MicroBooNE status

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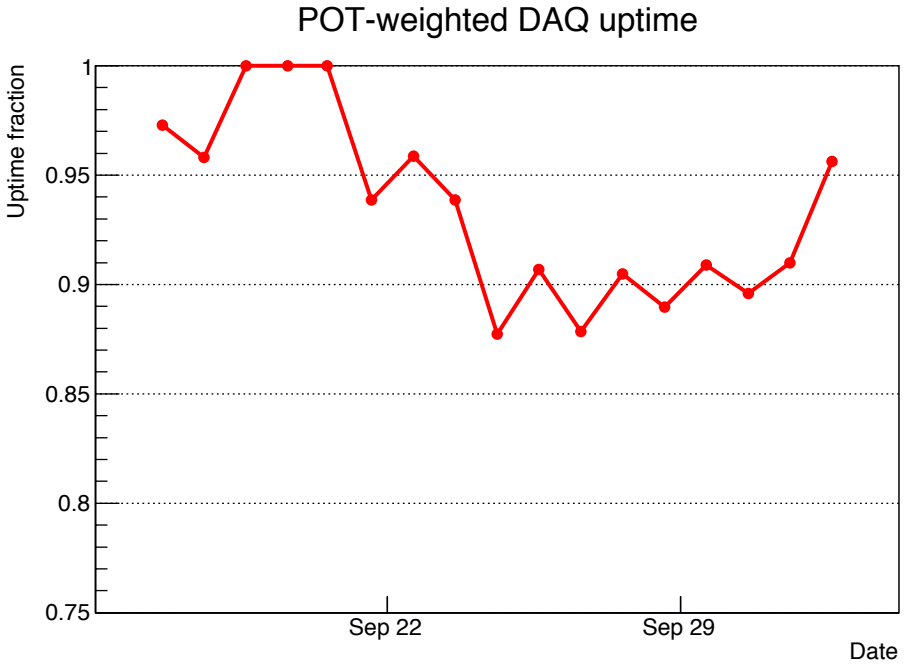
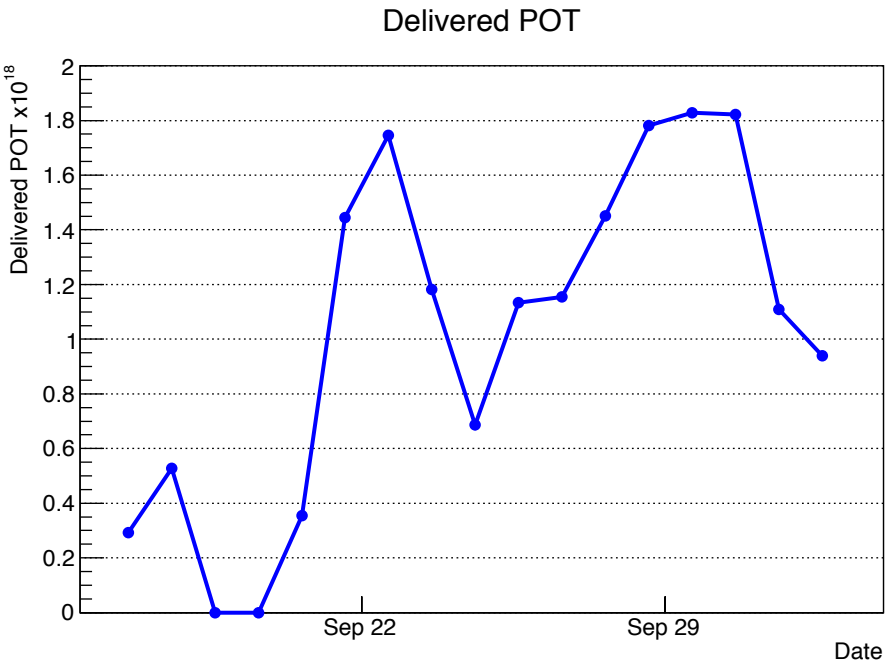
DAQ uptime

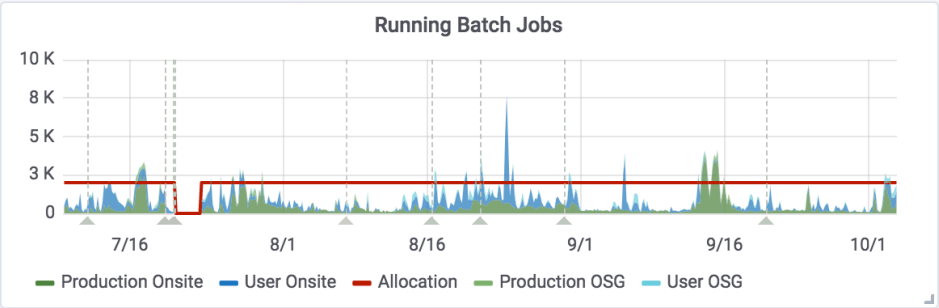


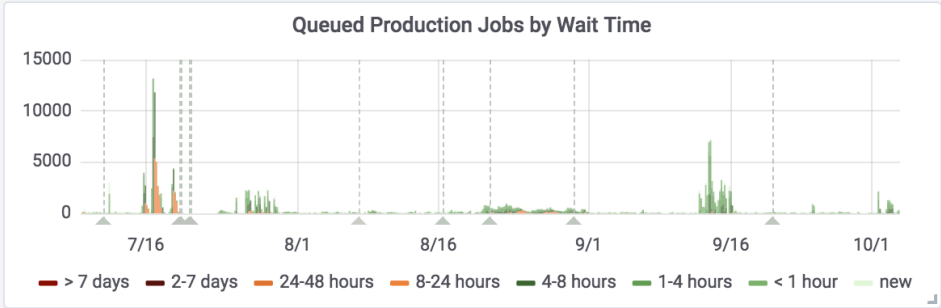


We have been taking BNB data since September 17th

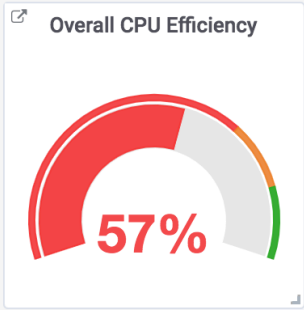
POT delivered since 9/17:	1.745 e19
POT on tape:	1.603 e19
Fraction on tape:	91.8%

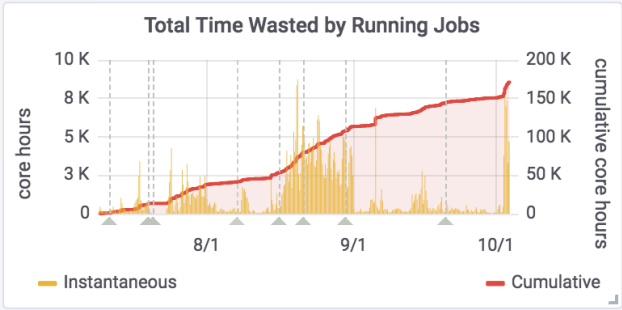
Computing resource use



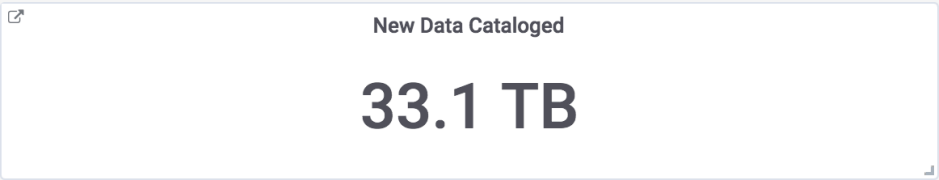


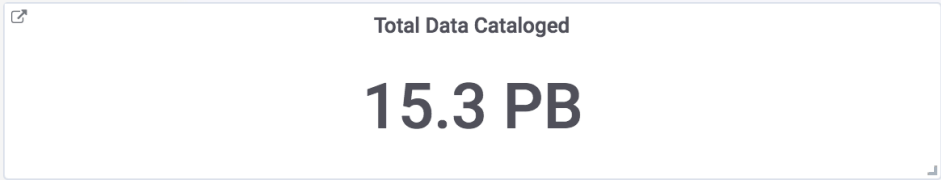
Completiong and Efficiency Stats





New row





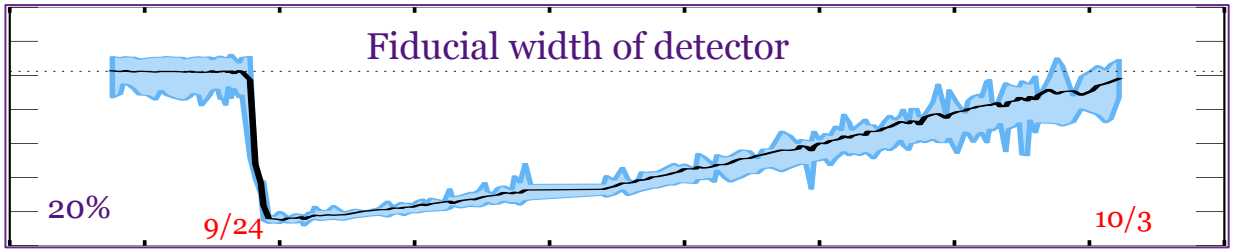
Also over summer:
As part of tape shortage mitigation, MicroBooNE deleted 500TB of obsolete data

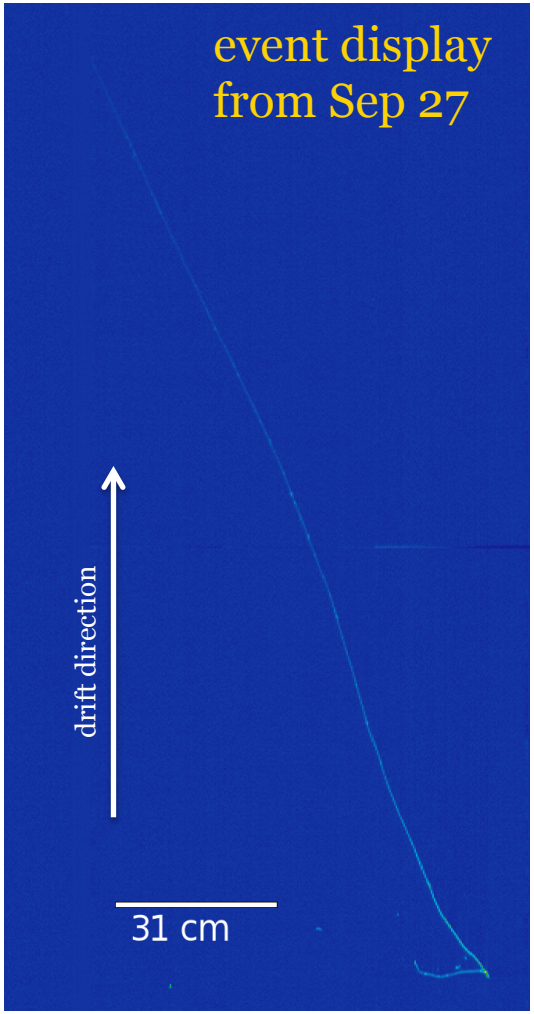
Summer shutdown activities

- 15 new DAQ servers installed
  - Replacing old ones out of warranty
  - Old ones are being loaned to SBND for development work
- 5 power outages
  - 3 initially planned
  - 1 postponed at the last minute, after already ramping down in preparation
  - 1 unplanned outage due to Feeder 45 glitch
- Calibration runs
  - Laser maintenance work followed by calibration runs over multiple weeks
  - Unbiased trigger runs at lower drift voltage and purity
- More off-beam cosmic data taken than in previous summers
  - Thanks to our DAQ team for upgrading capability to take a high cosmic trigger rate, following request from physics analysis groups
- David Caratelli (FNAL) has retired as Run Coordinator; Mark Ross-Lonergan (Columbia) joins team as Deputy Run Coordinator

Recent reduction of argon purity

- On September 4th, bad argon delivery was made into external top-up dewar, with ~100ppm O_2 contamination
  - Levels were recorded but not alarmed on
  - First time this has happened in >3 years operation
- 20 gallons entered our cryostat on September 24th
  - Caught quickly by shifters and runco team
  - ND cryo team immediately responded and stopped flow into vessel
- Top-off is needed to maintain liquid level in vessel. We need argon dewar drained and refilled before liquid level drops to a point where detector cannot operate. Working with procurement
  - Yesterday external vendor came and performed this task
- MicroBooNE has been running 24/7 and staffing shifts throughout
  - Valuable calibration & systematic evaluation data at lower purity
- We continue to see tracks throughout this period
- We currently have ~3ms lifetime
  - Estimate ~1 week to return to >15ms lifetime from before the purity degradation





Recent & upcoming publications

- Two publications submitted to journals over summer:
- "*Comparison of ν_μ-Ar multiplicity distributions observed by MicroBooNE to GENIE model predictions*"
  - Submitted to Europhysics Journal C; arXiv:1805.06887
- "*A Deep Neural Network for Pixel-Level Electromagnetic Particle Identification in the MicroBooNE Liquid Argon Time Projection Chamber*"
  - Submitted to Physical Review D; arXiv:1808.07269
- In collaboration-wide review:
  - "*First Measurement of Muon Neutrino Charged Current Neutral Pion Production on Argon with the MicroBooNE LArTPC*"
  - "*Rejecting cosmic background for exclusive neutrino interactions studies with LArTPC*"
  - "*Design and Construction of the MicroBooNE Cosmic Ray Tagger System*"
- We also released 10 public notes over summer