Photon Tagged beamline

Summer Student Project

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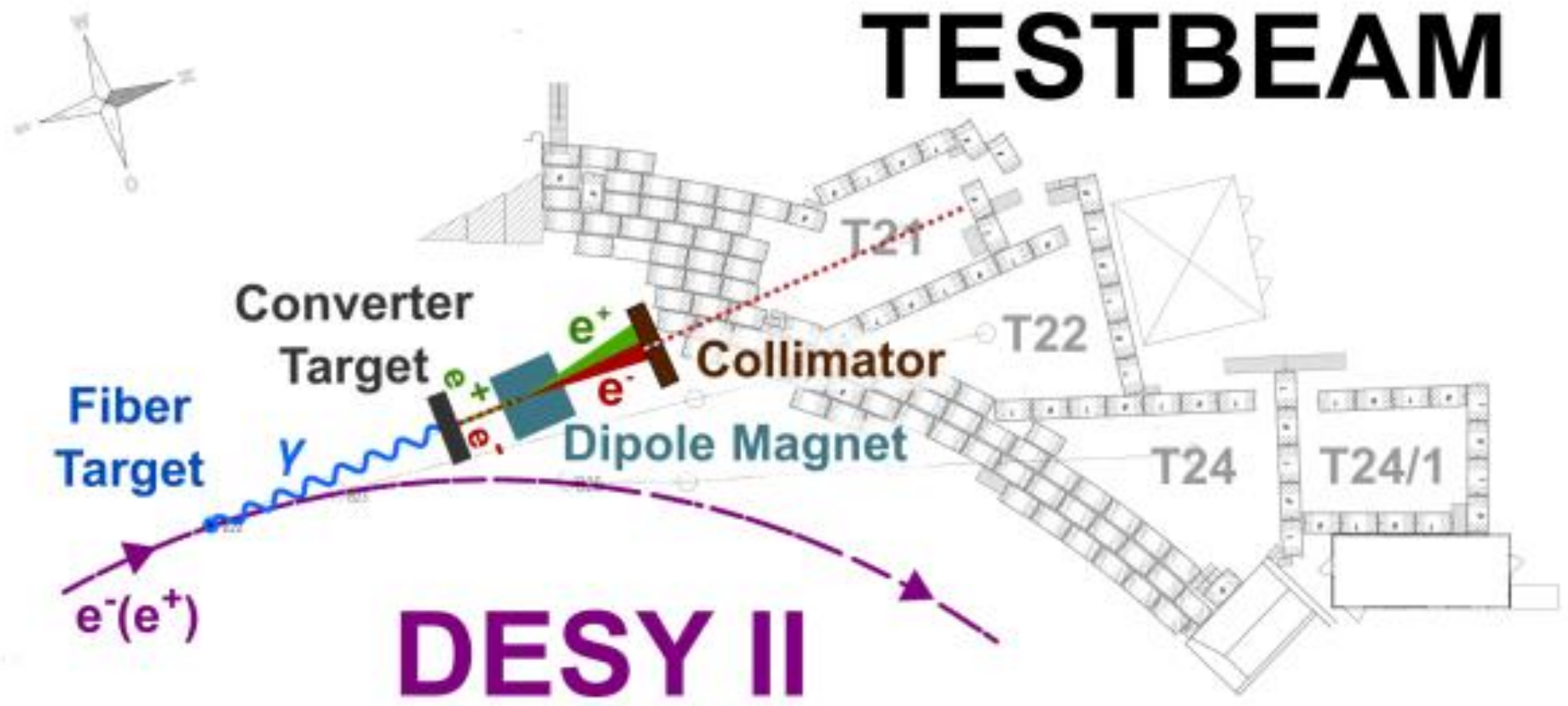
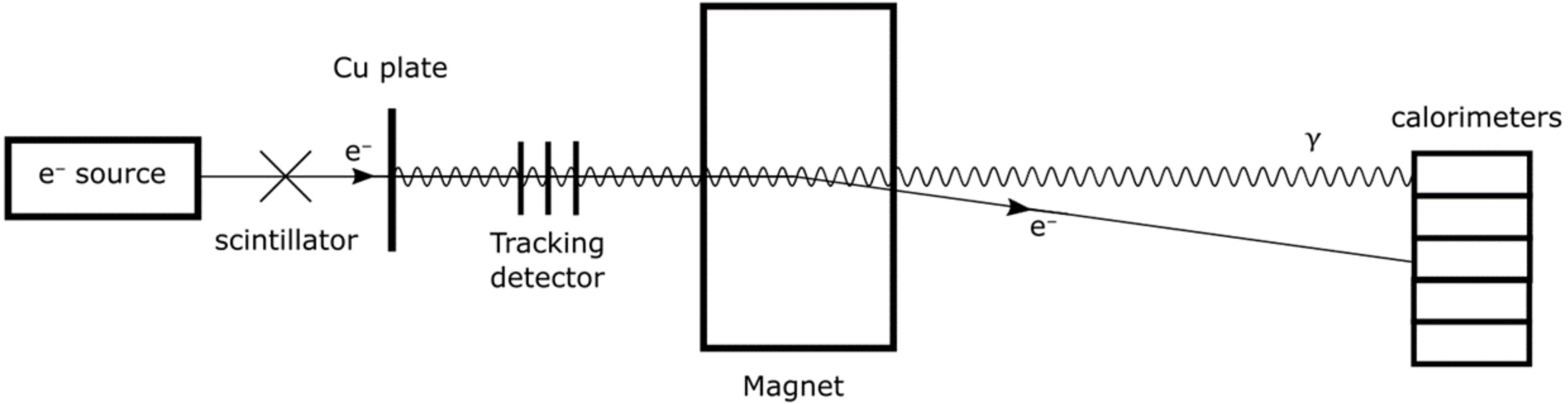
Supervisors: Jan Dreyling-Eschweiler, Lennart Huth

The testbeam facility

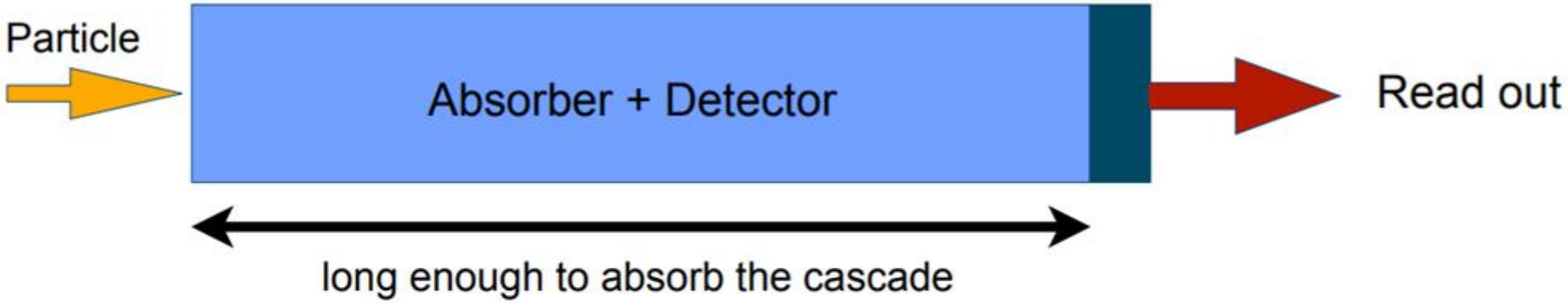


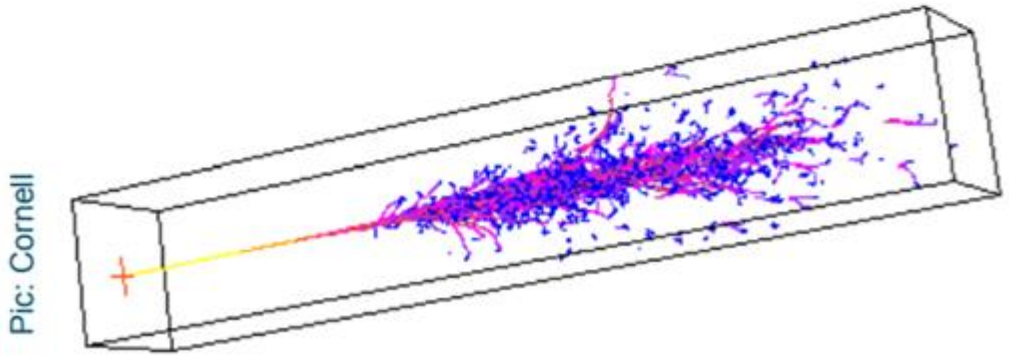
Photon tagged beamline



- Proof of concept experiment.
- Motivation: allows testbeam users to use photons of known energy.

Calorimeters – Working principle

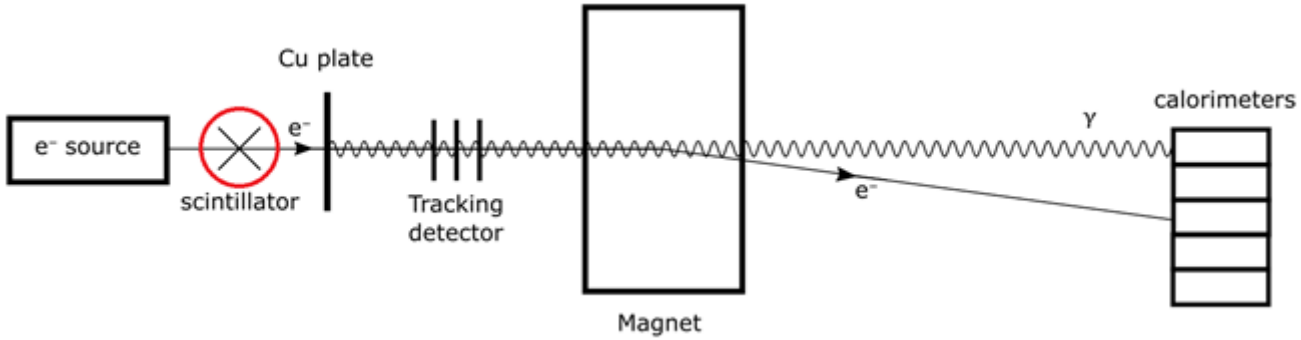


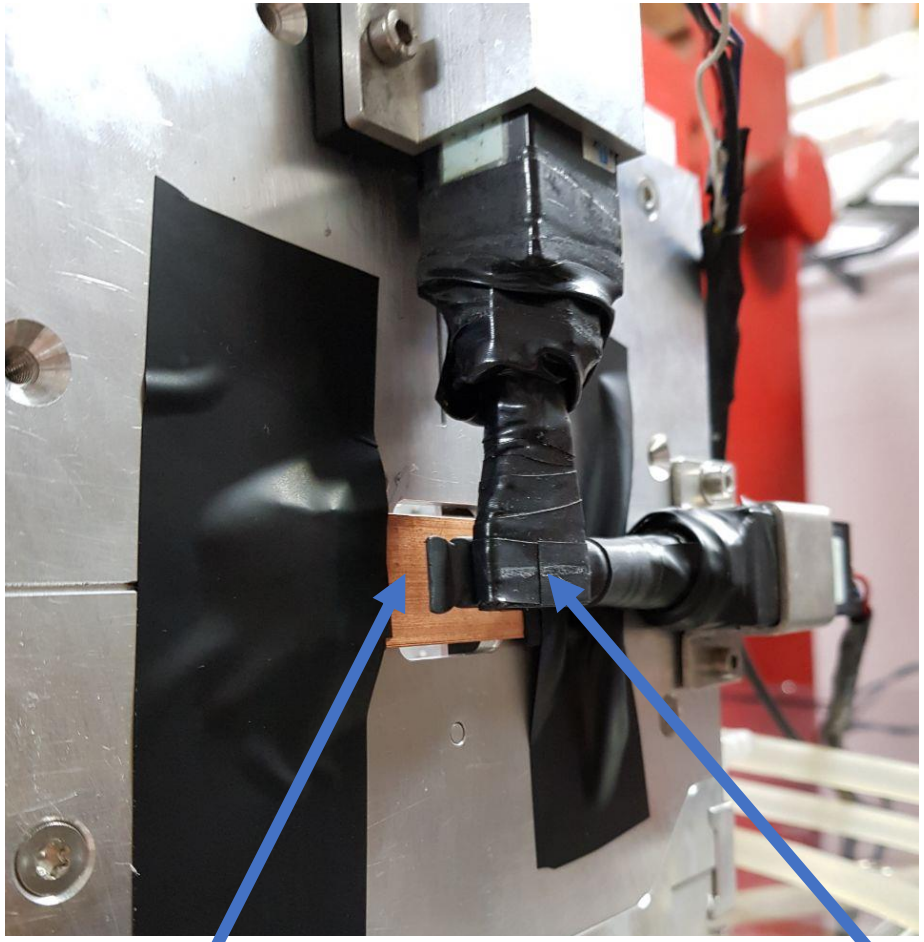


Calorimeter readout – QDC

QDC (Charge to digital converter)

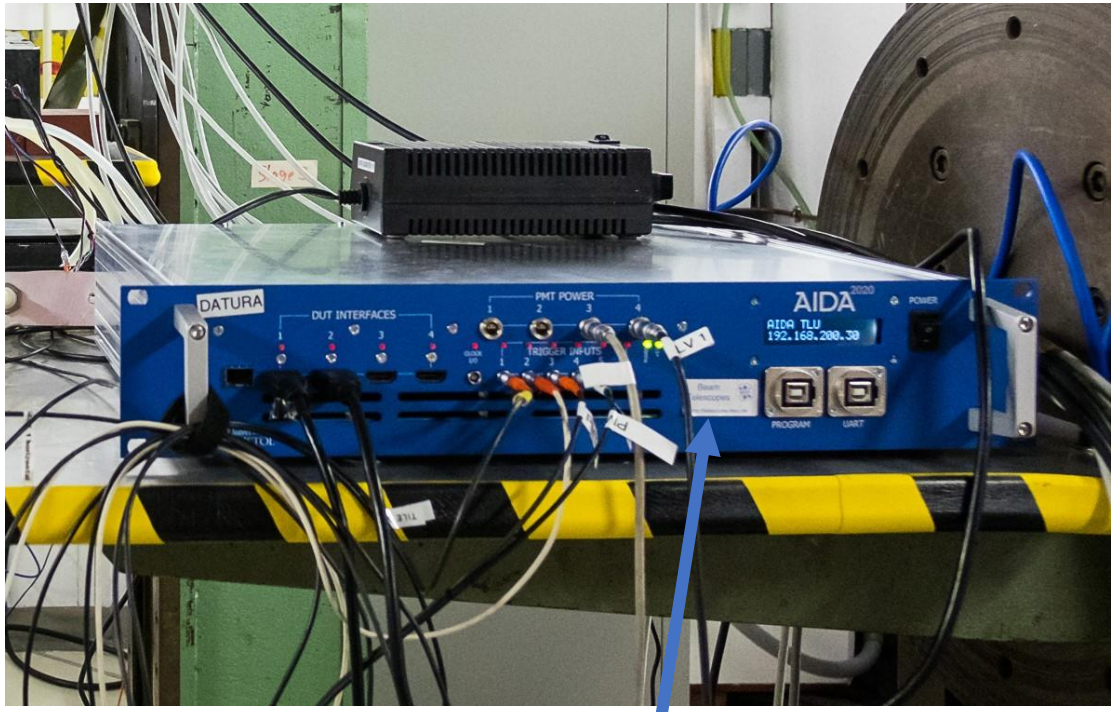
Triggering system





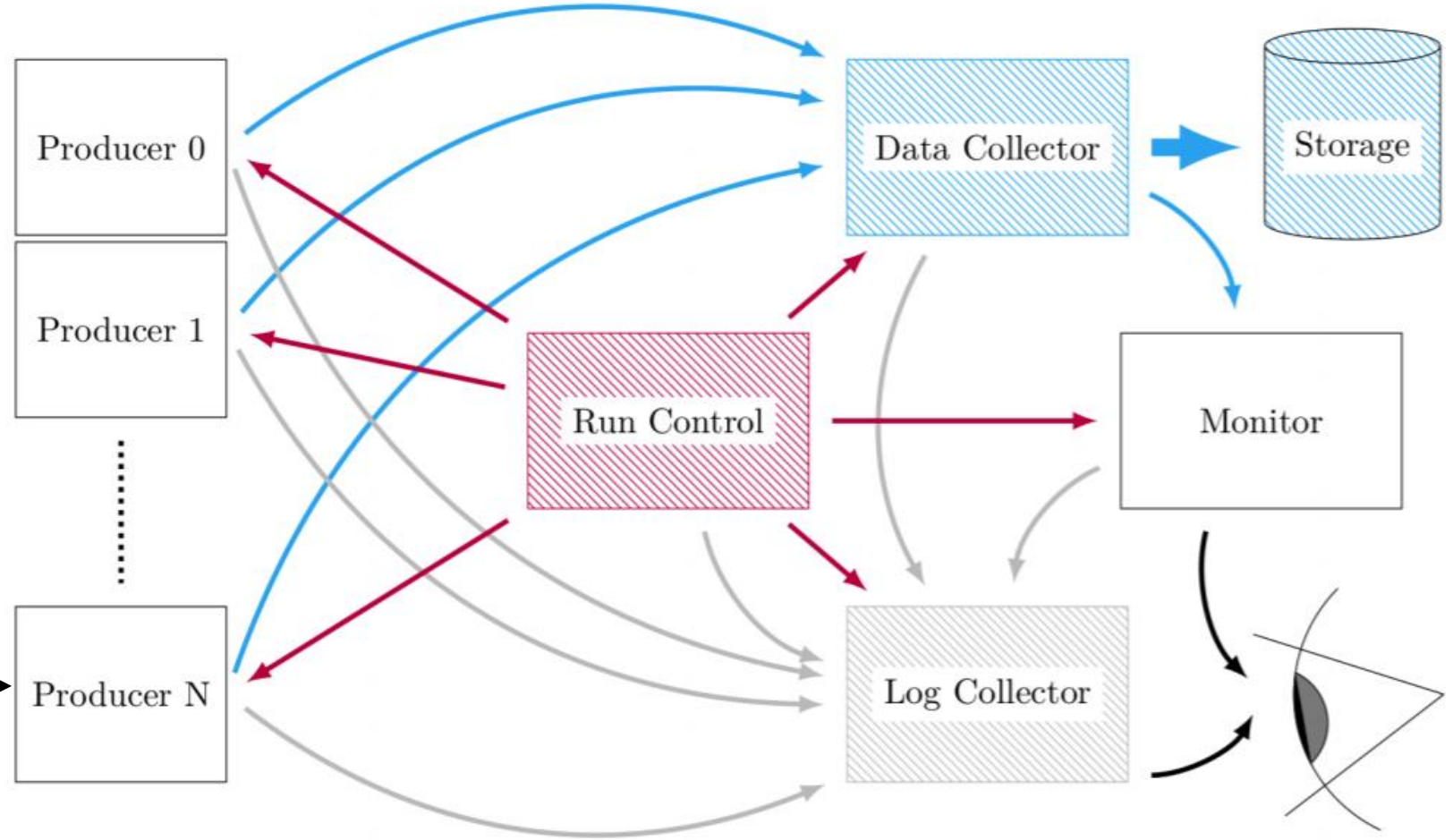
Copper target

Scintillators

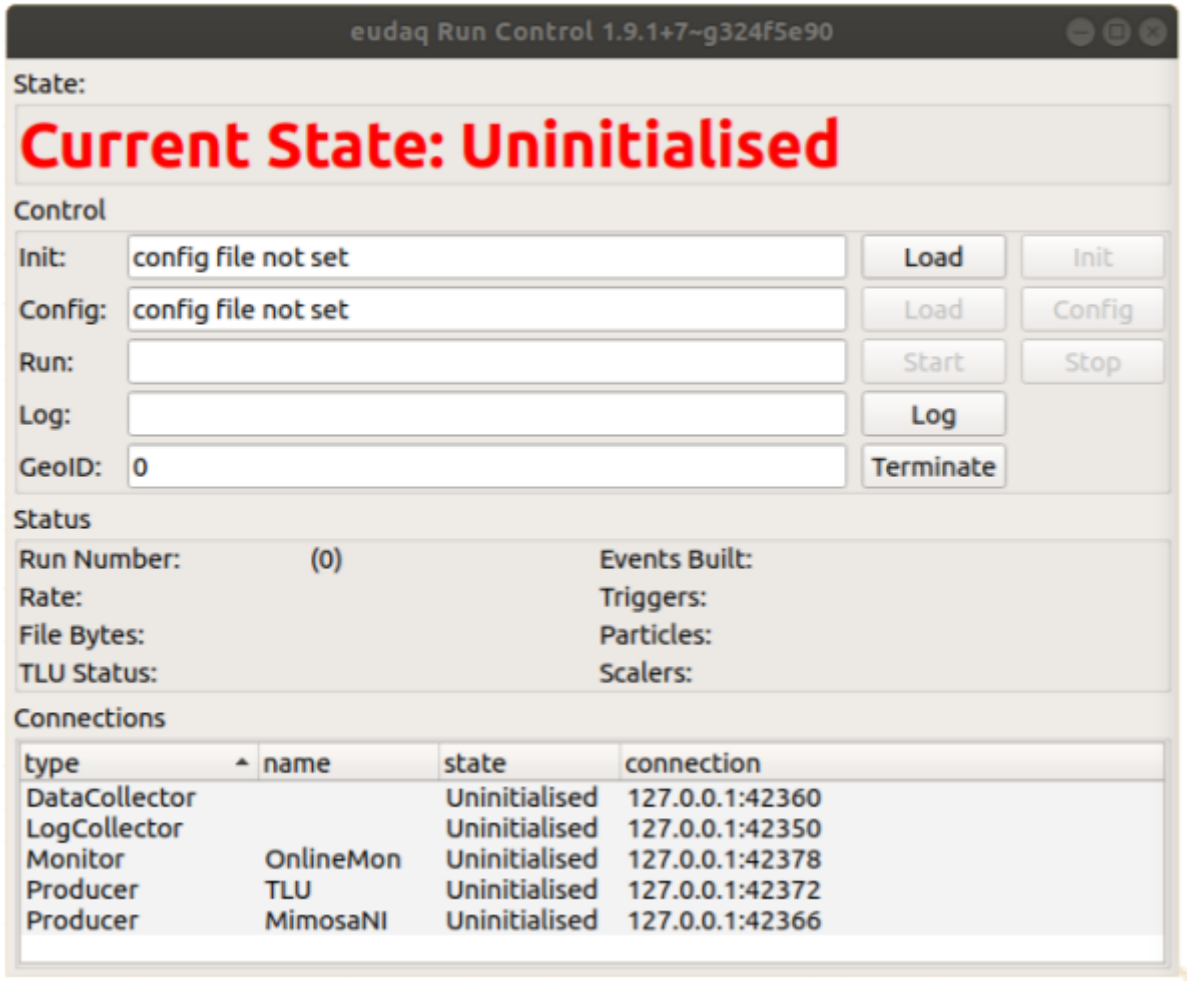


TLU (Trigger Logic Unit)

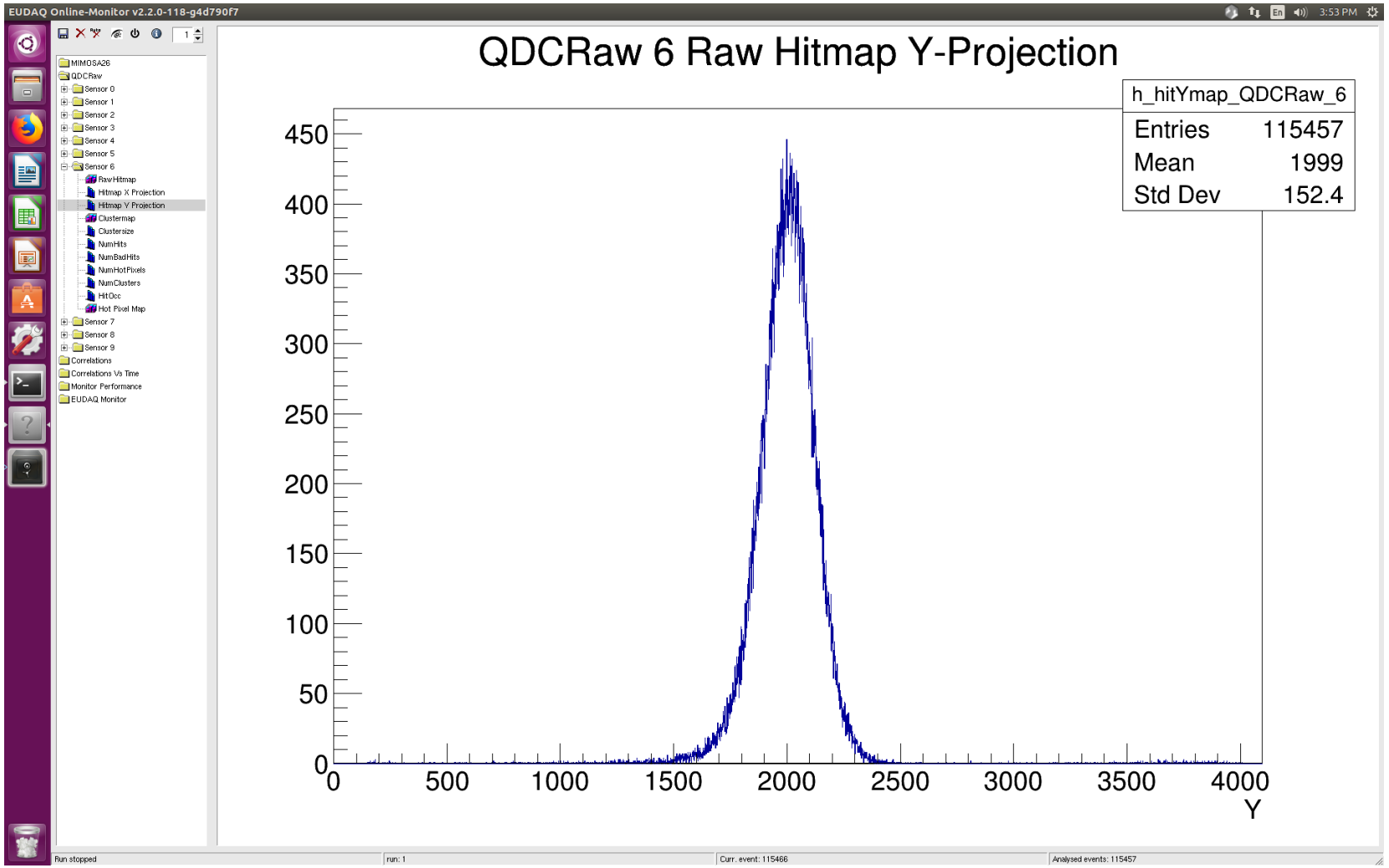
Data Acquisition System – EUDAQ



EUDAQ Run Control

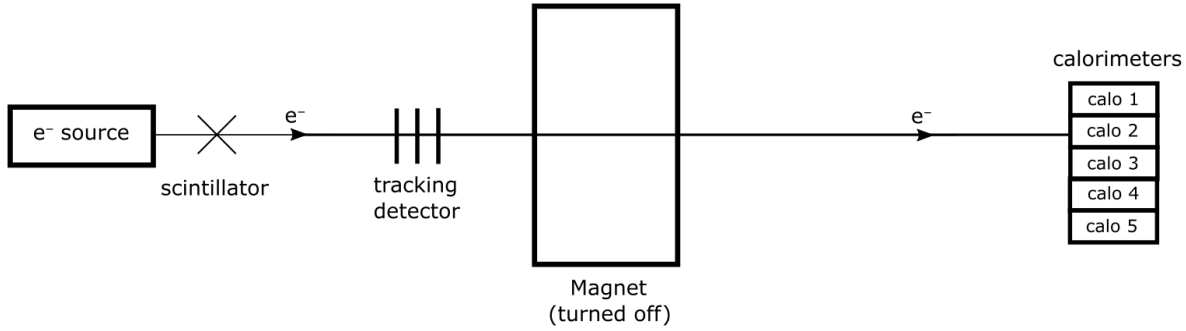


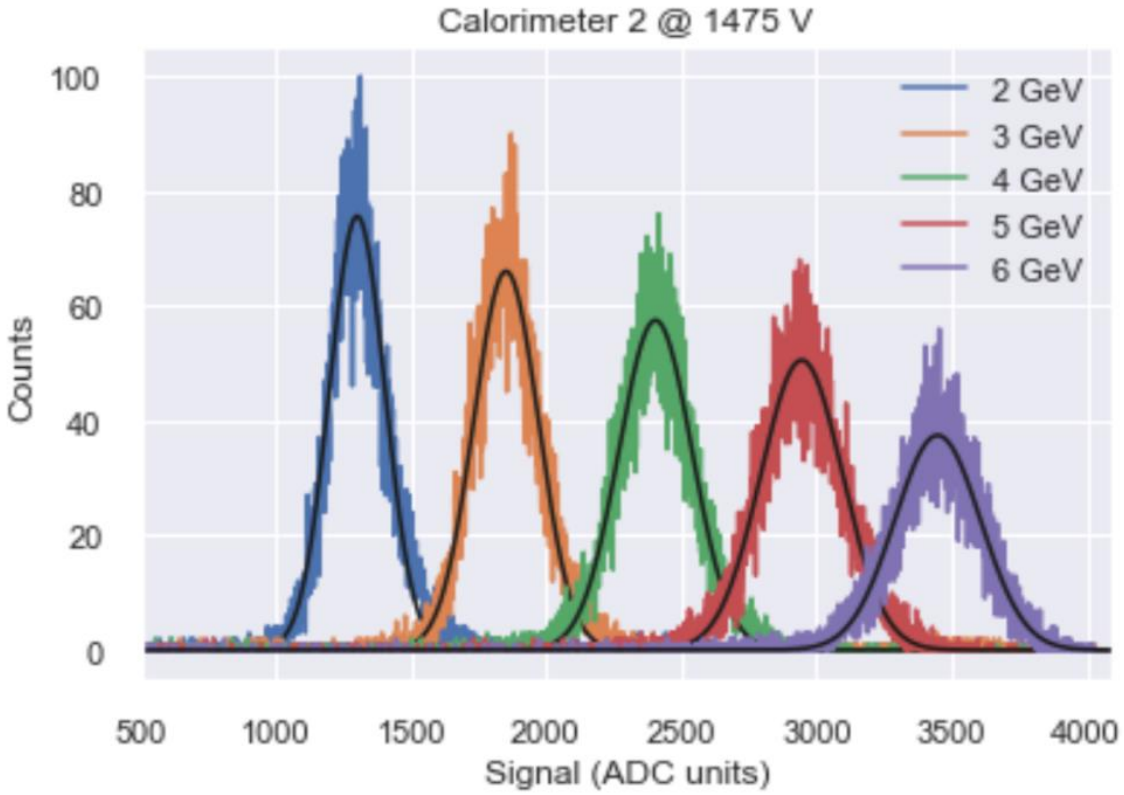
Real time data – EUDAQ Monitor

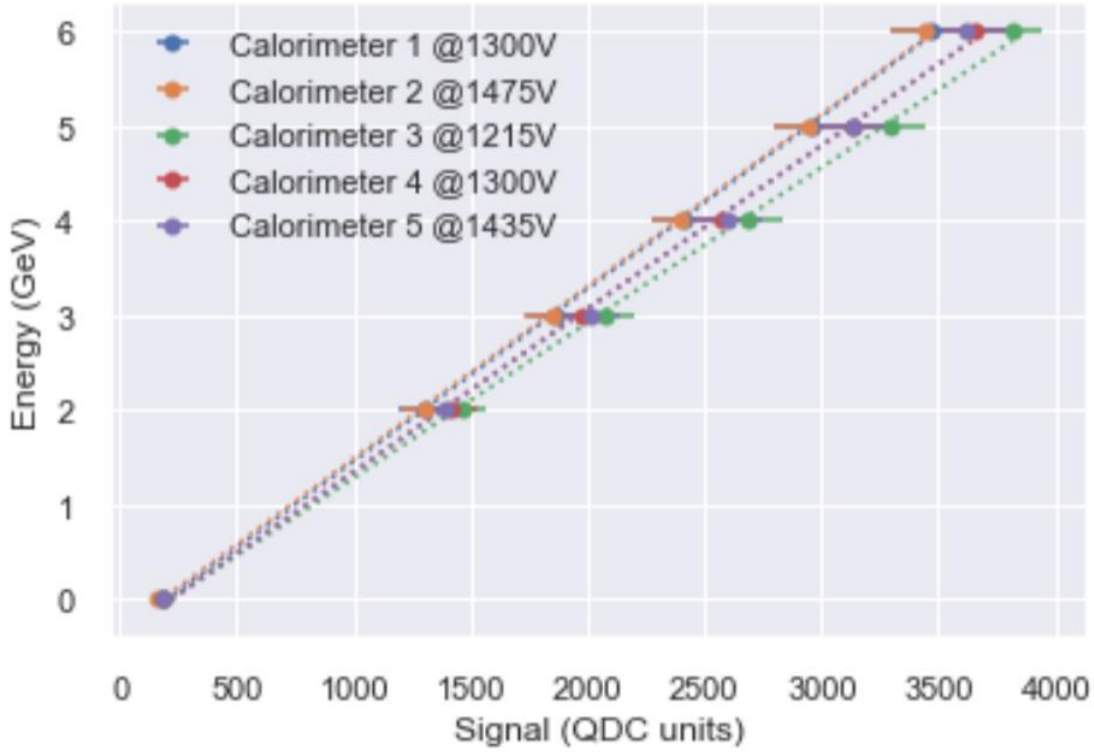


One week of setup and measurement in the testbeam

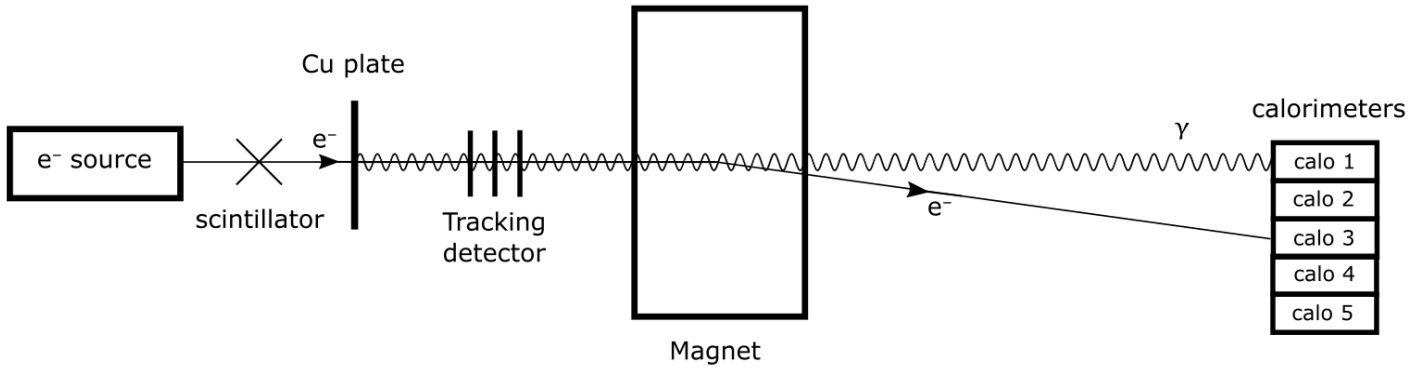
Calorimeter calibration

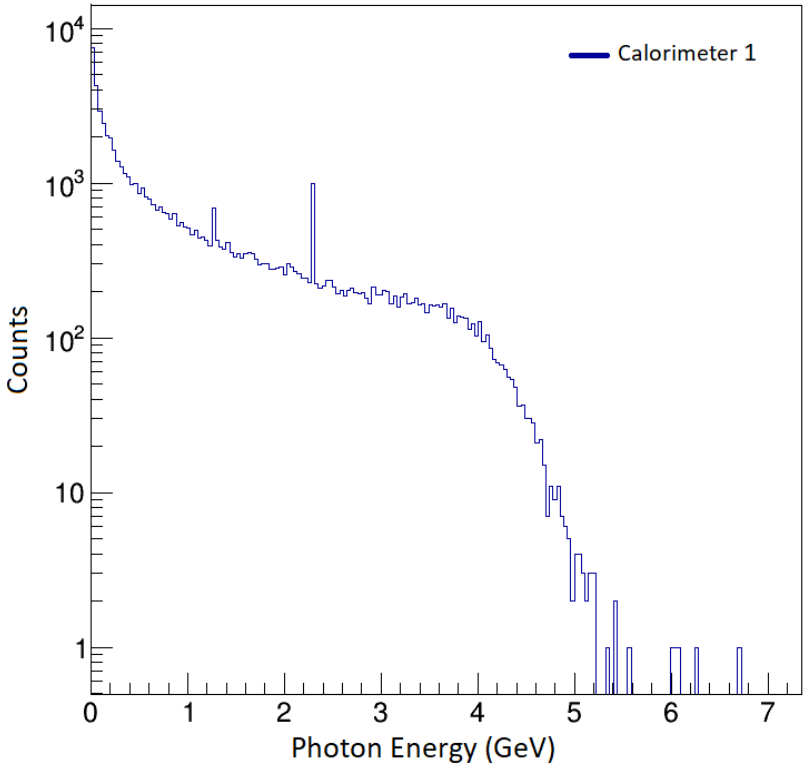


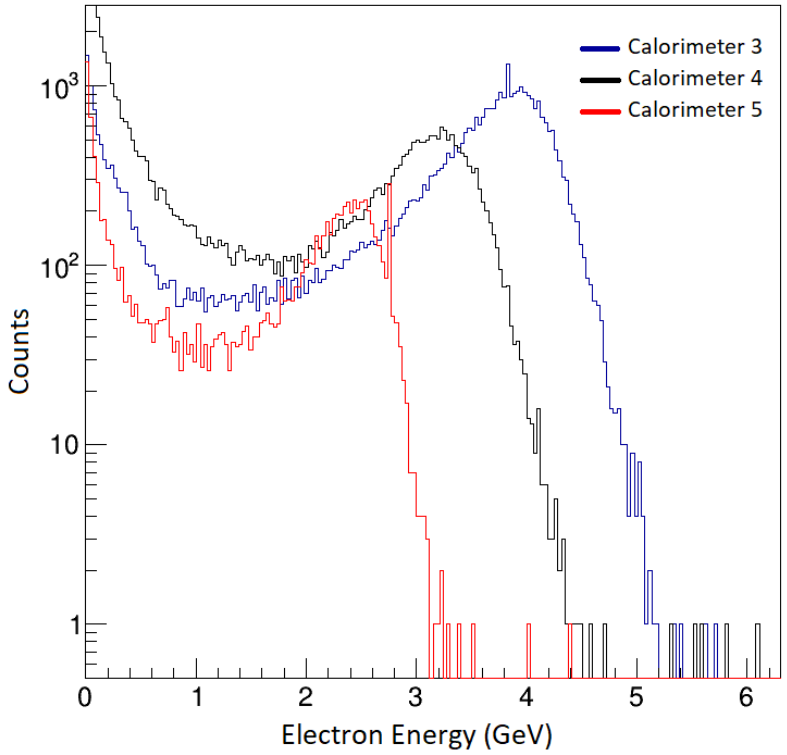


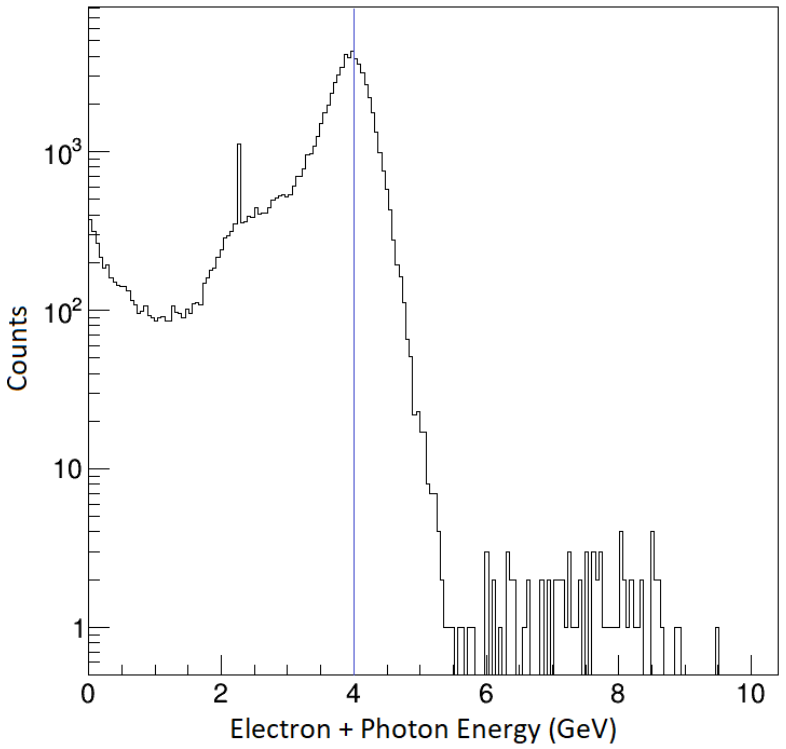


Measurement example
E_0 = 4GeV

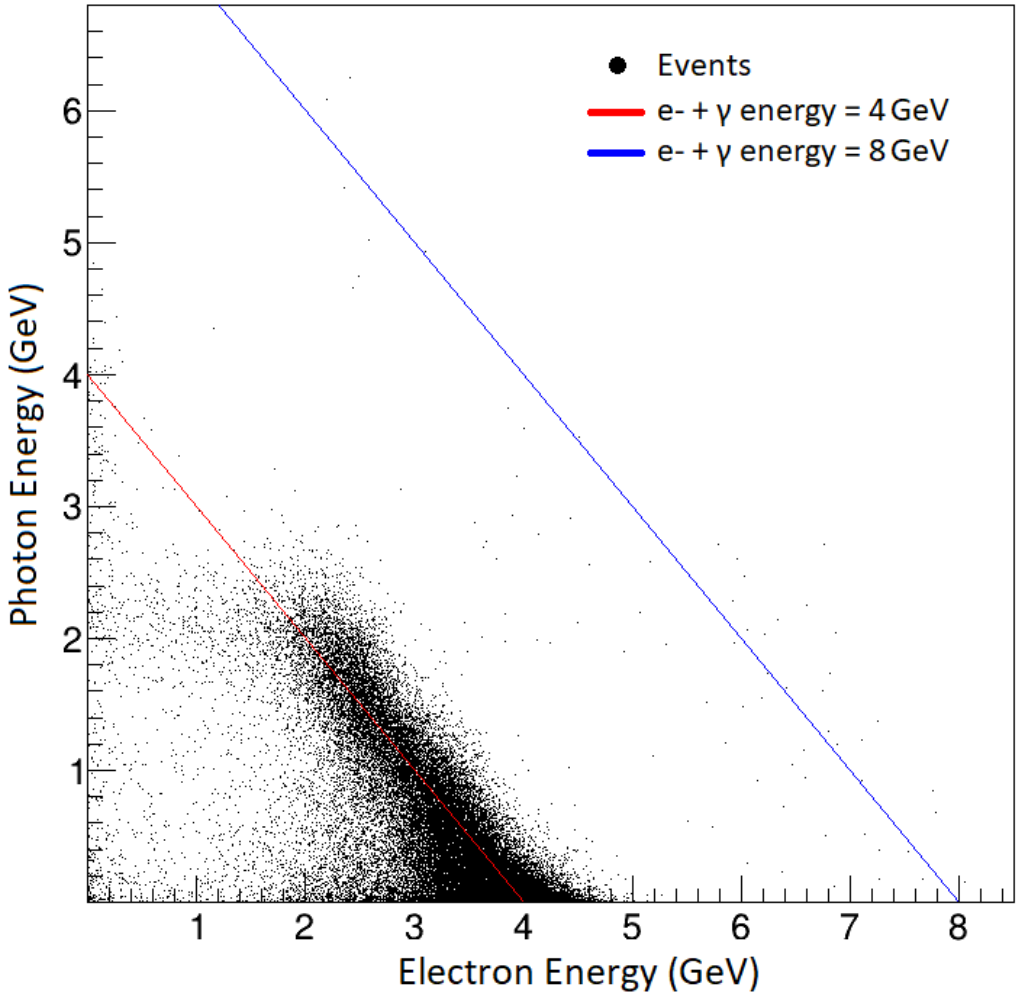








Measurement Example $E_0 = 4$ GeV



Summary and outlook

- Integration of the calorimeters into the testbeam DAQ
- Successful proof of concept of the photon tagged beamline setup
- Improvement of the setup and further analysis