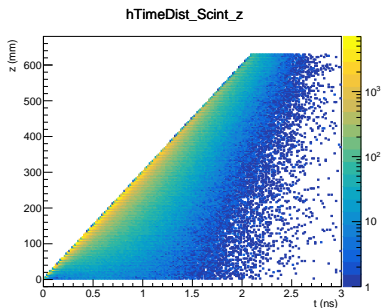
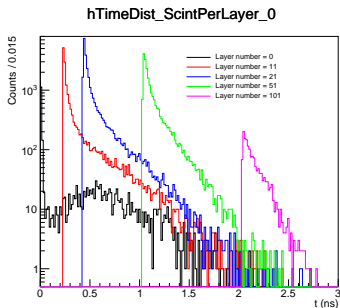


Report on KOTO EMCal Study

Junlee Kim

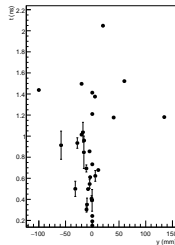
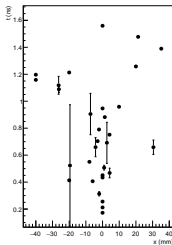
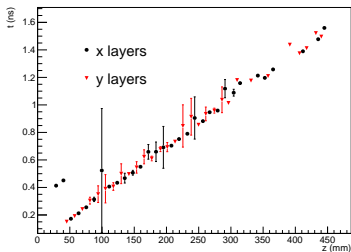
August 19, 2020

Time information



- ▶ All scintillator hits(detector level) with 10k events
- ▶ Local Time was replaced with Global Time
- ▶ Linearity between peak time and layer number + long tails on the right side
- ▶ Showers are completed within 2.5 ns

Time v.s. Position (single event)



- ▶ Timing uncertainty from the standard deviation over segments in a given layer.
 - ▶ Larger uncertainty indicates larger differences of timing between segments.
- ▶ Secondaries are largely deviated from $t=1$ ns (or $z=250$ mm)
- ▶ Usage of front part of shower to estimate the direction of mother particle (incident γ)?

Outlook

- ▶ Tracking only with front part of shower?
- ▶ Need to develop step-level tracking before detector level.
 - ▶ Need to update GEANT4 simulation
- ▶ Consideration of specific detector shape?
 - ▶ Should we go with rectangular shape?
 - ▶ Barrel type with the current beam line?