



ANNIE: Accelerator Neutrino Neutron Interaction Experiment

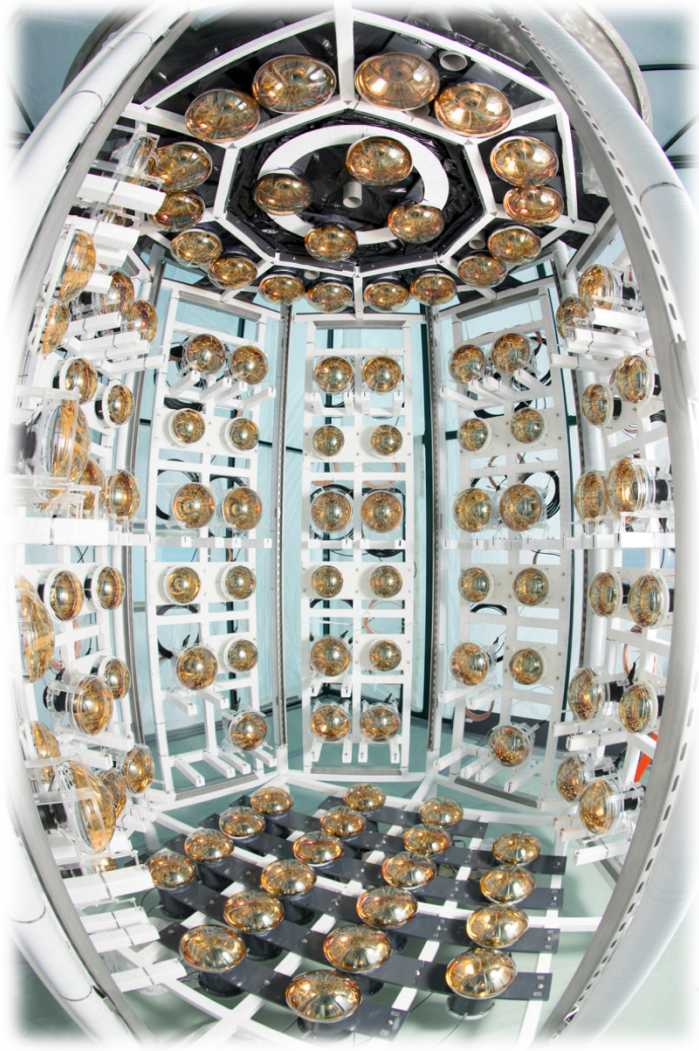
Emrah Tiras
on behalf of ANNIE collaboration

Iowa State University

PMG/All Experiments Meeting, Fermilab
September 3, 2020



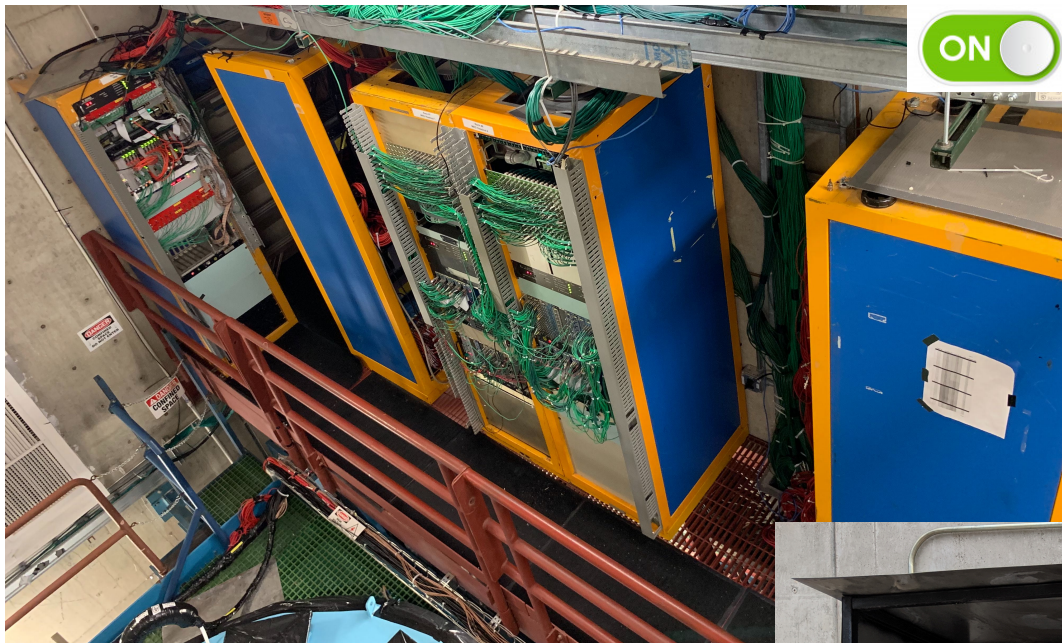
Updates from ANNIE



Since the last PMG meeting:

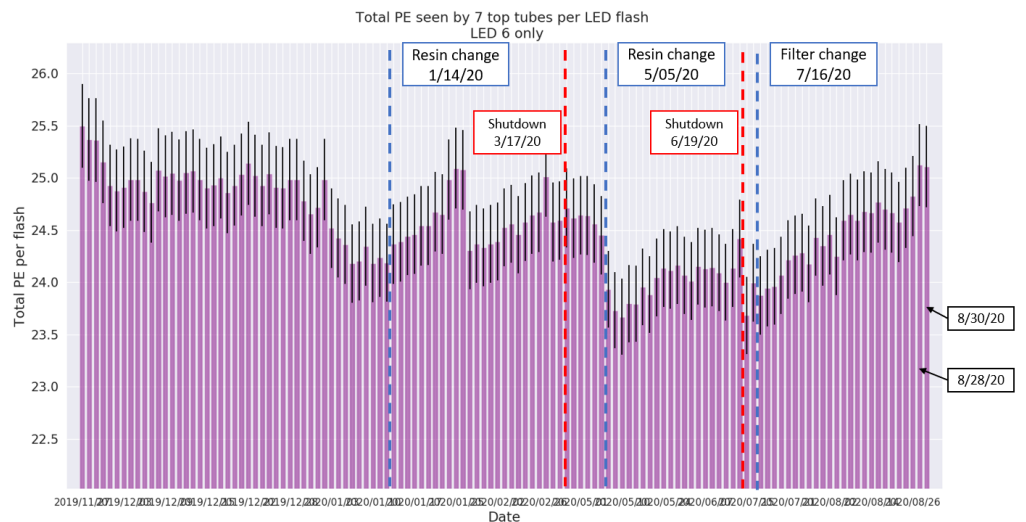
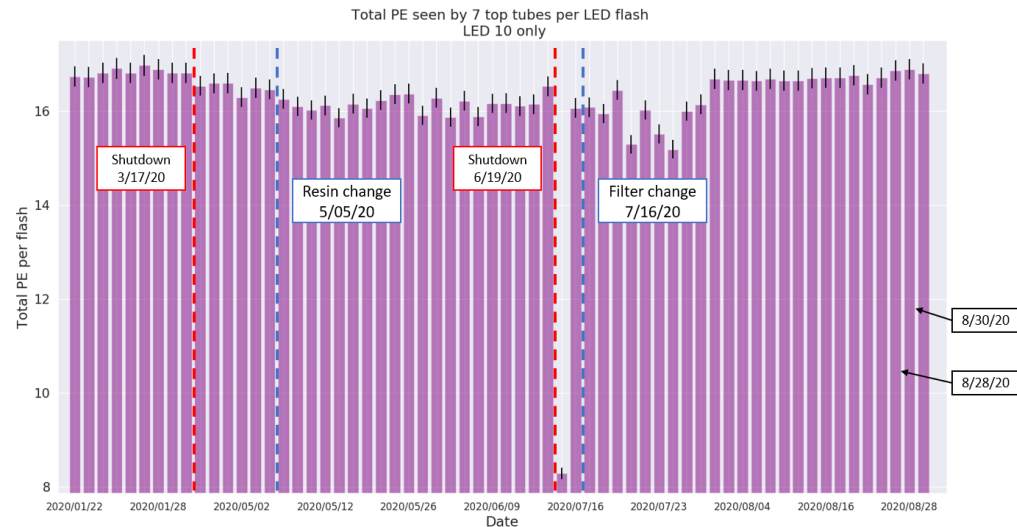
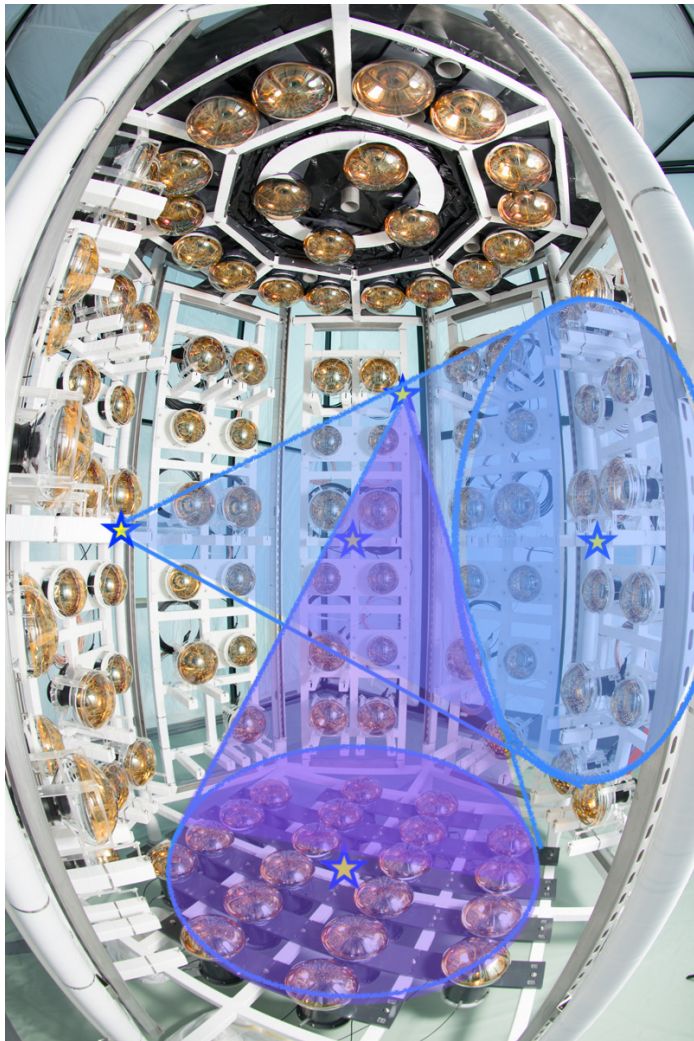
- ▶ Experiments Operations Plan (EOP) is under the final review for approval.
- ▶ We have been monitoring the water transparency and taking Cosmic data for calibration of the Muon Range Detector (MRD).
- ▶ A broken CAMAC crate, which digitizes 170-180 channels, was successfully replaced with a spare.
- ▶ LAPPD characterization is ongoing at Lab6 and the first LAPPD is aimed to be deployed in October.
- ▶ A laserball calibration system for sub-ns PMT timing resolution studies is planned to be deployed in October.
- ▶ An ANNIE poster was presented at the Users Meeting.

LED Calibration and Cosmic Data Taking Ongoing



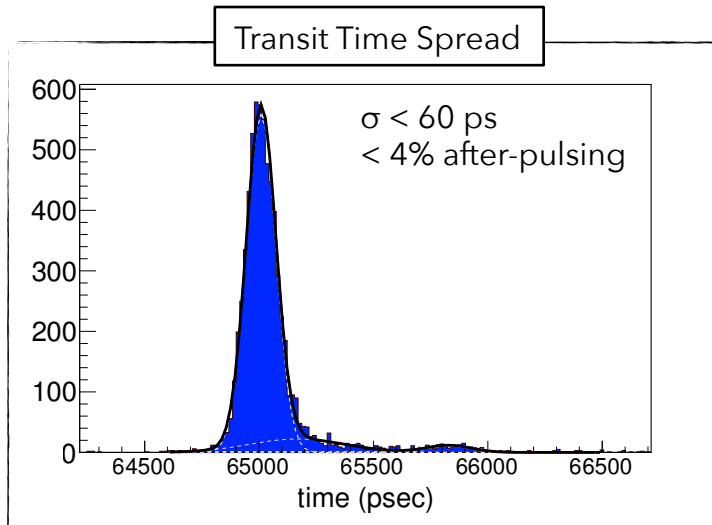
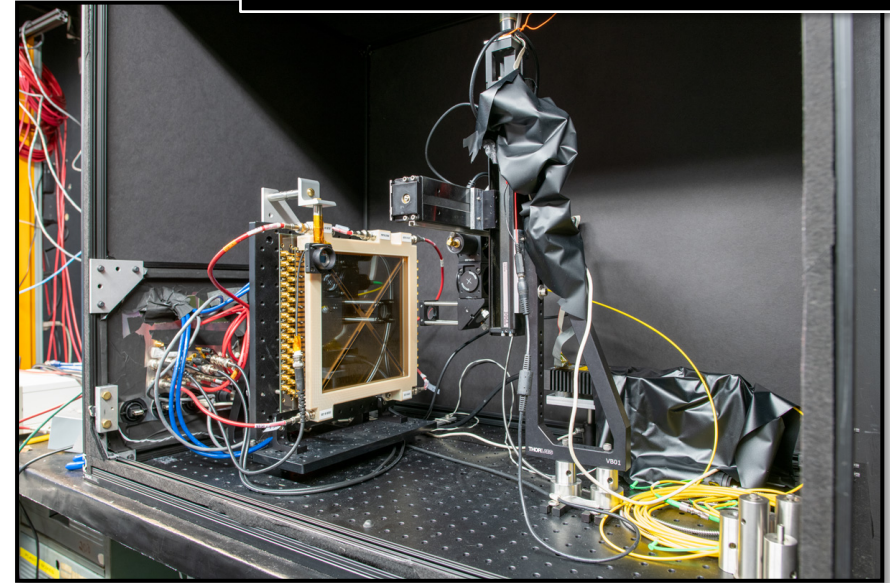
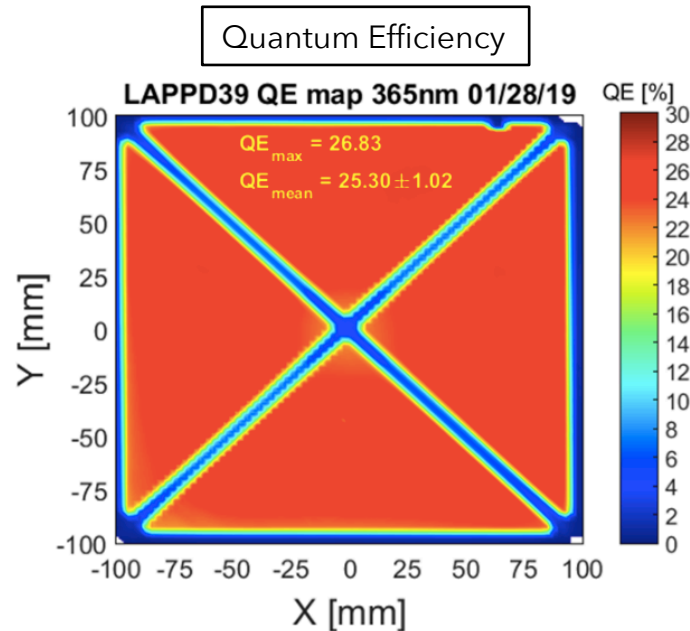
- All the PMTs, VME and HV systems are on.
- Water filtration/recirculation system is remotely controlled and being monitored 24/7.
- The water volume is continuously being flushed by Nitrogen.
- We perform weekly checks.

Water transparency is stable (within 2-3%)



LAPPD Characterization at Lab6

- LED-based QE scans
- Laser-based gain and timing scans



- ▶ Characterization of the Large Area Picosecond Photo-Detectors (LAPPDs) and the full integration with the readout electronics is ongoing at Lab6.
- ▶ The first LAPPD is being readied to deploy into the tank in October and more to come later.

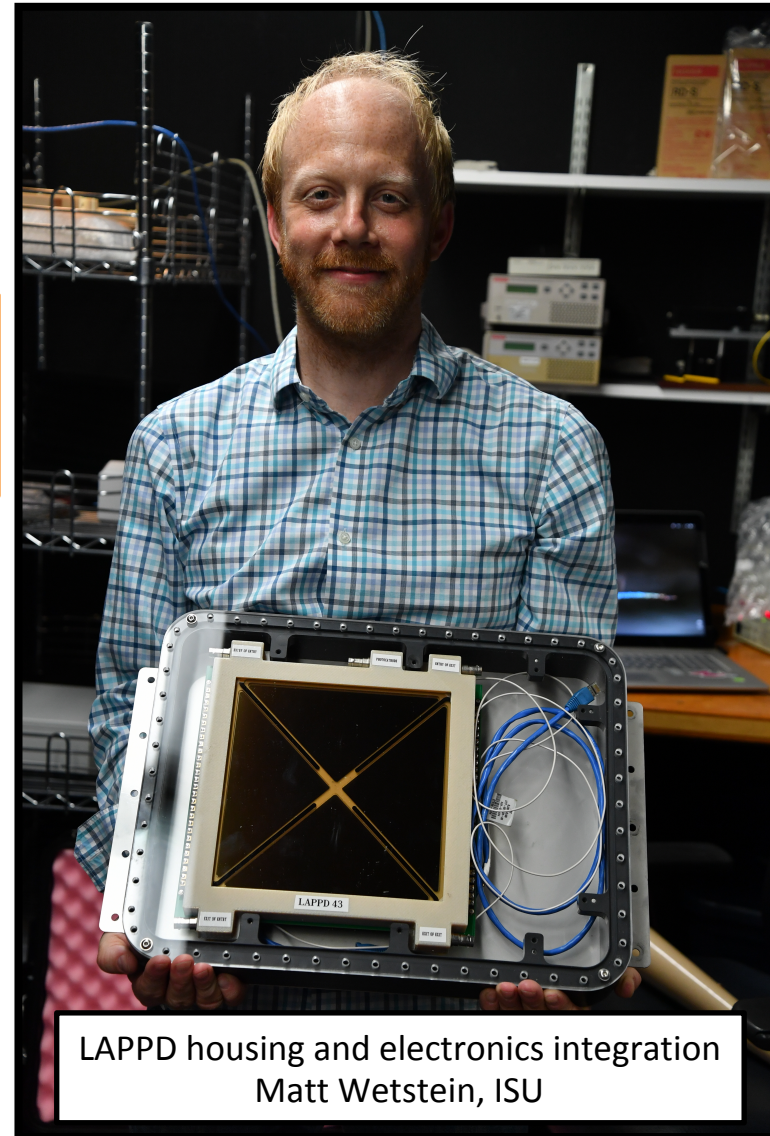
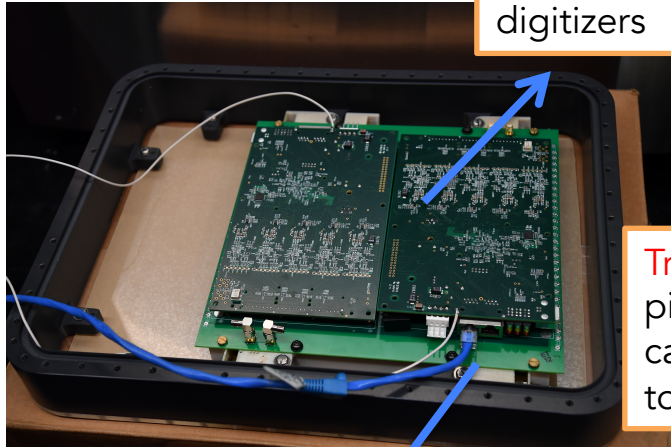
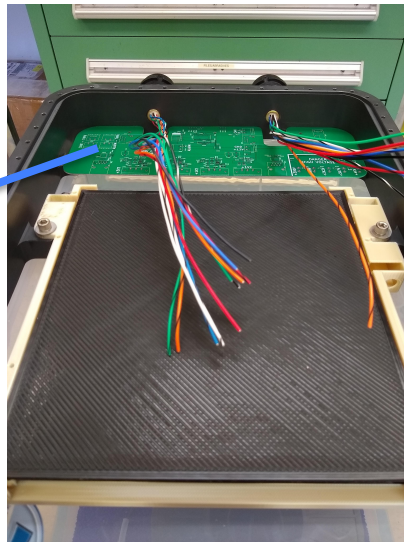
LAPPD Housing Integration with Electronics at Lab6

2 ACDC Cards as waveform digitizers

Trigger card in between pickup board and ACDC cards to provide trigger to the ACDCs.

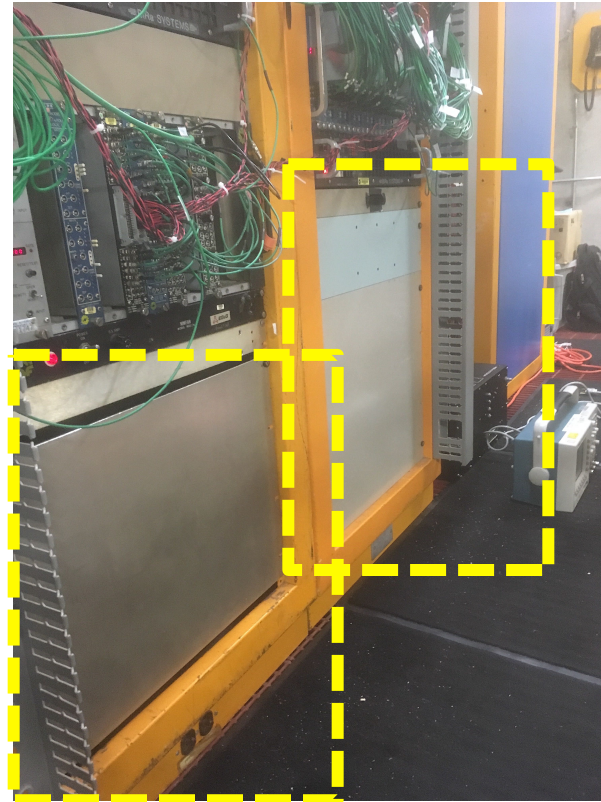
Analog pickup board

LV-HV board to provide power and slow controls



LAPPD housing and electronics integration
Matt Wetstein, ISU

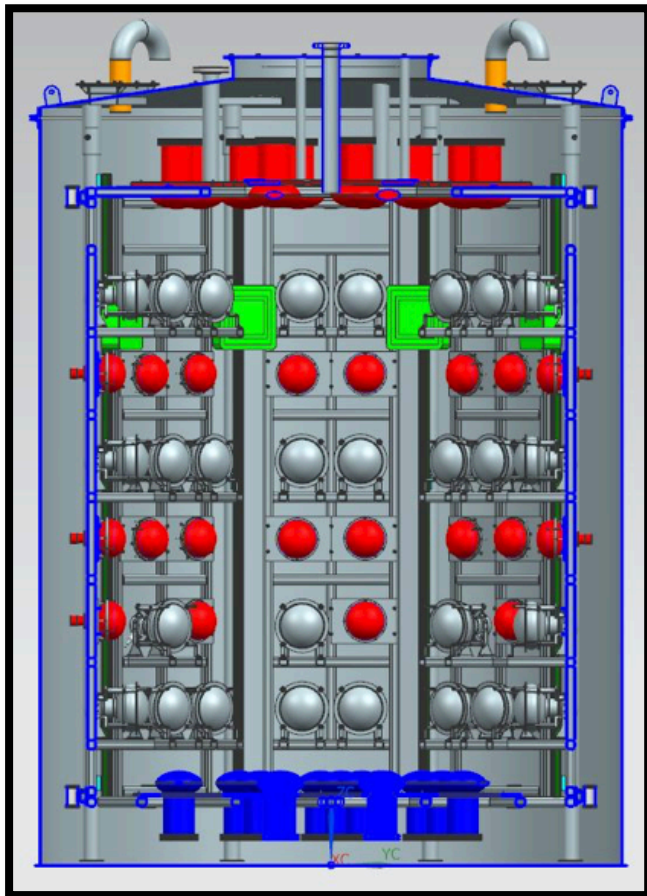
Rack-mounting electronics for LAPPDs



- ▶ The LAPPD electronics: ANNIE Central Card (ACC), HV and LV Power Supplies will be mounted on the current electronics Racks at SciBooNE Hall.
- ▶ Also, a picosecond Laser for the laserball calibration system will be mounted on the racks.
- ▶ The Phase II ORC document is being updated and it will be submitted for the review soon.

LAPPDs will be deployed in-situ

- ▶ The inner frame attached to the tank lid is an octagonal structure.
- ▶ LAPPDs are deployable in-situ: a unistrut is mounted at each corner (vertex).
- ▶ A detailed work plan for the deployment will be submitted soon.



ANNIE Detector in the hall

