged fragment but still use rule-based reclustering or association



Early Late

APRIL performance for pi0 at 5 GeV

Hao LIANG

LLR

Simulation

- Detector: ILD_l5_o2_v02
- Particle Gun: 1000 5GeV π^0

Multiplicity



Energy



Angles

•
$$m_{\pi^0}^2 = \frac{2(E_1 + E_2)^2 r}{(1 + r)^2} (1 - \cos\theta) \Rightarrow (E_1 + E_2)^2 = m_{\pi^0}^2 (1 + r)^2 / (2r(1 - \cos\theta))$$

By default: PFO angle is determine by the barycenter of hits



Eff. = 0.71 and 0.75

Gaussian fit range: [4,6]GeV

Event Display















