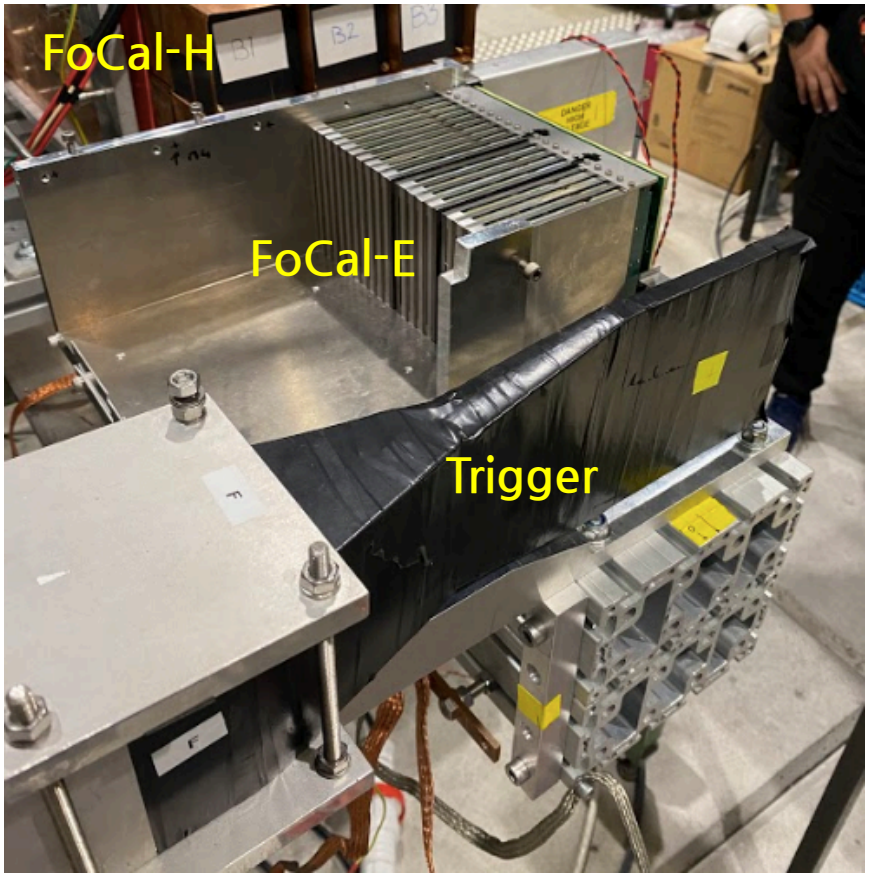
ALICE FoCal SPS beam test

October 13
Minho Kim

FoCal SPS beam test

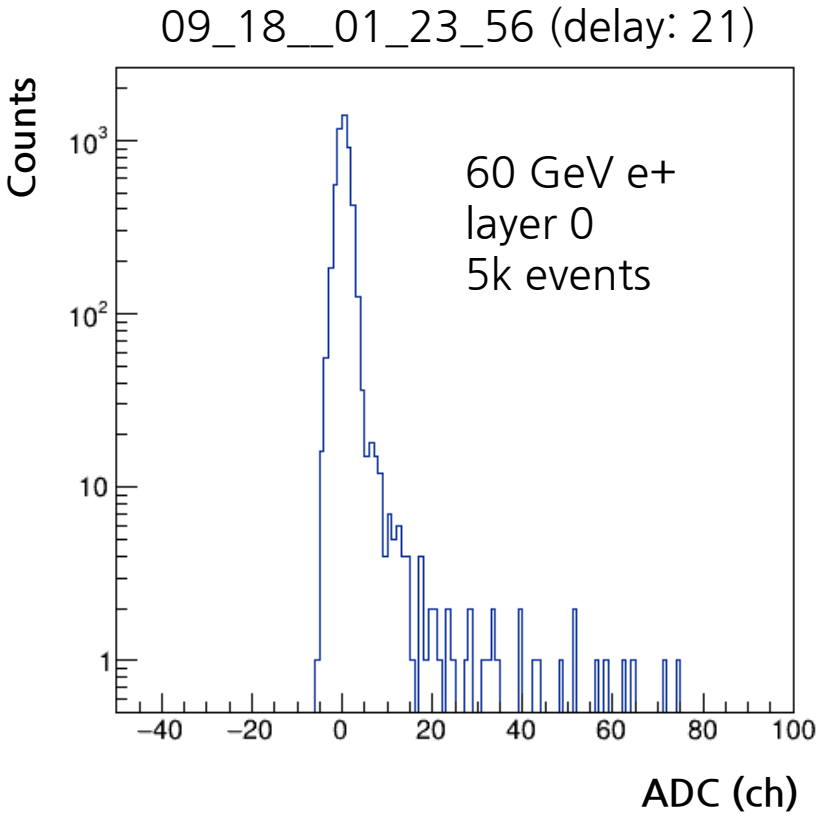


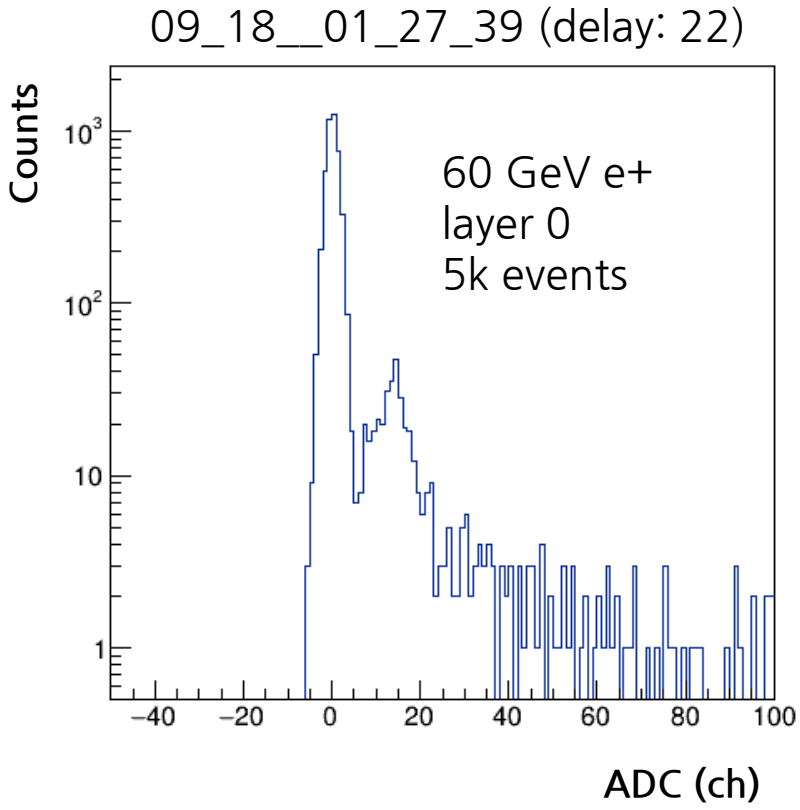
- Prototype of the ALICE FoCal (FoCal-E + H) was installed at the SPS beam line and measured positrons and charged pions from September 15 to 21.

My activities

- Data analysis and online monitoring have been assigned to me, Jonghan, and Hanseo.
- Followings should be studied from the analysis side.
  - Basic data check.
  - TOT behavior, dynamic range.
  - Detector performance: energy resolution, linearity.

Delay timing of the gate

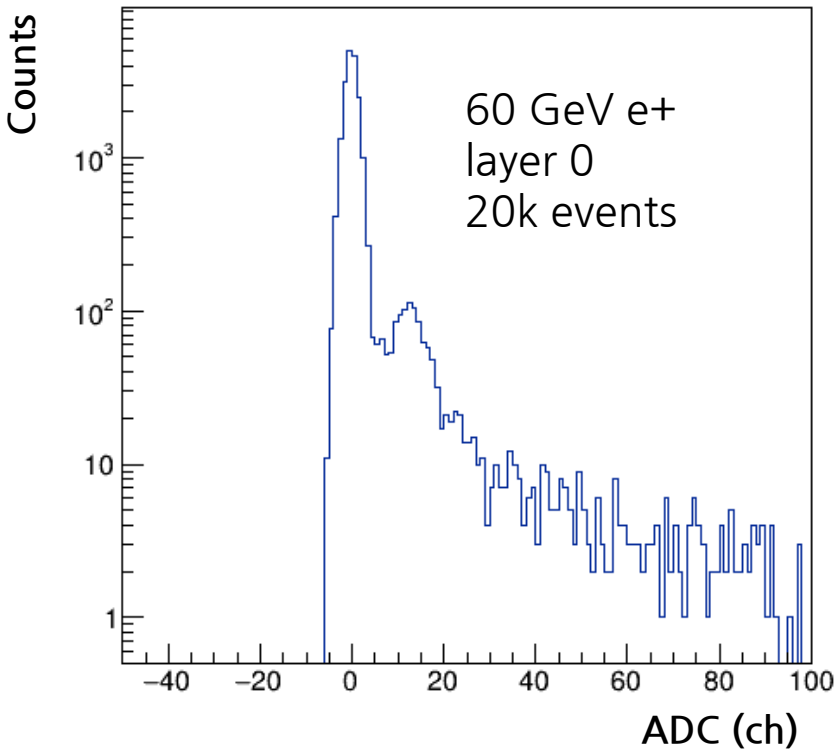




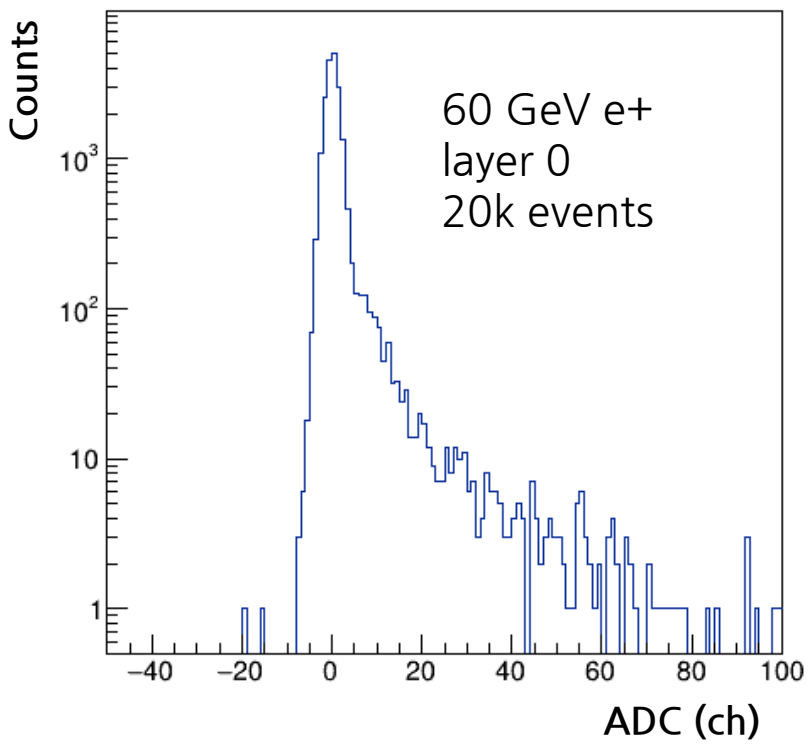
- At the first delay scan, delay: 22 showed a clear MIP peak.

Delay timing of the gate

09_18__04_22_22 (delay: 21)

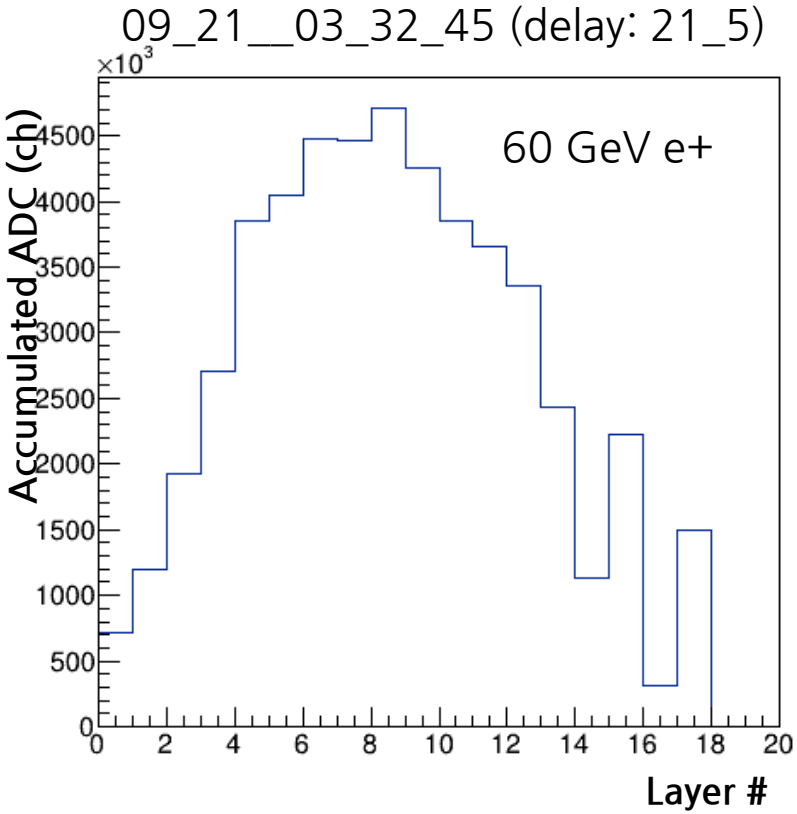


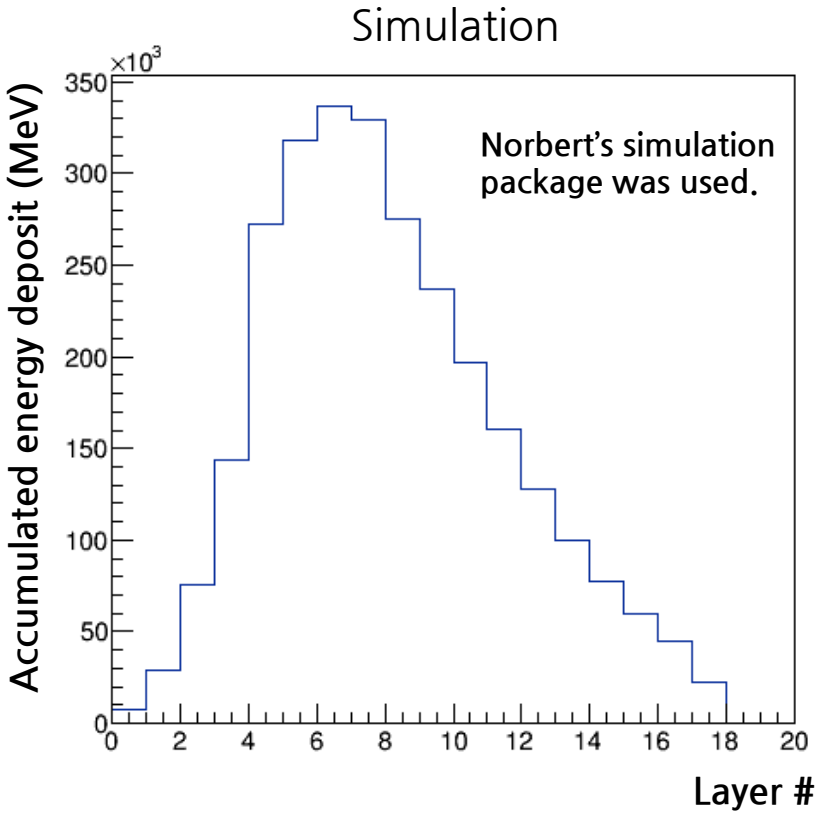
09_18__04_31_29 (delay: 22)



- However, it was reversed at the third delay scan. A clear MIP peak is shown with the delay: 21 this time.
- A timing jitter is suspected as an origin but 25 ns is too big for a jitter.

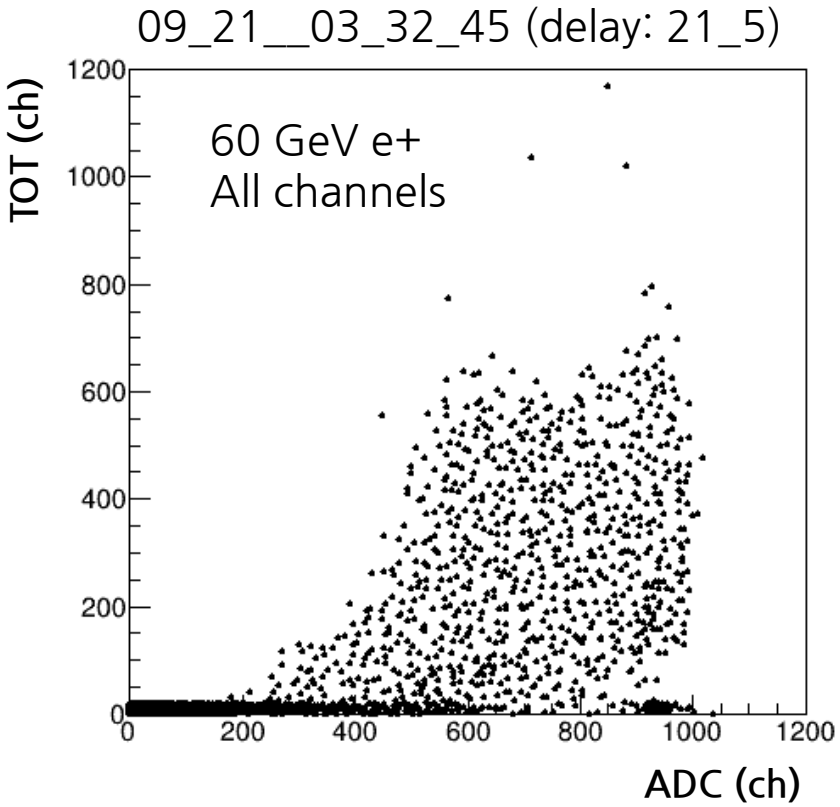
Longitudinal shower development





- The shower maximum layer is different from the one expected by the simulation.
- ADC may be saturated or not believable even before it reaches the maximum (1000 channel).
- However, it could also be due to incomplete pedestal and common noise subtractions.

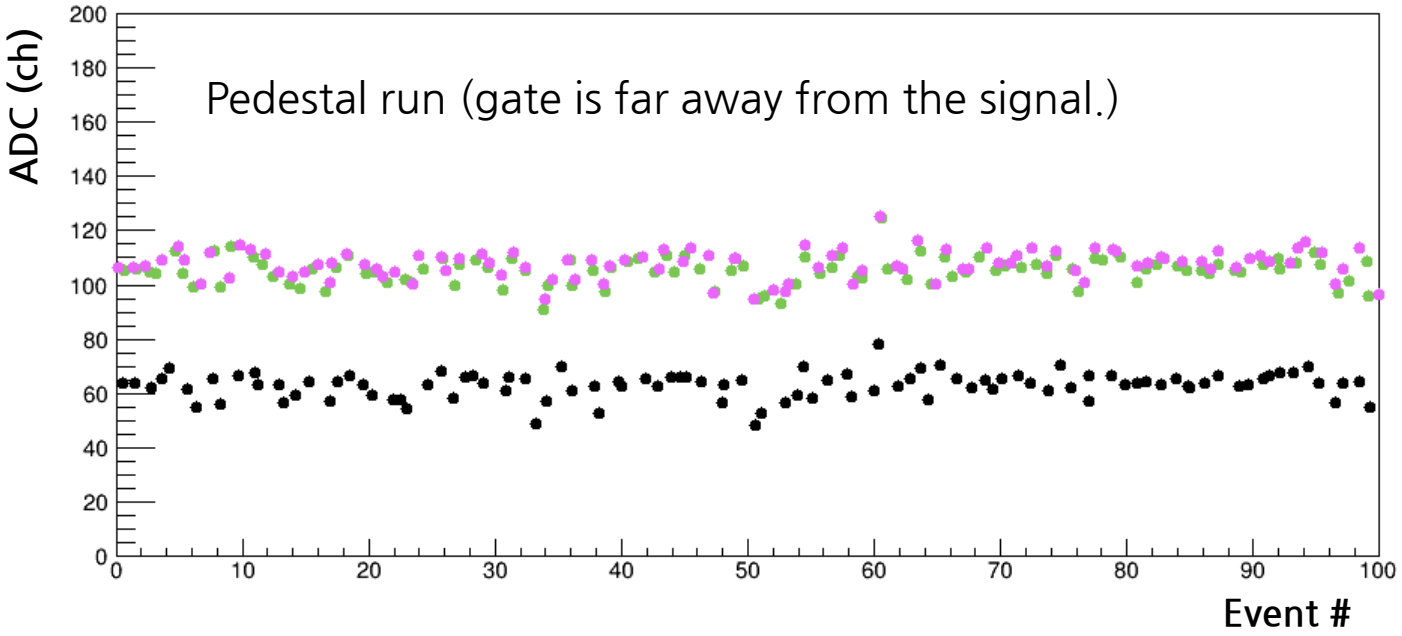
ADC vs TOT



- TOT starts having non-zero values when the ADC is larger than ~200.
- When the TOT has non-zero value, it is not proportional to the ADC.
- To better understand the ADC and TOT behaviors, data taking with an internal charge injection will be started soon.

Plan

- Pedestal and common noise subtractions should be done properly before studying the detector performance.



- After further developing above items, the detector performance will be studied in detail.

- Further development of the online monitoring will also be done before the Nov. beam test to quickly estimate the data quality right after a run.