

Short Baseline Neutrino



## SBND Status

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Proton PMG / All Experimenters' Meeting  
April 4, 2024

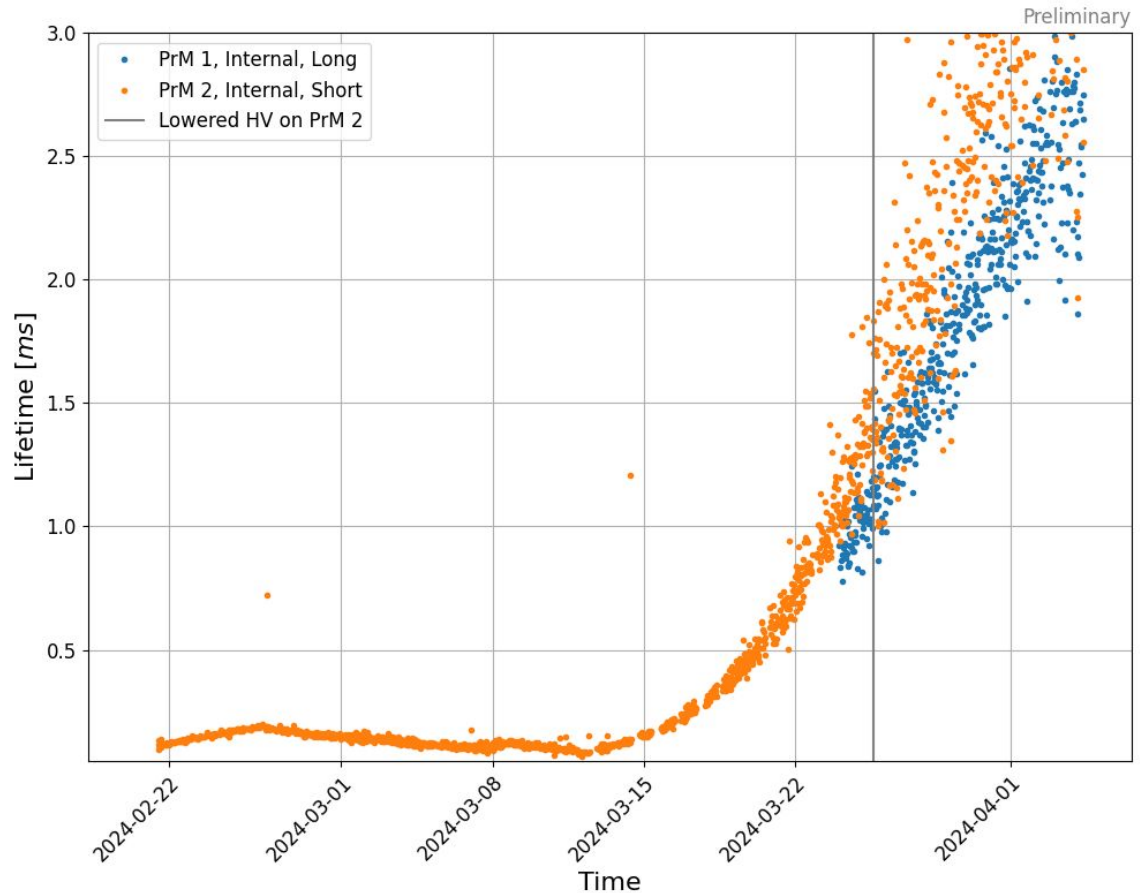
# Cryogenics Commissioning & Operations

Cryogenics team completed initial commissioning of the LAr recirculation system

Recirculation system has been operating stably for the past few weeks

LAr purity is improving, with drift electron lifetime now around 3 ms

Technical requirement for the cryogenics system is 3 ms electron lifetime, so we are close to or at the requirement



*Drift electron lifetime vs. time in SBND cryostat*

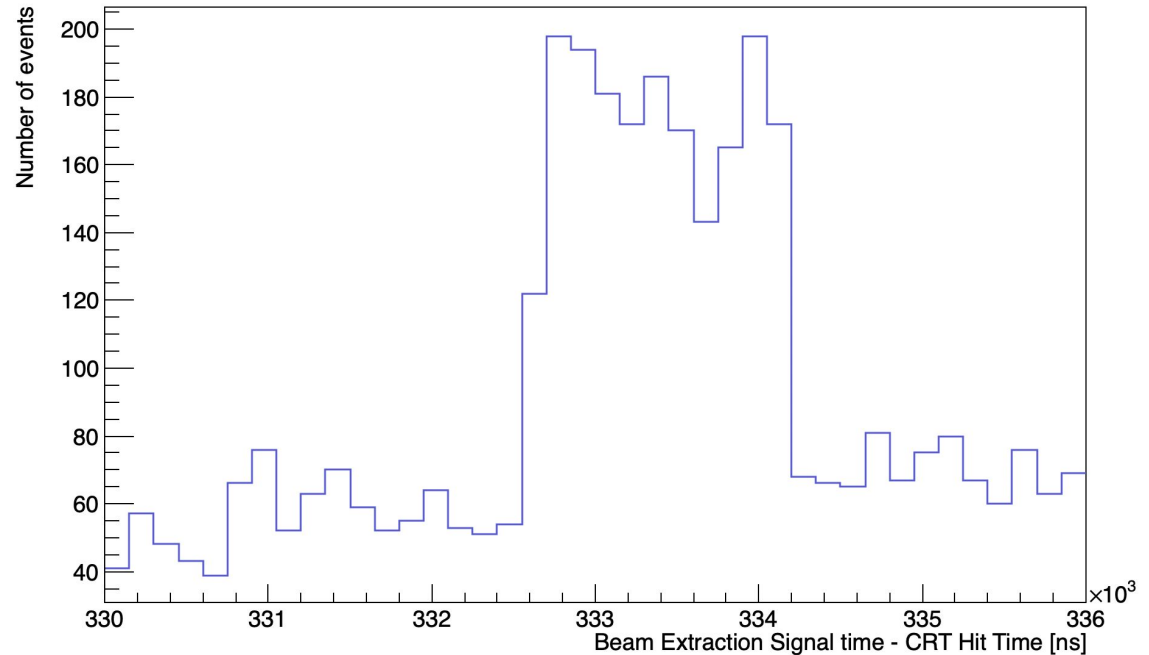
# Detector Commissioning: Beam in the CRT

Shortly after BNB returned, observed beam activity in the north wall of the CRT

Observed beam activity as excess above backgrounds with the expected delay relative to the BES

Also this month, DAQ team has successfully tested a configuration for collecting data from all subsystems (TPC, PDS, CRT)

CRT North Wall [data collected 14 March 2024, 3pm-6pm]

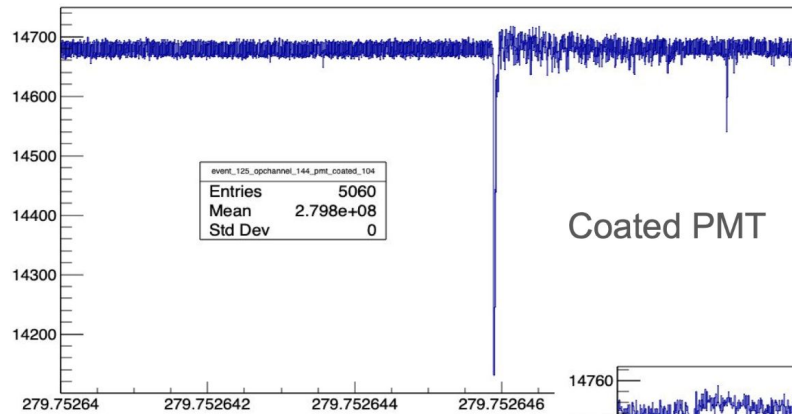


*Beam activity excess in CRT in ~3 hours of BNB data*

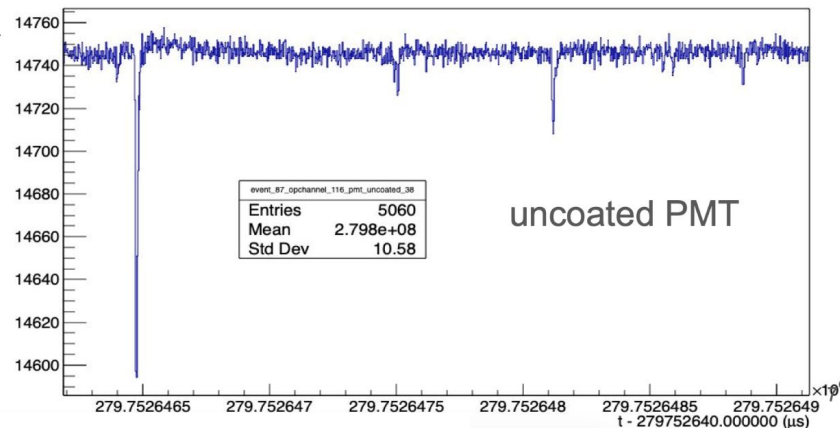
# Detector Commissioning: First PMT Waveforms

The Photon Detection System (PDS) team ramped up all 120 PMTs  
 Over 90% of the PMTs behaved as expected, and their initial operating settings were determined

A handful will require some further study to make these settings



Coated PMT



uncoated PMT

*Waveforms showing signals from  
 LAr scintillation light in TPB-coated (top)  
 and uncoated (right) PMTs*

*Waveforms recorded using DAQ*

# Detector Commissioning: Ongoing Work

Ramping up of the TPC bias voltages has started

Analysis of PMT data to measure gains is ongoing, as input to the effort to adjust operating voltages to equalize PMT gains

DAQ and trigger commissioning is also happening in parallel, with priority on improving run stability and enabling greater trigger complexity

