



SOUTH DAKOTA



SCHOOL OF MINES
& TECHNOLOGY

MicroBooNE Update

Arturo Fiorentini (SDSM&T)

Proton PMG / All Experimenters' Meeting
September 3rd, 2020

Current status and plans

- MicroBooNE is in “safe mode” since March 21st and is not taking data
- Cryogenics system still remain on and is monitored by ND Cryo team
- Regular weekly LArTF walk-throughs by run coordinators and ND technical support team continues
- MicroBooNE shifter fills “safe mode” checklist once every 8 hours from home via PCs/laptops, and system experts remain on-call to trouble shoot any issues, as needed
- MicroBooNE is entering an R&D phase and is not requesting 24/7 neutrino beam starting in November. However, if beam is running for other experiments, we can make good use of it in our studies

Power outage on 8/25

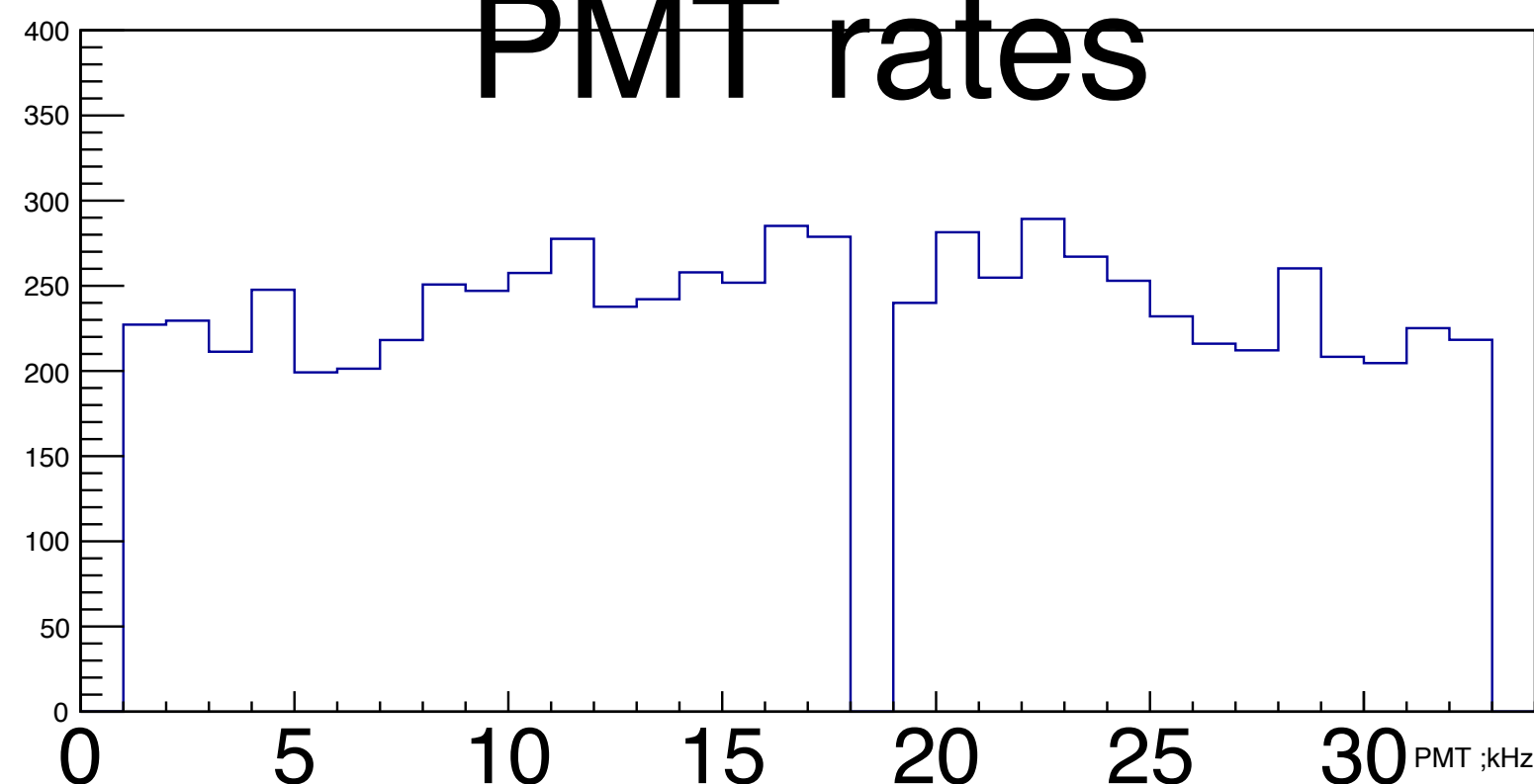
- Annual power outage for Feeder 44 which powers LArTF was scheduled for Tuesday August 25 from 7:30 to 15:30
- MicroBooNE crates were powered down on Monday August 24 at 16:00
- ND Cryo and SLAM teams turned off cryogenics system and MicroBooNE servers respectively on Tuesday August 25 at 7:00
- Everything was powered on and back to “safe mode” soon after power outage finished
- Procedure went smoothly thanks to MicroBooNE, Cryo and SLAM teams

Change to refurbished LAr pump

- Switched to circulation pump that was refurbished in-house by ND technicians (work led by Kelly Hardin)
- PMT SPE rates were found low after power outage due to a decrease in LAr purity while pumps were off but they were back to normal after ~1 week → refurbished pump is working well
- Successful in-house circulation pump refurbishment has important implications to SBND and DUNE → we likely no longer need to send pumps out for service with an outside vendor (long lead times and additional expense)

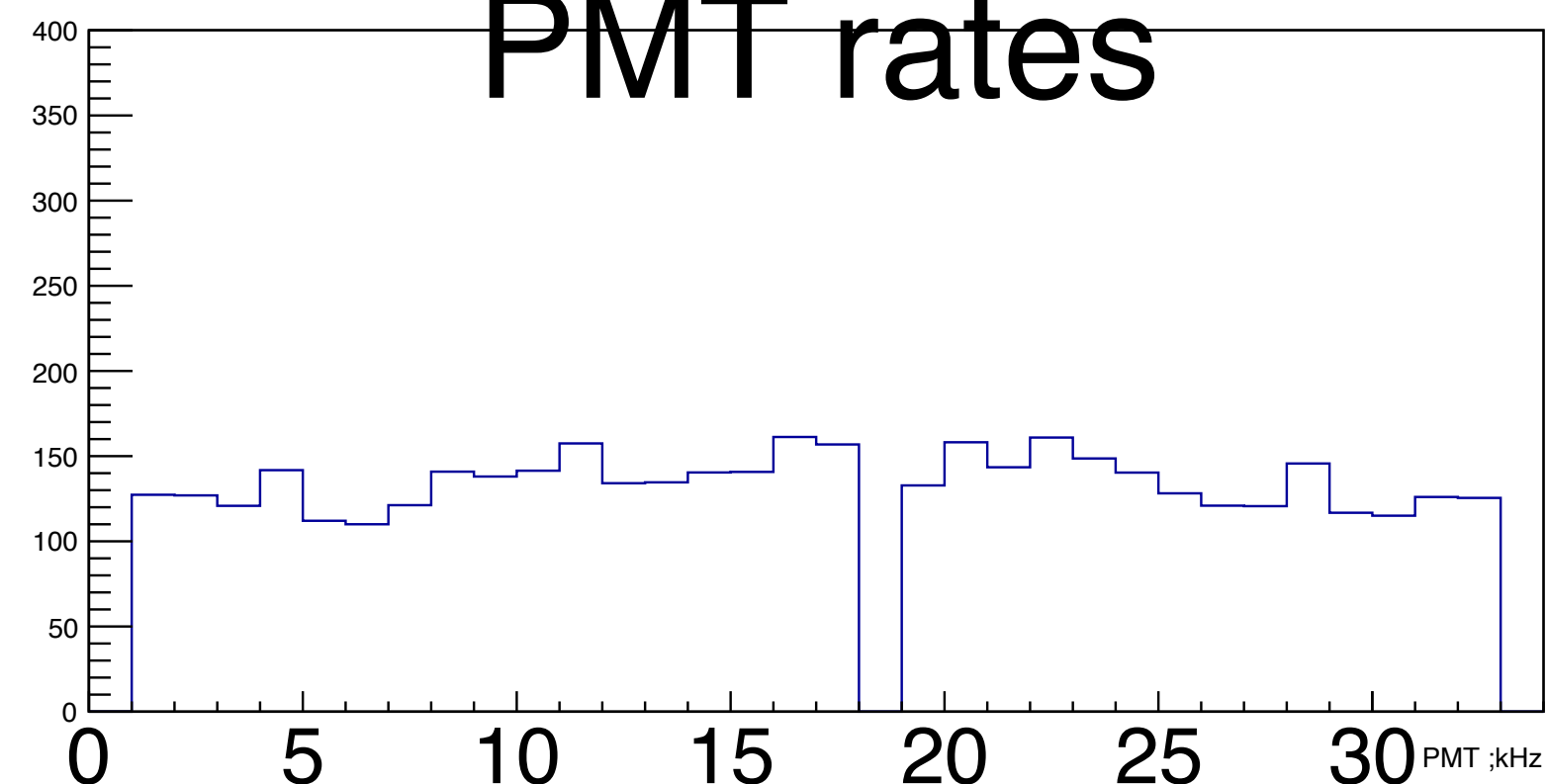
August 24
(before power outage)

PMT rates



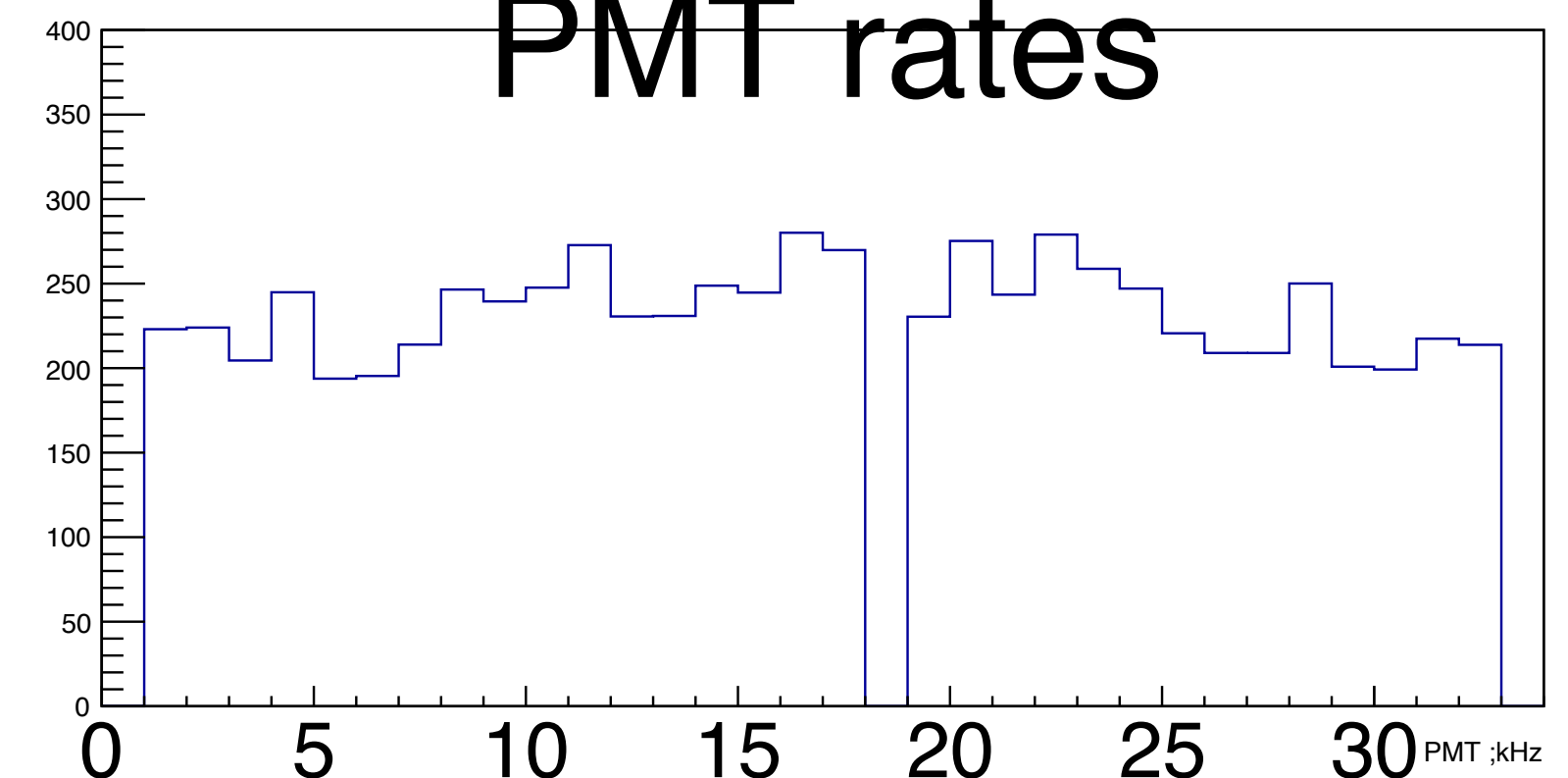
August 25
(after power outage)

PMT rates



August 31

PMT rates



Upgrade from SL6 to SL7

- SL6 end of life is November 30 2020
- Current plan is to upgrade to SL7 only DAQ gateways and control room
- DAQ will still run SL6 during R&D phase in 2020 → need security variance approved by Fermilab Computer Security Board
- Upgrade plan is ongoing with the help of SLAM team
- Expect to finish by the end of September

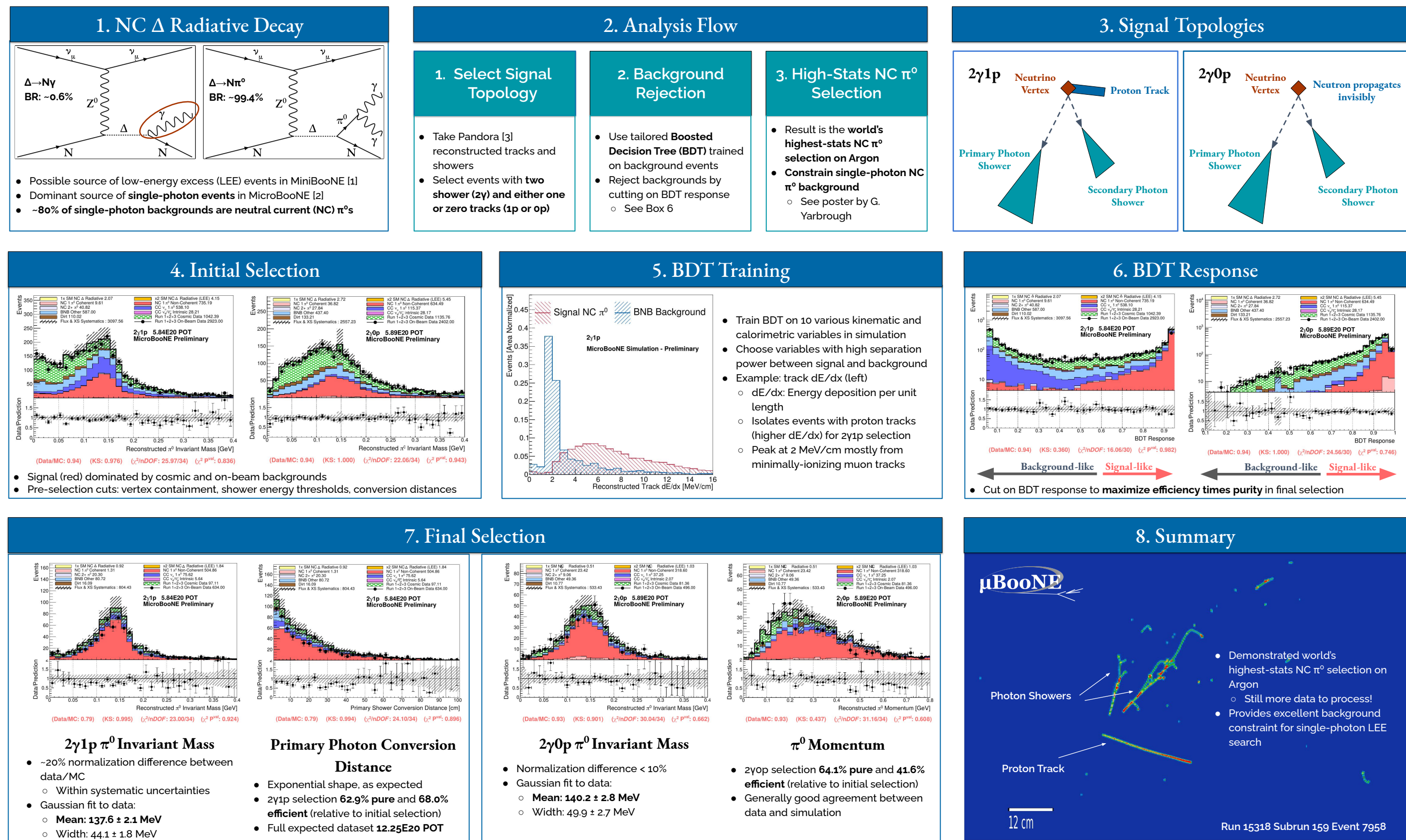
MicroBooNE in Fermilab Users Virtual Meeting (August 10 - 13, 2020)

- MicroBooNE graduate student won first place in the poster contest
- Congratulation to Andrew Mogan (UTK) for a great poster

Constraining the Neutral Current π^0 Background for MicroBooNE's Single-Photon

Andrew Mogan - University of Tennessee, Knoxville
On Behalf of the MicroBooNE Collaboration

Low-Energy Excess Search



References

- [1] Aguilar-Arevalo et al., Phys. Rev. Lett., vol 121, p. 221801, 2018
- [2] Wang et al., "Photon Emission in Neutral-Current Interactions at Intermediate Energies," PRC, vol. 89, p. 015503, 2014
- [3] Accicari et al., European Phys. C, vol. 78, p. 82, 2018

Recent publications

Paper in last month

- The Continuous Readout Stream of the MicroBooNE Liquid Argon TPC for Detection of Supernova Burst Neutrinos
 - [arXiv:2008.13761](https://arxiv.org/abs/2008.13761), submitted to JINST
 - First LArTPC experiment to successfully commission and operate a continuous readout for non-beam events

Public note in last month

<https://microboone.fnal.gov/public-notes/>

- Progress Toward the First Search for Bound Neutron Oscillation into Antineutron in a Liquid Argon TPC
 - MICROBOONE-NOTE-1093-PUB, 8/4/2020
 - Important first step toward a high-sensitive search for neutron-antineutron oscillation with the future DUNE detector