

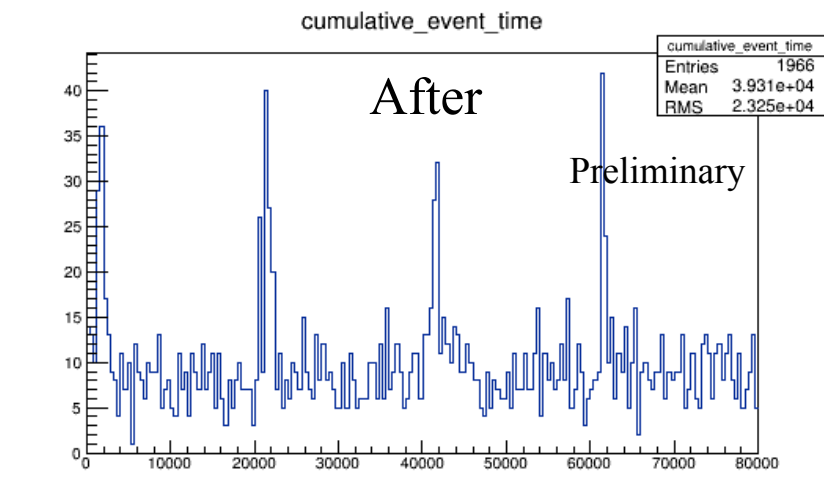
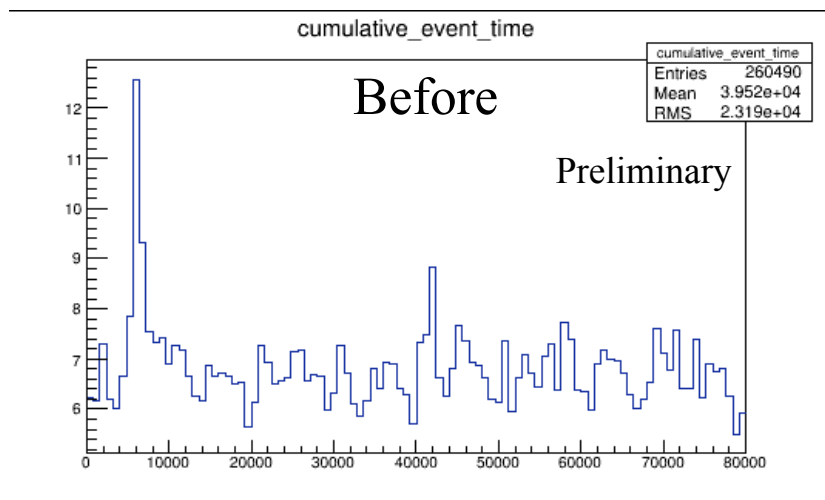
ANNNIE Status

Carrie McGivern

AEM :: June 13, 2016

- Pigtail connector on a negative HV card failed
 - Ordered new connector parts and enlisted Wayne Johnson (NML) to help us rebuild it (along with a spare)
 - Connector (plus spare) build and installed
- Mild sparking in splitter boxes at high voltage (~ 1600 V)
 - Sparking along the bottom of some of the capacitors
 - Tested and verified with a spare box at ISU
 - Due to flux residue trapped under the capacitors
 - Cleaned, conformally coated applied, and tested to at least 2500 V
 - No issues since the cleaning
- A handful of tank PMTs have high current when powering on
 - Suspect possible water sweeping into the cable
 - Running at low voltage (when not in use) prevents high currents from reoccurring, still investigating
 - These PMTs are not necessary for ANNIE to meet Run I physics goals
 - No major issues since kept at operational voltages, still regularly monitored

- HV webpage for easier monitoring/control
- Upgrades to DAQ and ADC readout firmware
 - Data downsampling to improve data transfer rates



- Zero suppression (not implemented yet)
- Per-channel digital delays, with 2 nsec resolution (will replace lemo cables)
- DAQ can now trigger on beam, external (flasher) signals, or software
- Running up against full disk on the DAQ machine
 - Stops data taking
 - Working with Art K. to remove raw data off the machine once copied and verified offline

- Groups of up to 16 PMTs are combined into discriminator
 - Veto (2 layers of 13 PMTs each)
 - MRD layer 2 (2 halves of 13 ↔ paddles each)
 - MRD layer 3 (2 halves of 14 ↓ paddles each)
 - Each pair of discriminators is daisy-chained into a single ADC channel
- Seeing unexpectedly low rates
 - For a single run (R67, taken May 30th) : 142 MRD Layers 2+3 coincidences, eight coincidences between the Veto + MRD Layer 2, three coincidences between Veto + MRD Layer 3, and one event with coincidences in all three layers (out of 1.6×10^6 triggers!)
- Investigating
 - Measure discriminator values on various PMTs, bad splitter boards?
- Increased the operational voltage of the MRD layers
 - Layer 2 increased 200 V, Layer 3 up 500 V
 - Waiting for beam to return to test

- Continue taking data with the NCV in place
 - Establish run plan for various NCV locations
- Start taking 24/7 shifts (once BNB returns)
 - Acquire further operational experience
 - Training new shifters (in remote locations)
- Continue to analyze data
 - Determine cosmic muon rates
 - Search for neutron captures
 - Take additional LED flasher data

