

# Photon Tagged beamline

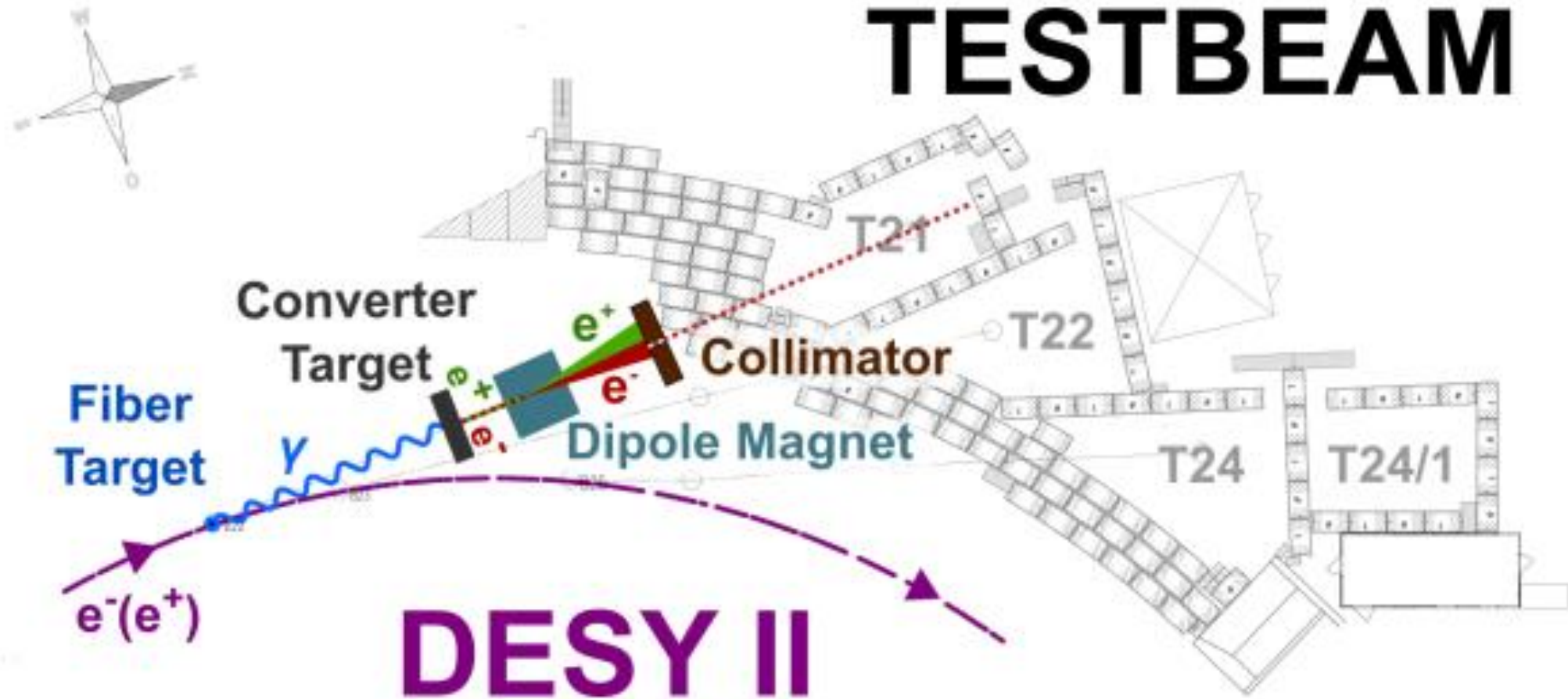
Summer Student Project

Gonzalo Morras

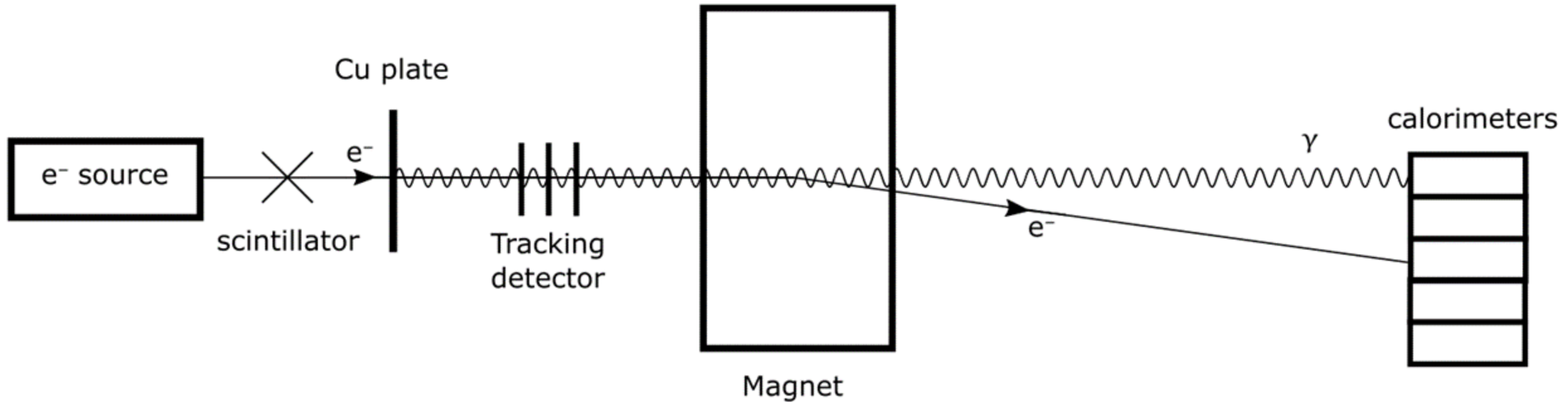
Supervisors: Jan Dreyling-Eschweiler, Lennart Huth



# The testbeam facility

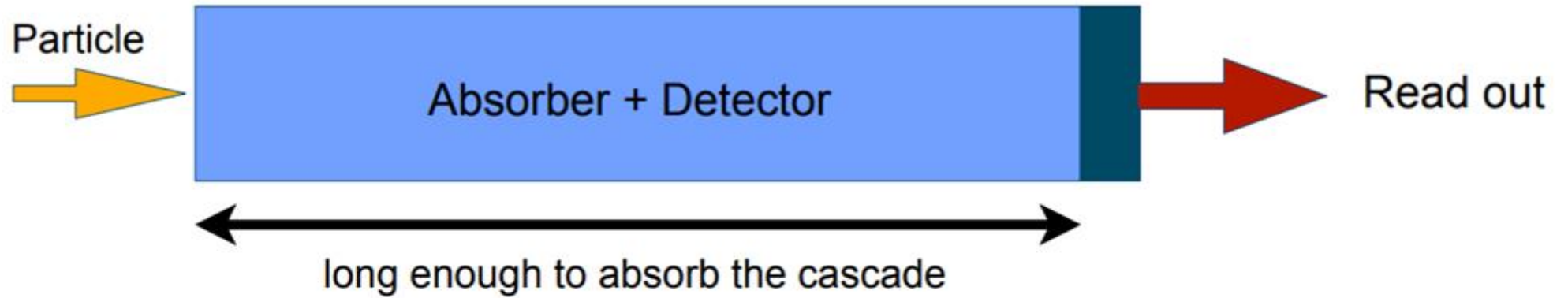


# Photon tagged beamline

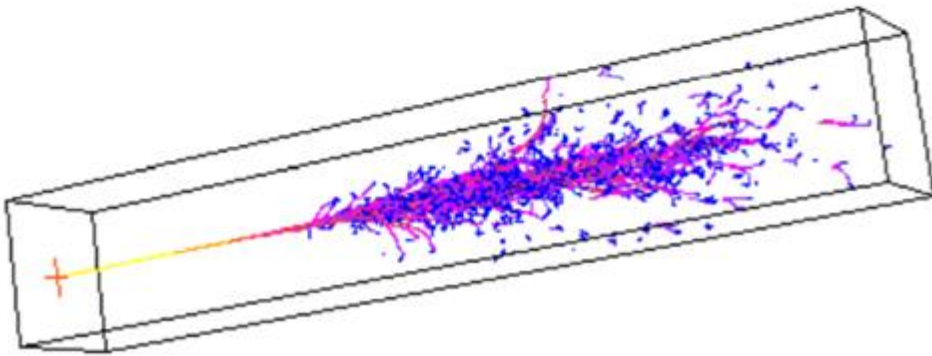


- Proof of concept experiment.
- Motivation: allows testbeam users to use photons of known energy.

# Calorimeters – Working principle



Pic: Cornell



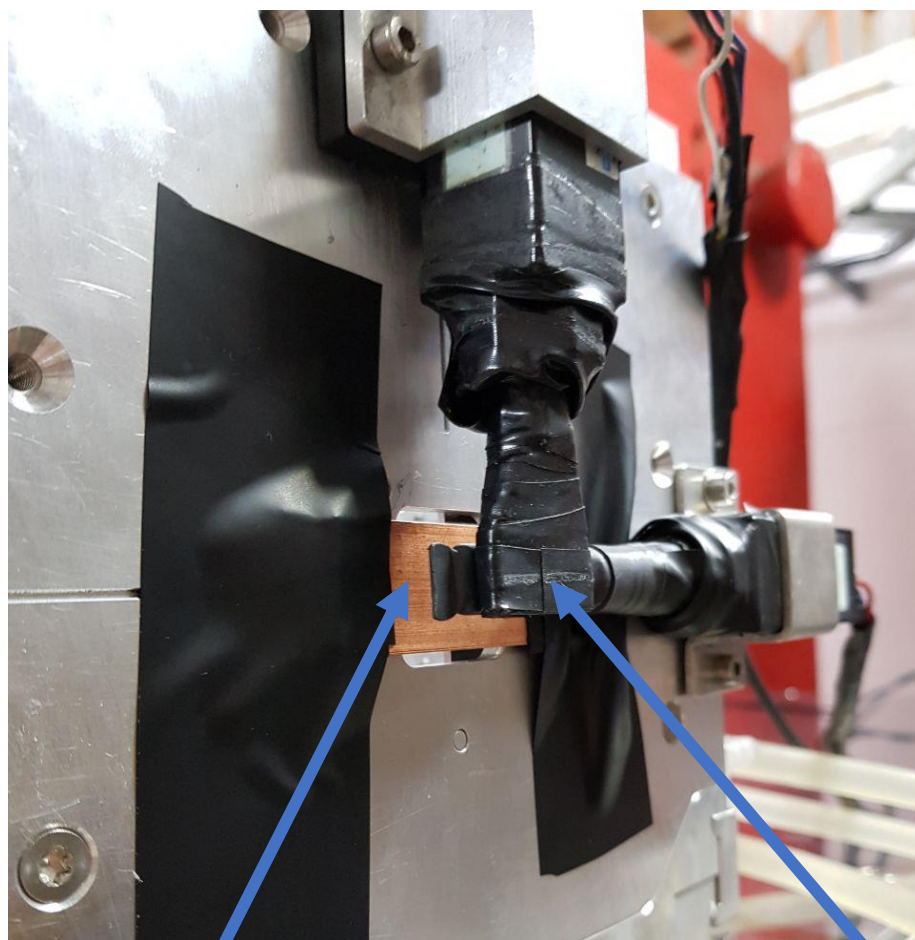
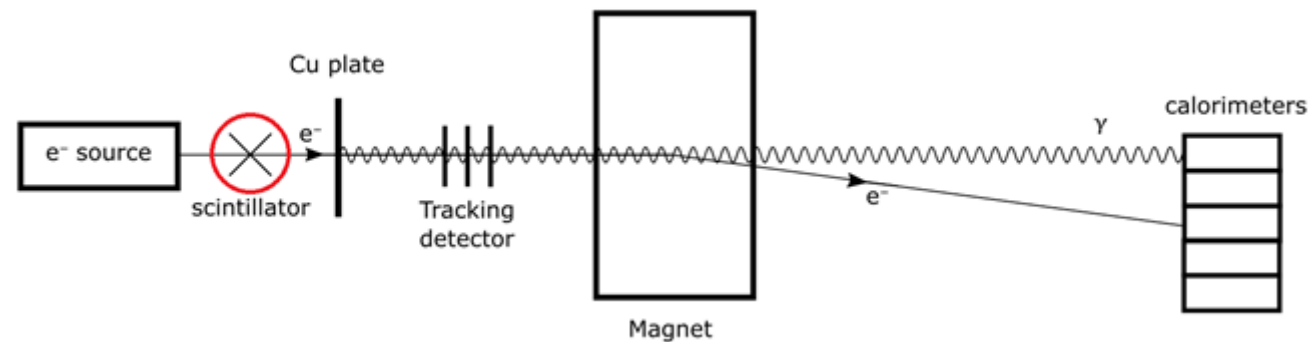
# Calorimeter readout – QDC



QDC (Charge to digital converter)

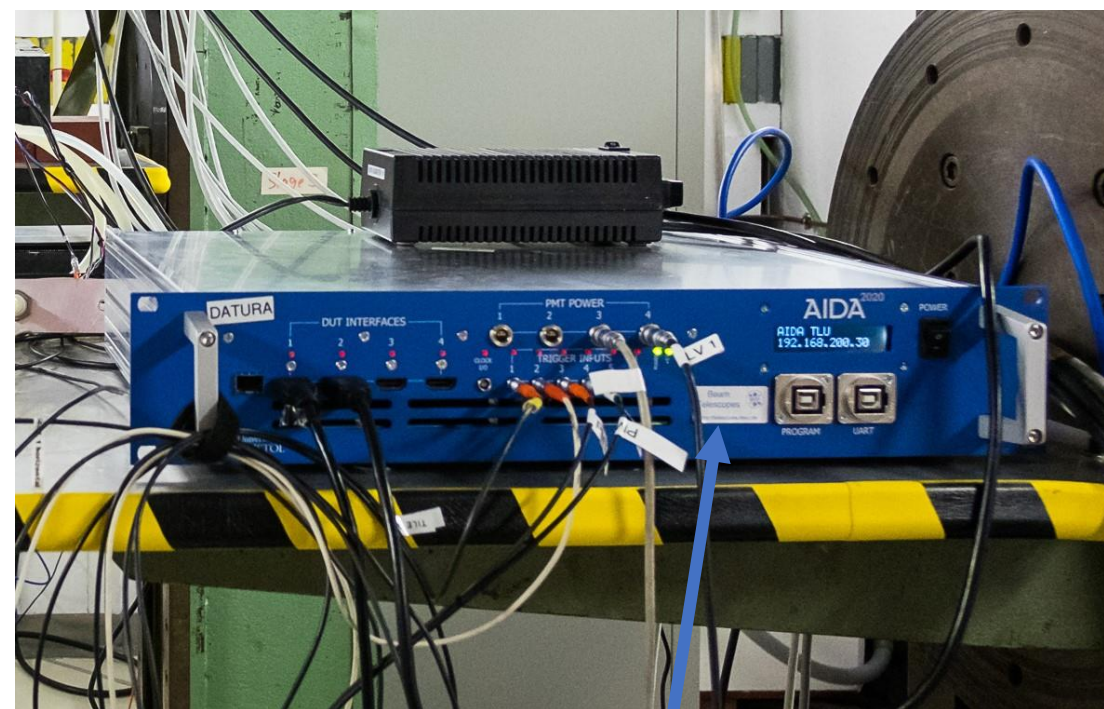


# Triggering system



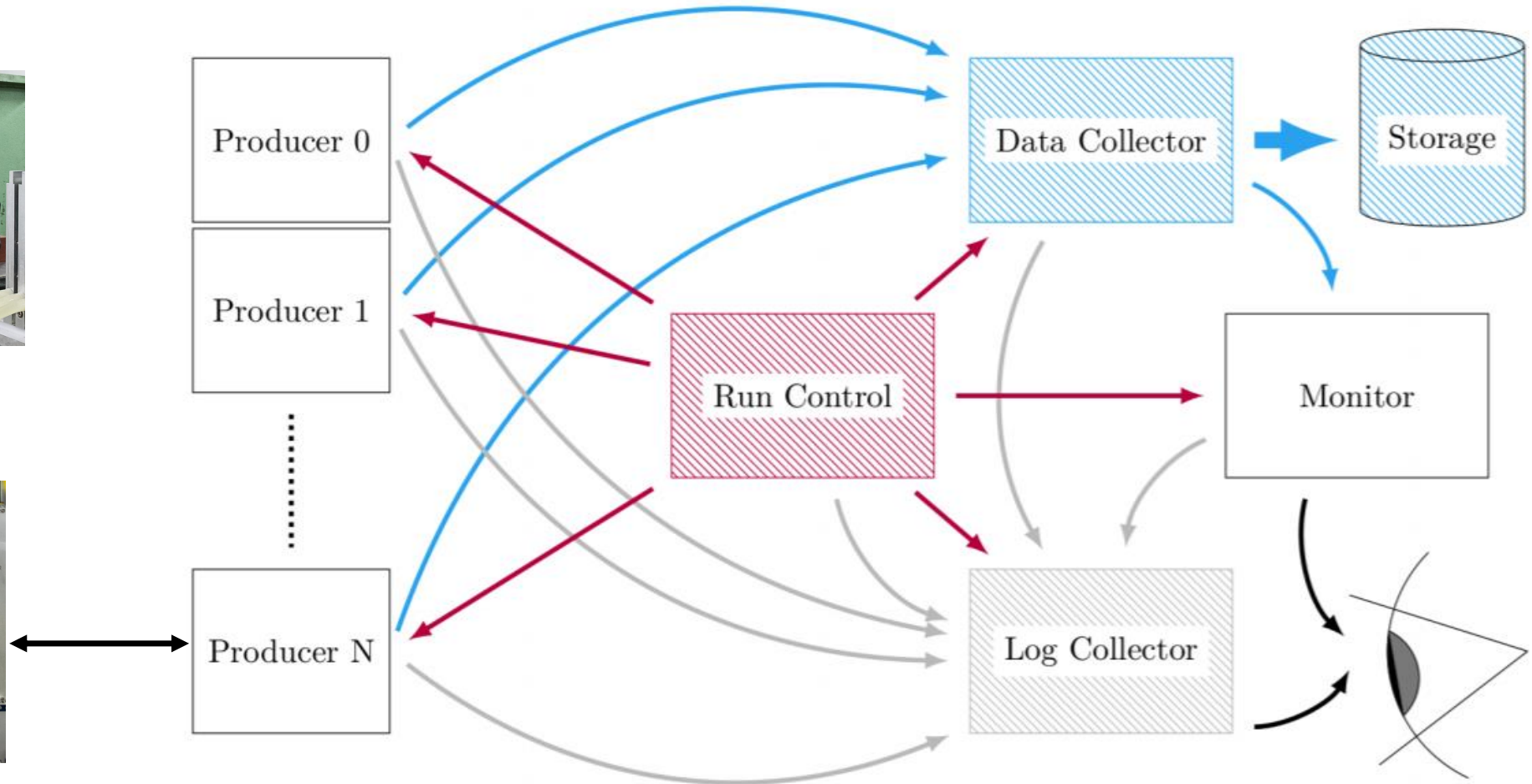
Copper target

Scintillators



TLU (Trigger Logic Unit)

# Data Acquisition System – EUDAQ



# EUDAQ Run Control

eudaq Run Control 1.9.1+7~g324f5e90

State:

**Current State: Uninitialised**

Control

Init: config file not set Load Init

Config: config file not set Load Config

Run: Start Stop

Log: Log

GeolD: 0 Terminate

Status

Run Number: (0) Events Built:

Rate: Triggers:

File Bytes: Particles:

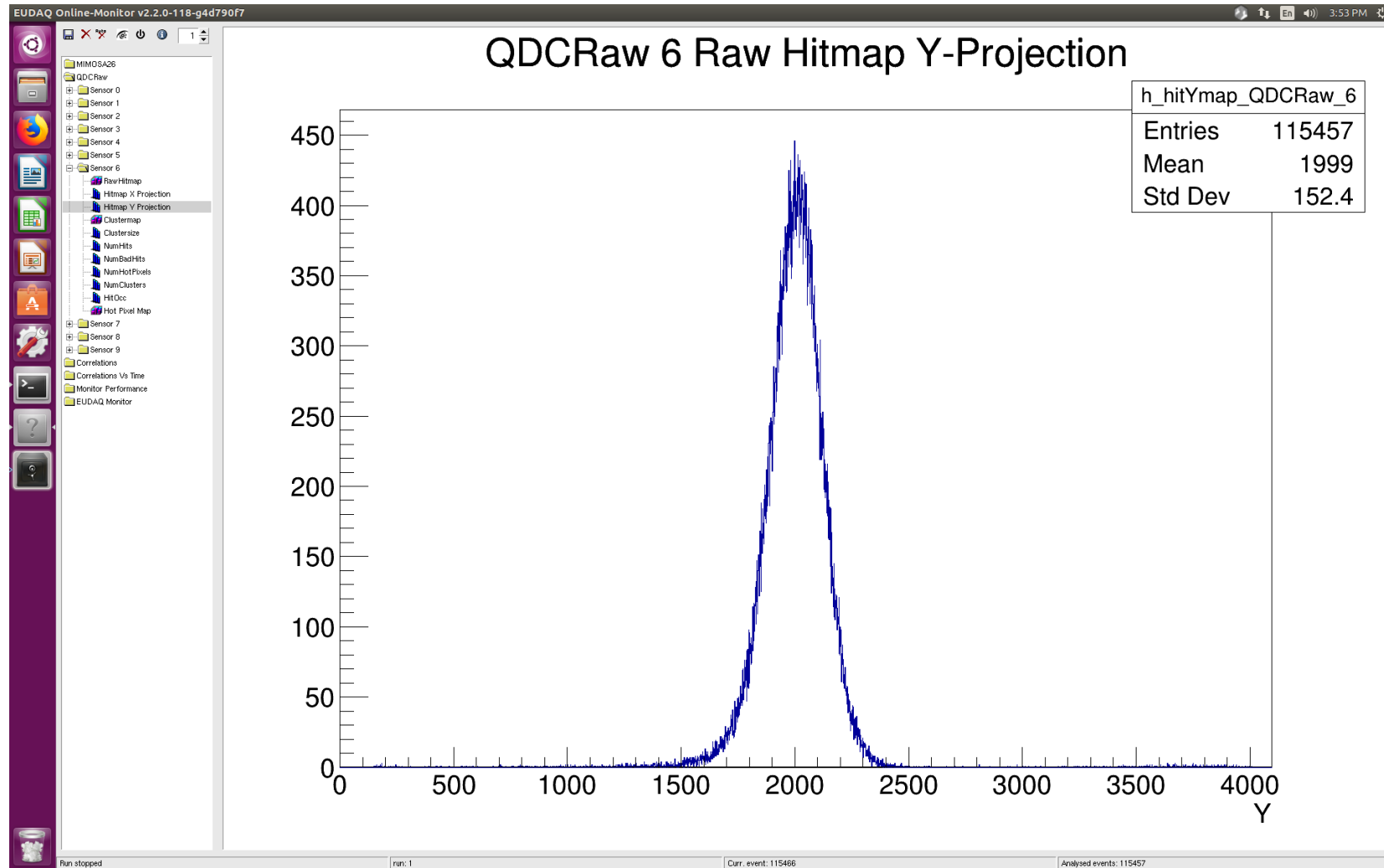
TLU Status: Scalers:

Connections

type	name	state	connection
DataCollector		Uninitialised	127.0.0.1:42360
LogCollector		Uninitialised	127.0.0.1:42350
Monitor	OnlineMon	Uninitialised	127.0.0.1:42378
Producer	TLU	Uninitialised	127.0.0.1:42372
Producer	MimosaNI	Uninitialised	127.0.0.1:42366



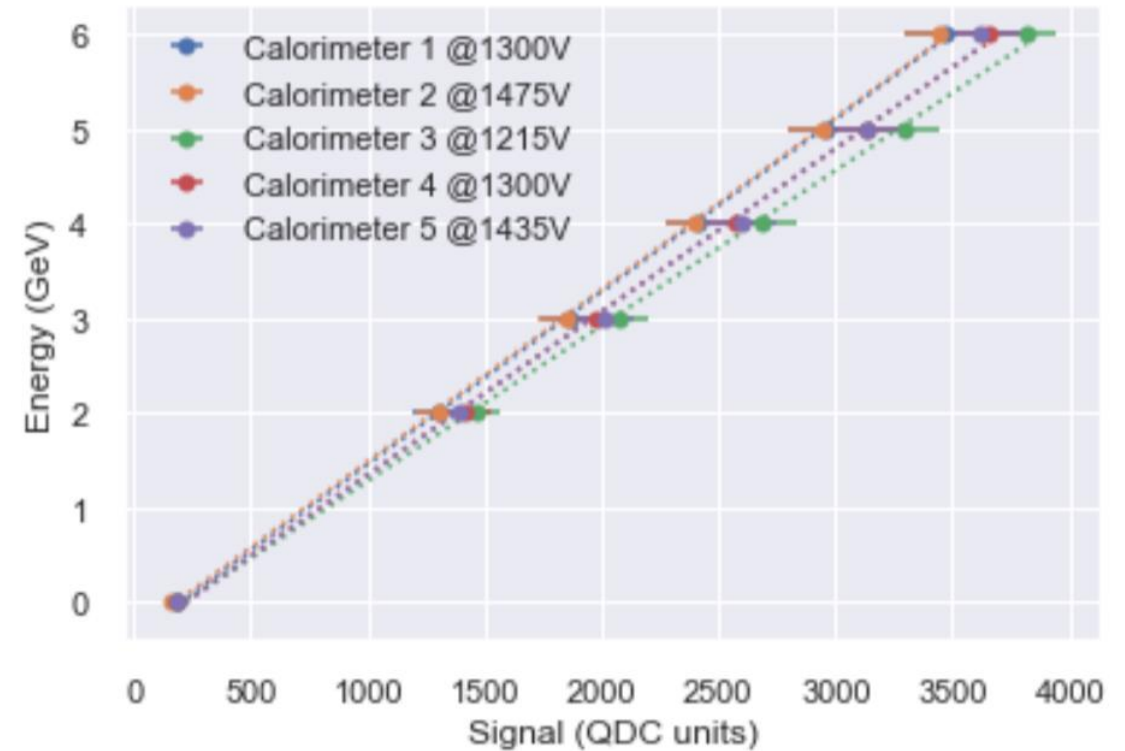
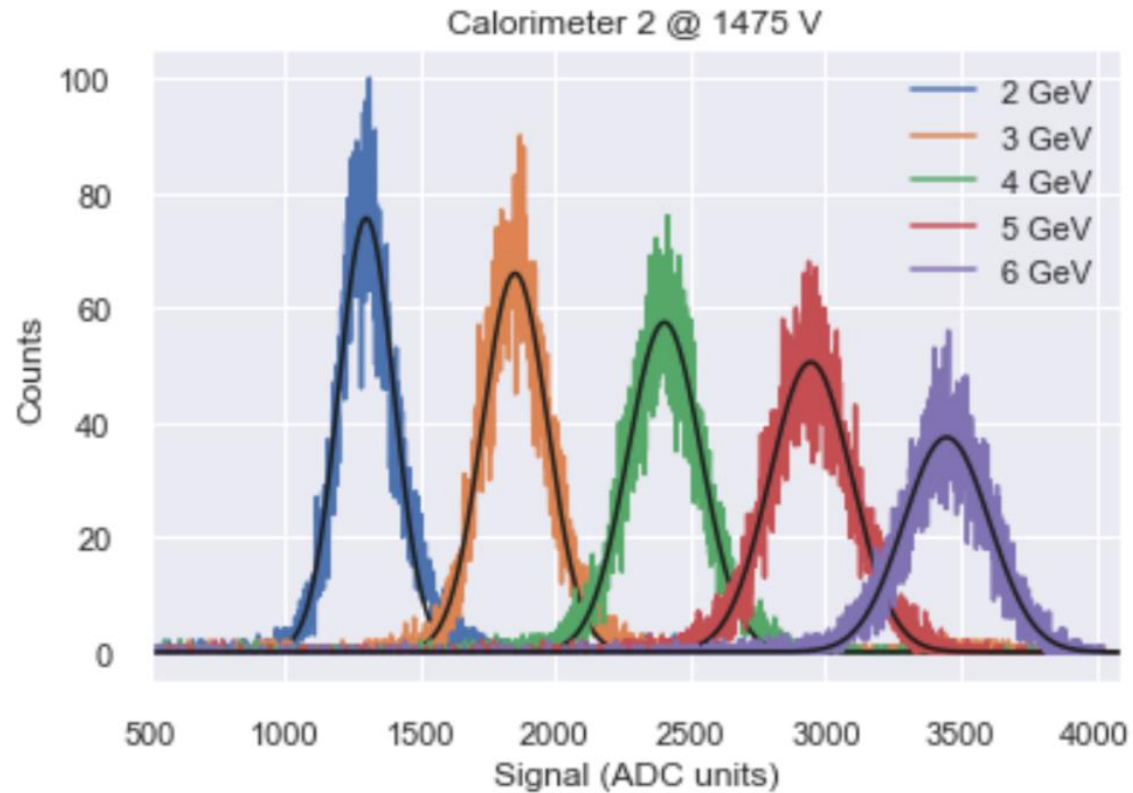
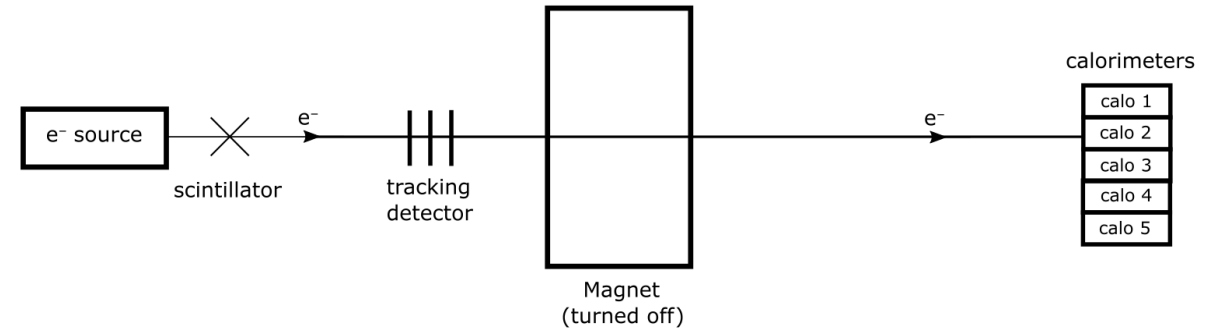
# Real time data – EUDAQ Monitor



# One week of setup and measurement in the testbeam

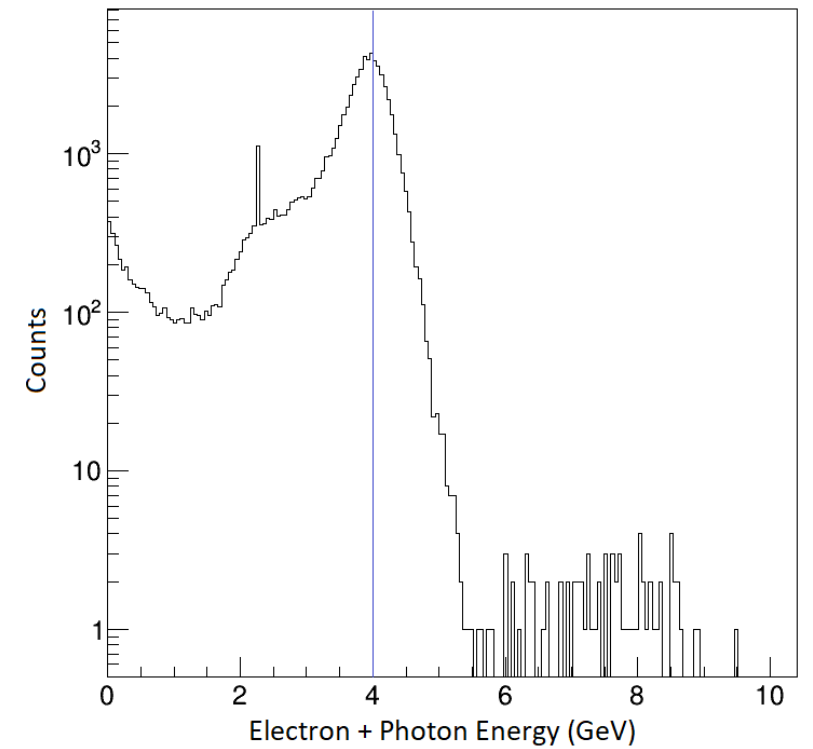
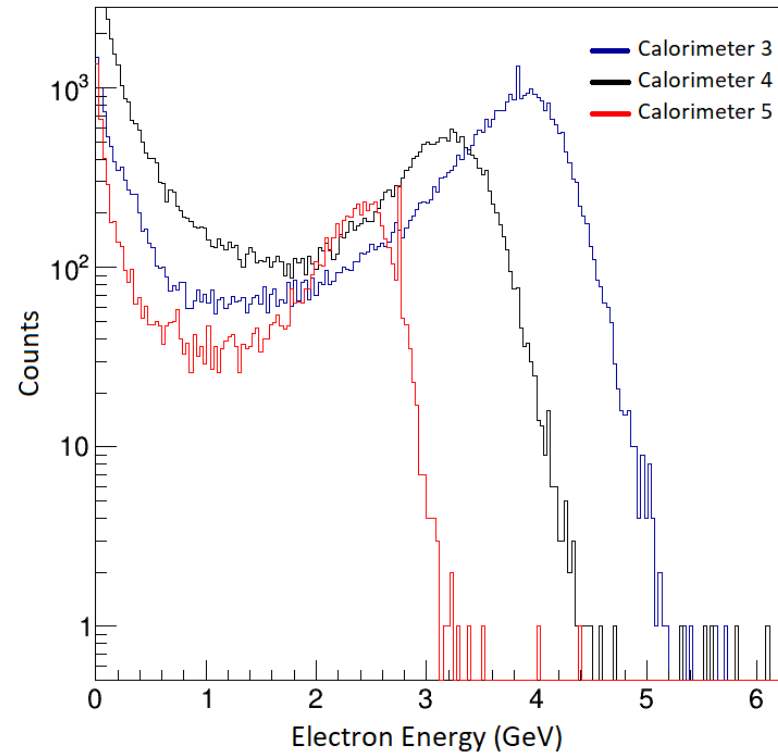
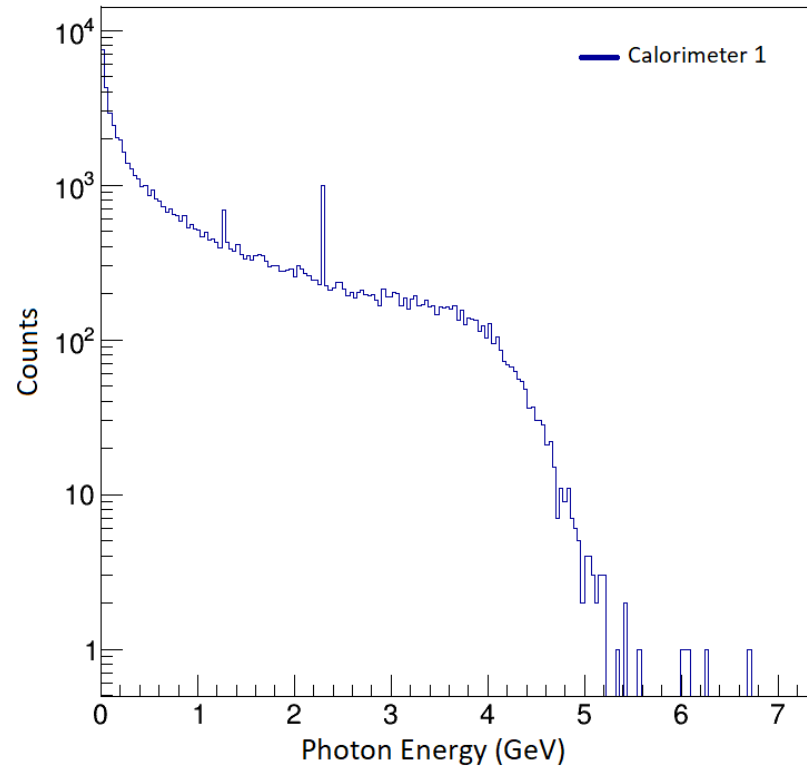
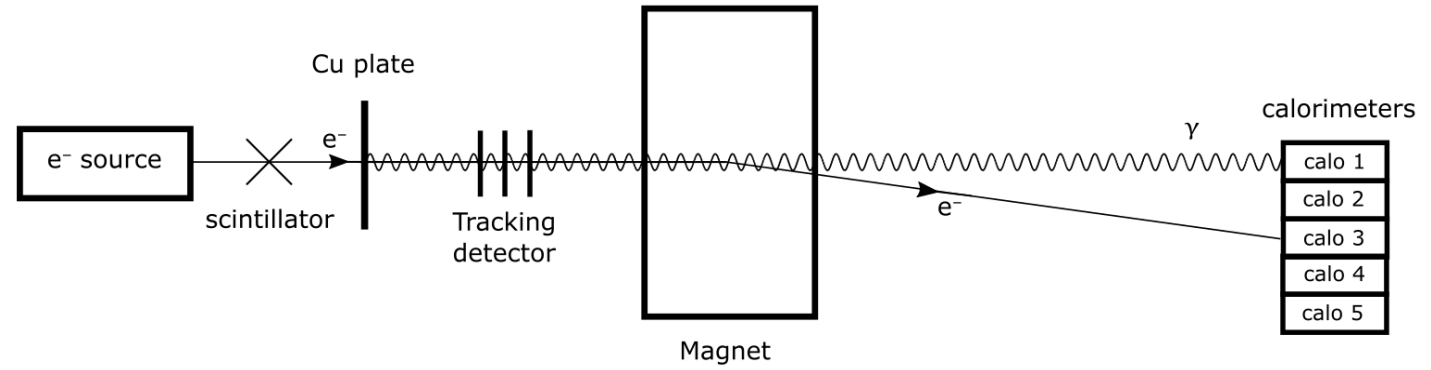


# Calorimeter calibration



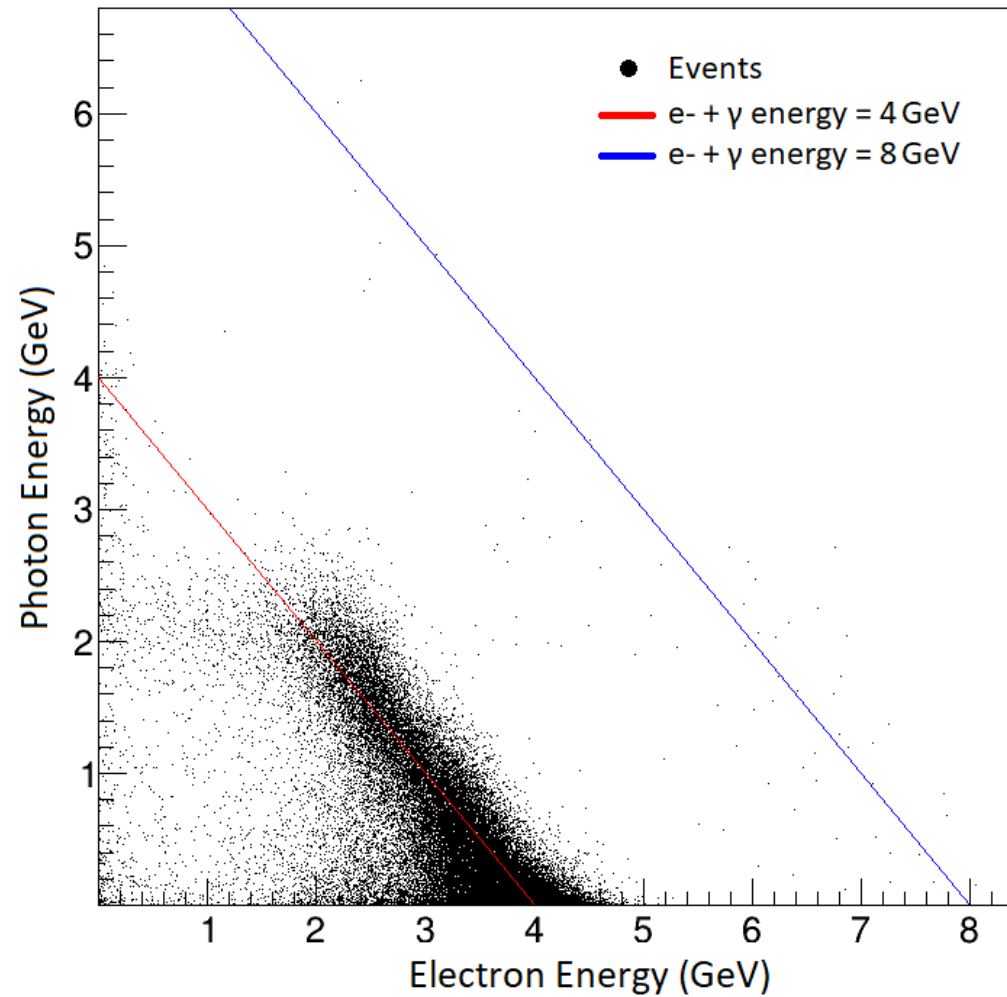
# Measurement example

$E_0 = 4\text{GeV}$





# Measurement Example $E_0 = 4 \text{ GeV}$



# 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