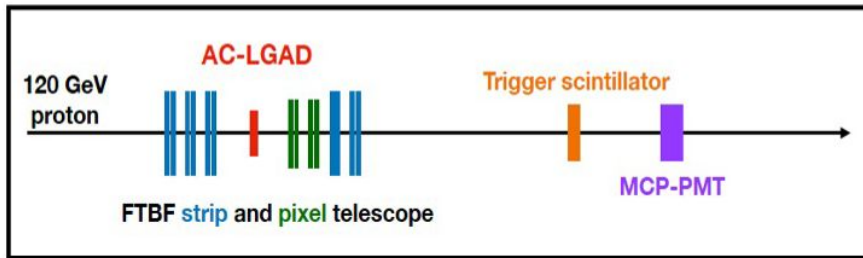
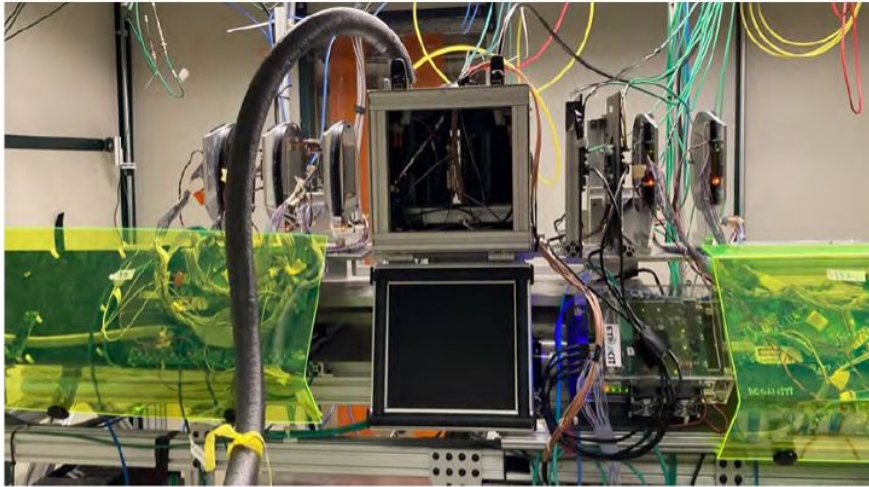


TOF Test Beam Plan in 2024



- 2+ weeks of beam time around June 2024 for AC-LGAD to check the performance of the prototype AC-LGAD sensor and ASIC for TOF (and Far-Forward detectors)
- Charged particle beam (e.g. electron/proton) with a few GeV or above beam energy
- FTBF is our preferred location as we have always done AC-LGAD beam tests at FTBF with the help of Fermilab colleagues in 2022 and 2023. Alternative places like CERN or DESY in 2024 may work but will require significant preparational work, and thus will be challenging and also much more costly.

TOF Thresholds

Energy threshold: 6 keV for ePIC simulation.

MIP signal is ~120mV, and noise is 2mV. The former corresponds to 116 keV deposition in 300 um Silicon (as currently modeled in ePIC). Assuming $3 \times$ noise threshold, corresponding to 6 keV

Pedestal and threshold in ADC: 0 (ASIC under development but pedestals/thresholds will be adjustable). Applying the above energy threshold would be equivalent to a threshold setting in the ASIC.

Noise rate: 30 Hz per channel, need to be implemented by TOF

Charge sharing: being worked on by TOF