



# ANNIE

## Accelerator Neutrino Neutron Interaction Experiment

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on behalf of the ANNIE collaboration

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PMG/All Experiments Meeting, Fermilab

December 3, 2020



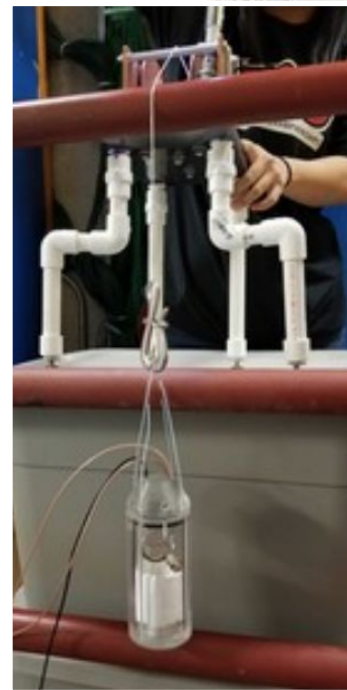
## Since the last PMG meeting...

- Began AmBe source calibration campaign
- Monitoring water transparency and taking cosmic data whenever possible
- LAPPD characterization tests are still ongoing
  - ORC walkthrough for the new additions to the test stand completed
- Picked up repaired VME crate → another spare
  - Now have 2 spare crates
- Experiments Operation Plan (EOP) is under review for final approval
  - Final revision to be submitted shortly
- Preparation for active shifts is underway

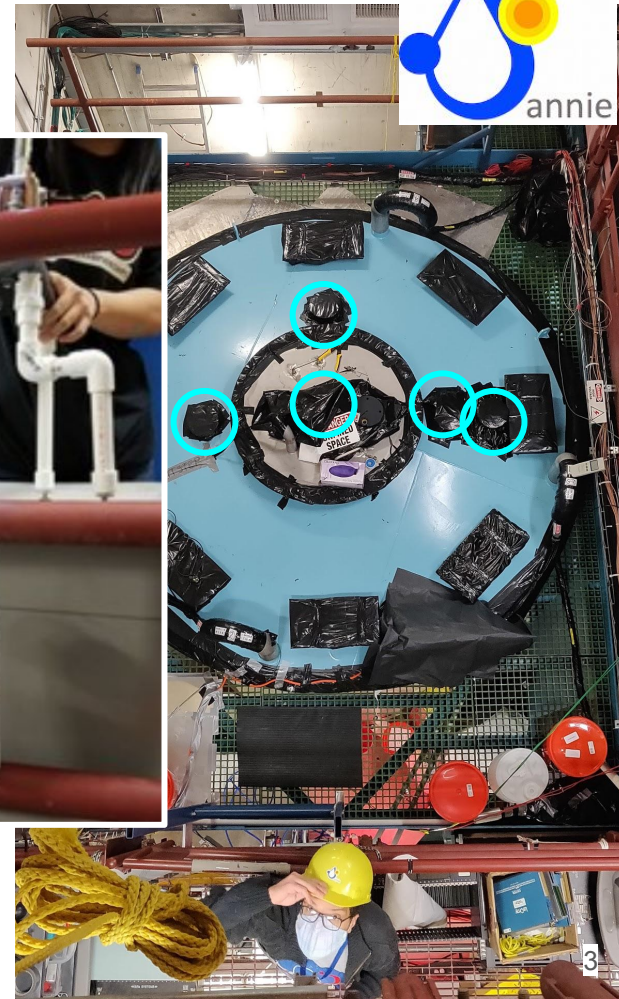


## AmBe Source Calibration

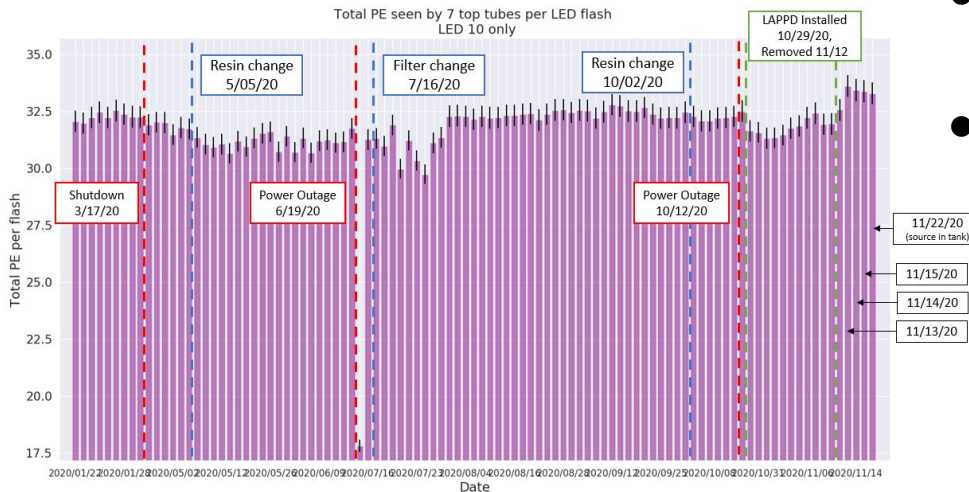
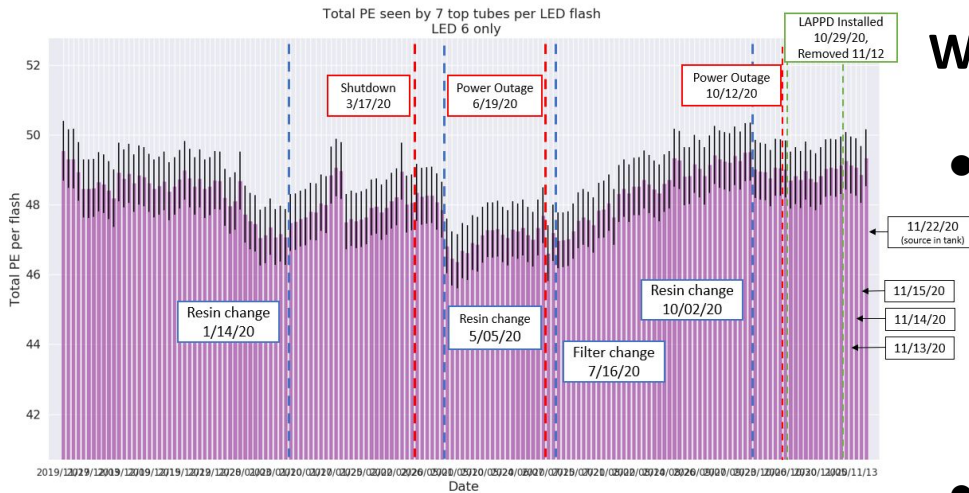
- **Goal:** Measure the neutron capture efficiency and background at various locations in the ANNIE detector
- **AmBe** source + BGO crystal in an acrylic vessel, with 2 SiPMs mounted inside
- Two “stages”
  - **With source** - deploy container at each port, at different heights (2-3 position changes per day → 2 weeks [Nov 13-Nov 28])
  - **Without source** - deploy container at each port at a single height (which varies by port → 1 week [Nov 29-Dec 6])



*AmBe source  
acrylic  
container*



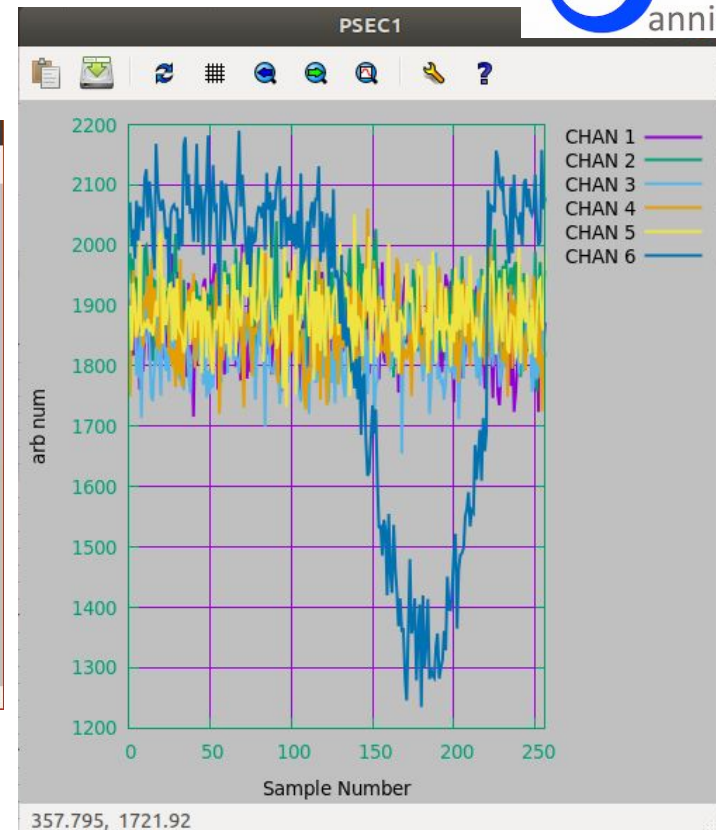
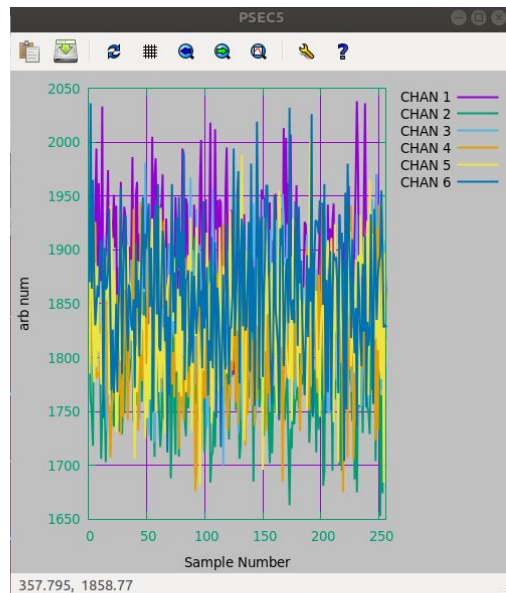
# Water Transparency: Still Stable!



- Since the calibration campaign is ongoing, water transparency (LED) and cosmic data runs have been put on hold. Last transparency plots before campaign are to the left.
- LED and cosmic data runs will resume once this calibration campaign is over.
- Conductivity, water flow and temperature, hall humidity and temperature, and pH are still stable and behave as expected.

## LAPPD Characterization at Lab 6

- Installed software to read out LAPPD waveforms
- Successful readout!
- Next steps:
  - Refine software
  - Move on to gain and timing measurements
- ORC walkthrough for breakout box, LVHV board enclosure, etc., completed → full system integration testing approved



## Beam Readiness & Shifts

- Once calibration campaign is completed, ANNIE will run in “beam mode”
- Checklist shifts will be performed remotely
  - Day: US (mostly Central)
  - Swing: US (mostly Central & Pacific)
  - Night: Europe (mostly Germany)
- For the Main Control Room (MCR), ANNIE’s plan (approved) is to provide 2 Run Coordinator (RC) numbers for when input for the beam is needed
  - 9am - 9pm: RC in US
  - 9pm - 8am: RC in Europe