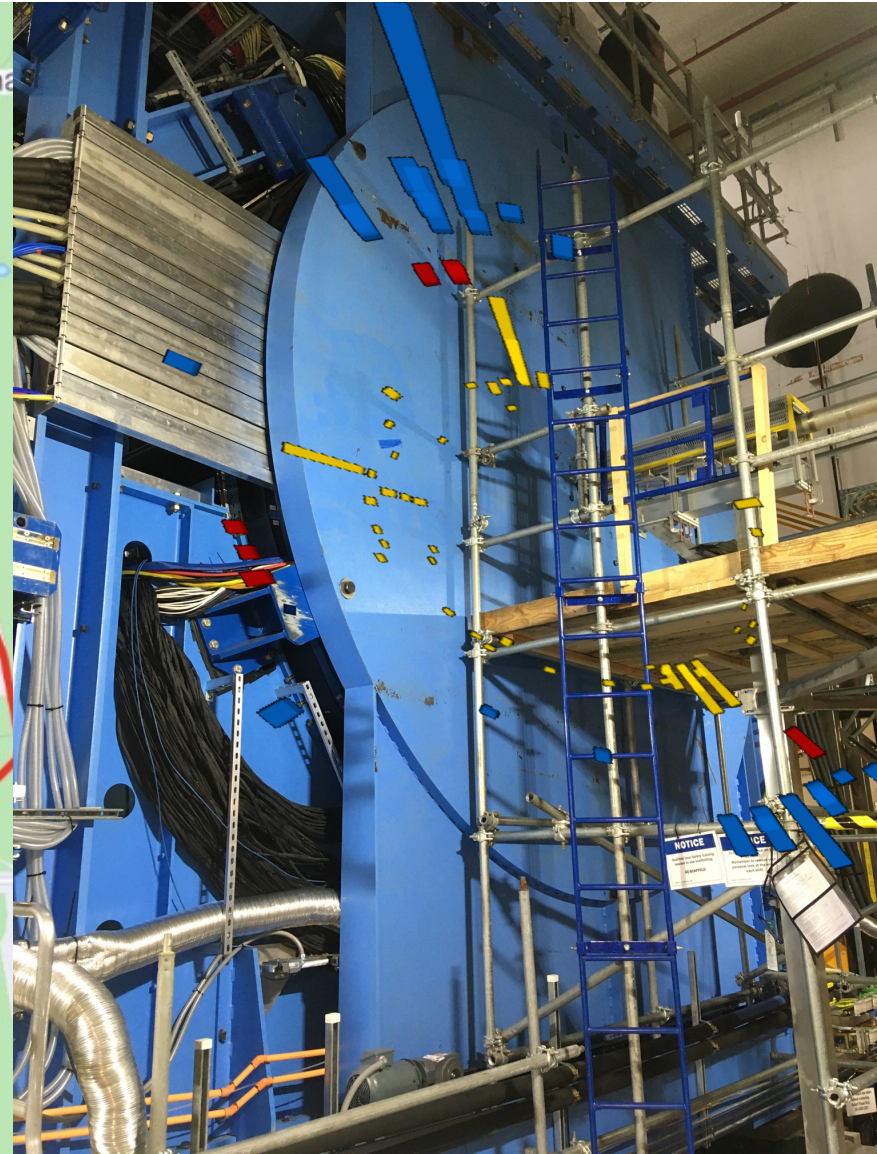


sPHENIX Status RHIC Coordination Meeting August 13, 2024

Jamie Nagle
University of Colorado Boulder
sPHENIX Run Coordinator

8/12/24

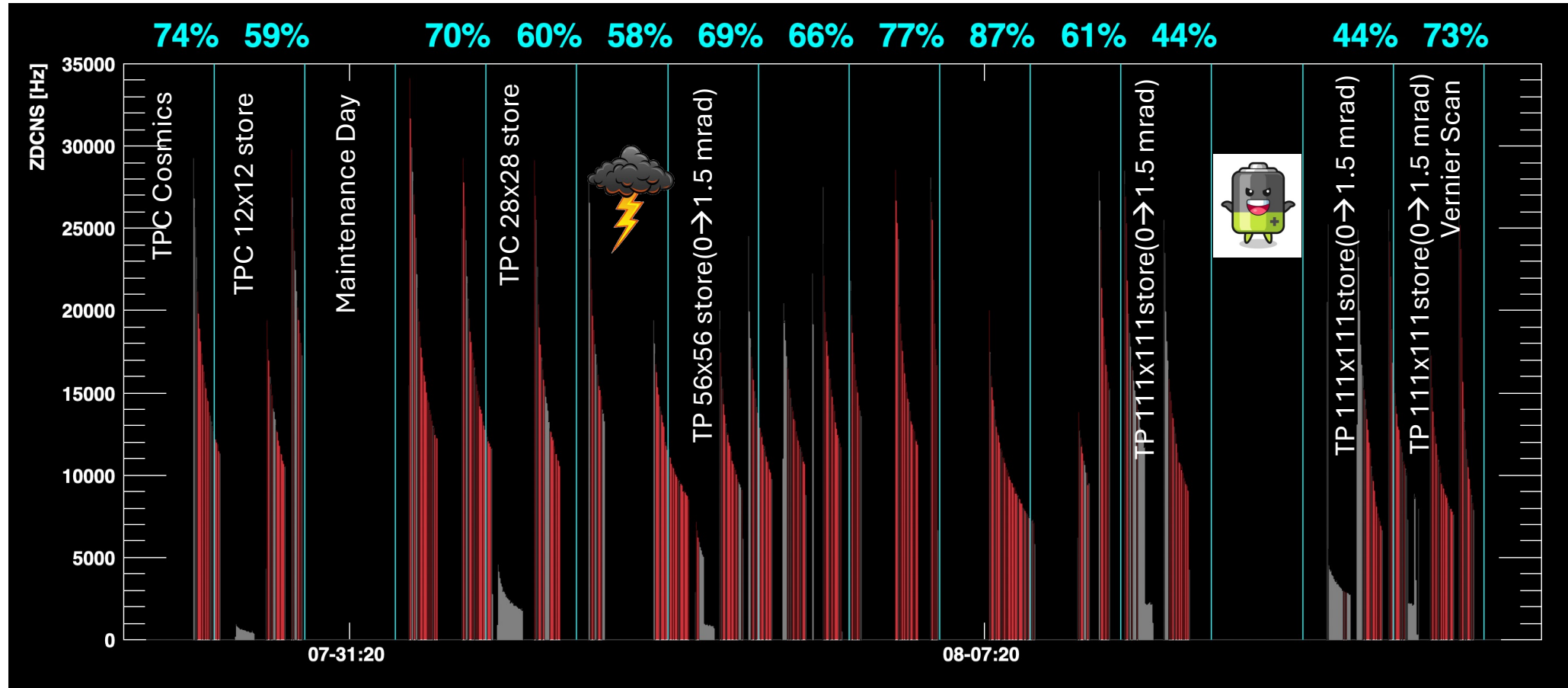
sPHENIX 2024

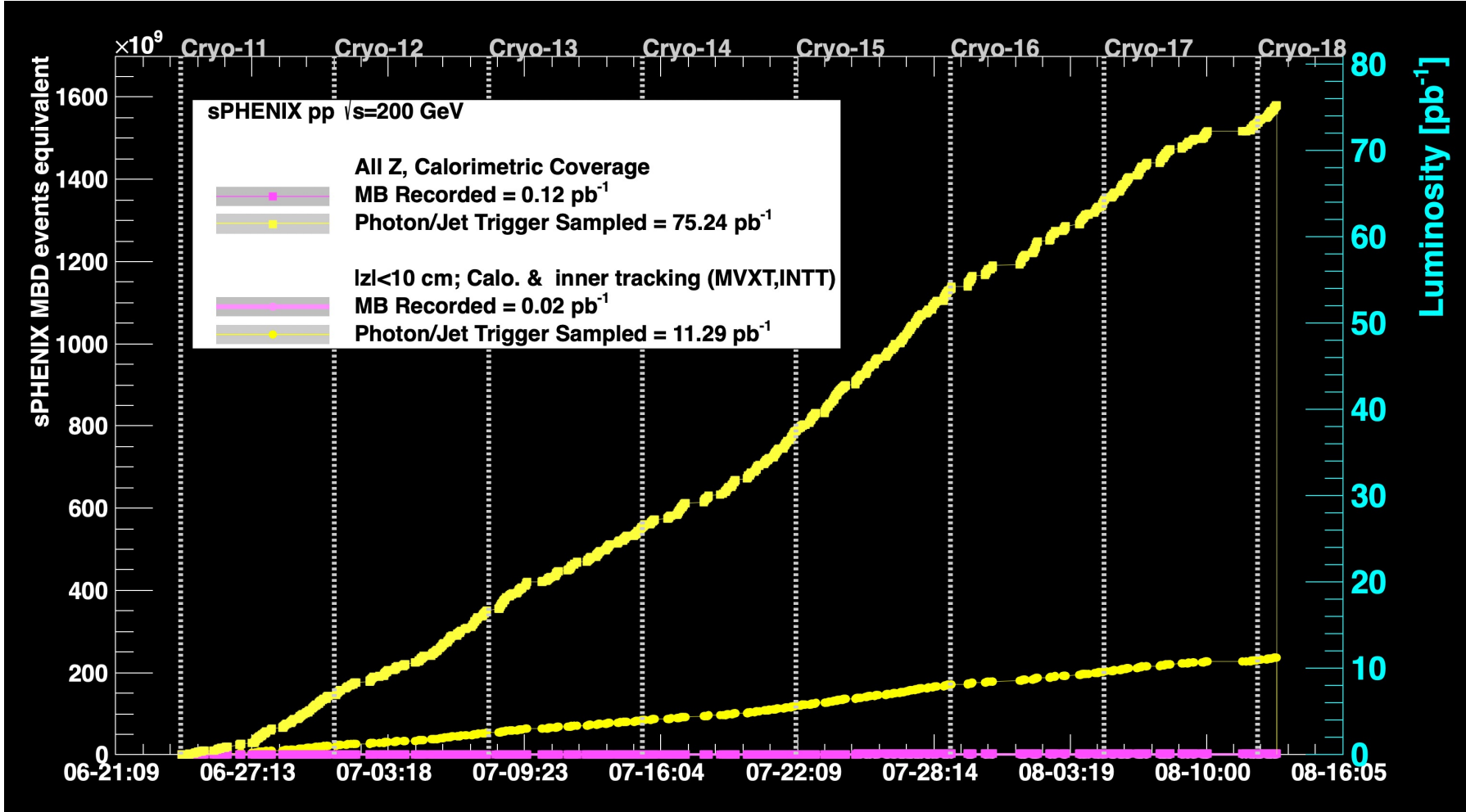


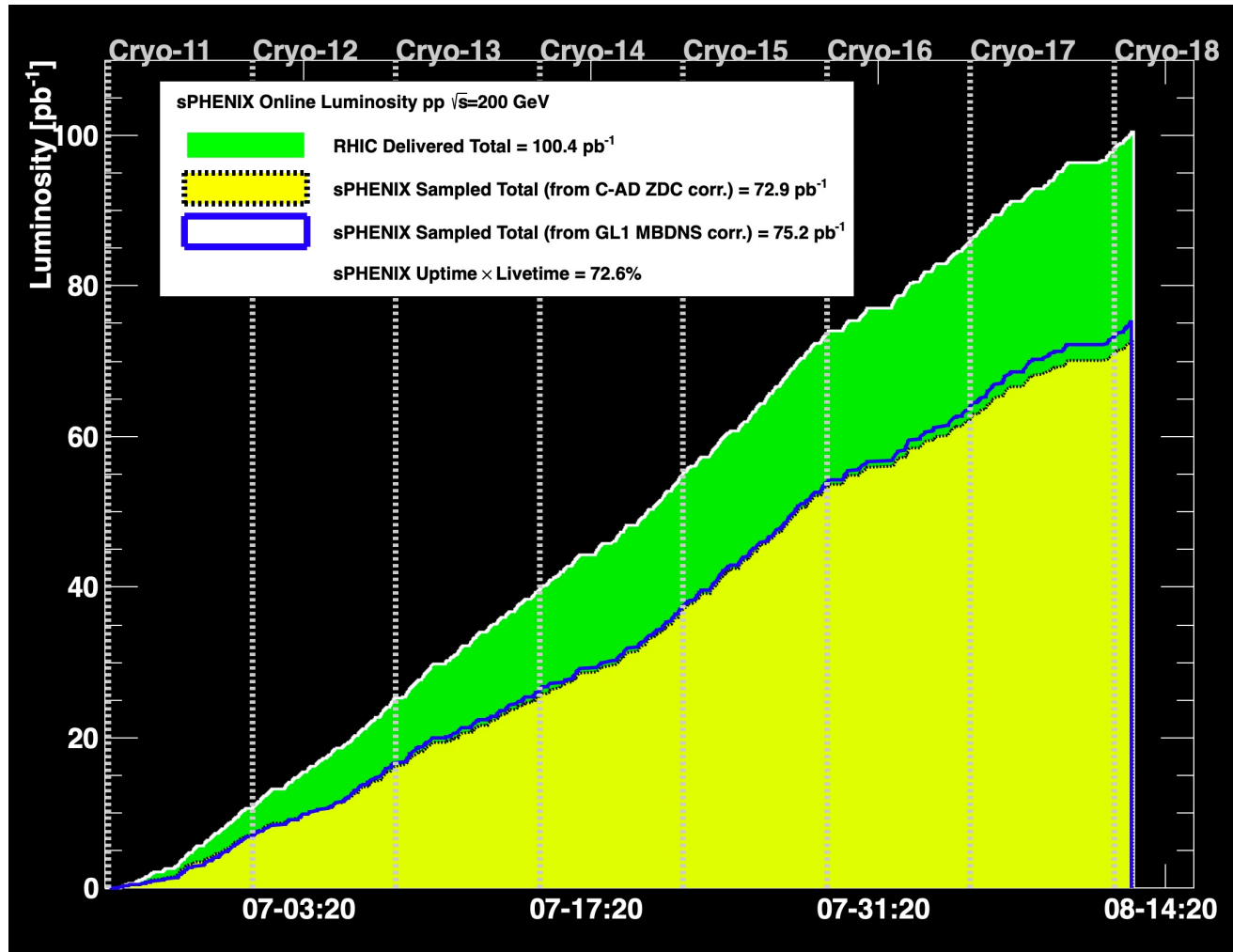
33 =

22 =

07 =







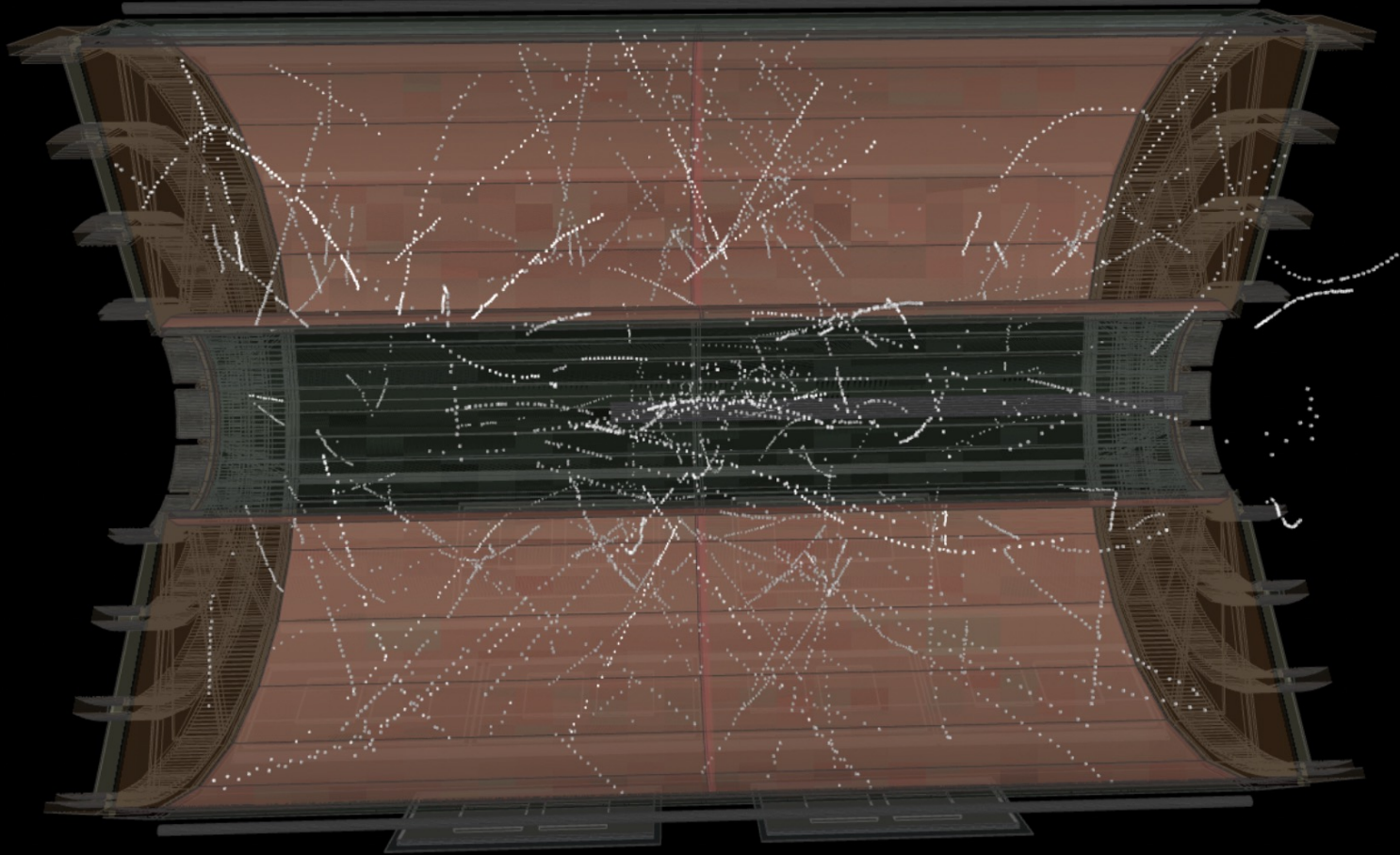


sPHENIX Internal

200 GeV pp

2024-08-09, Run 50916, Event #0

TPC HV: (GEMs - 3.30 kV, CM - 42.3 kV), 0 mrad crossing angle.





TPC → Time for Physics Collecting

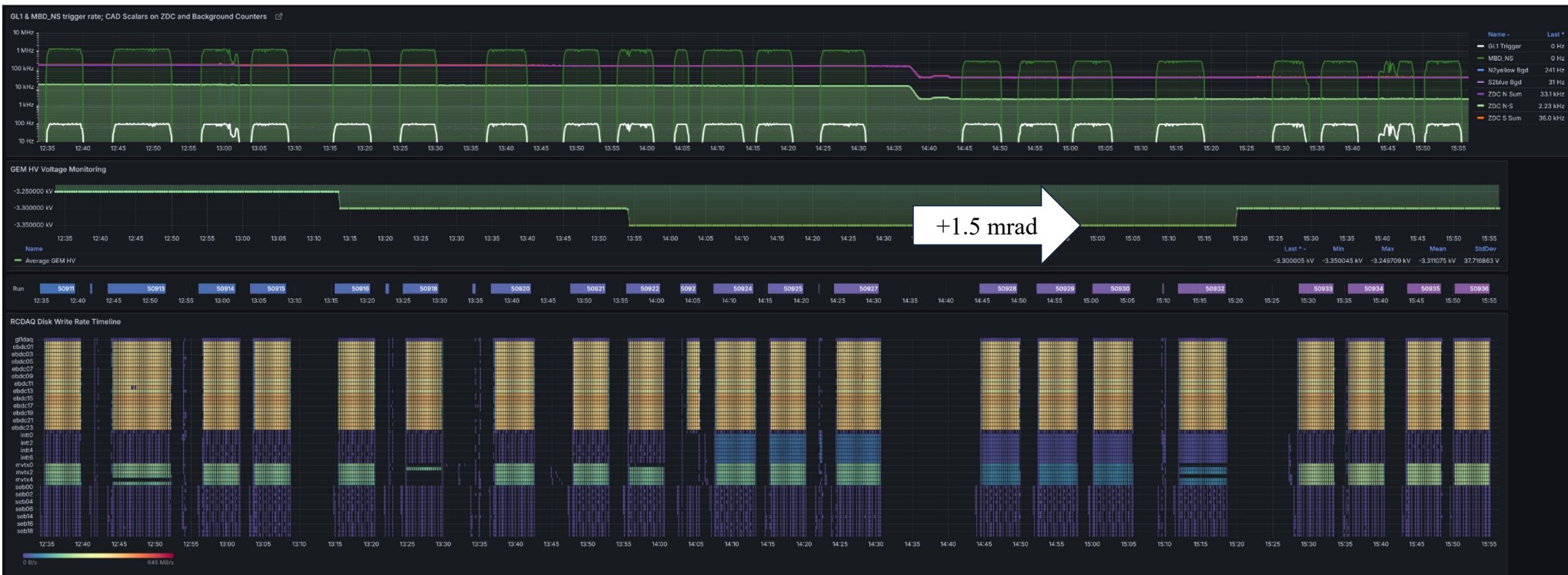
- sPHENIX is following our detailed TPC commissioning plan with isobutane.
- sPHENIX has tested and operated TPC successfully with 111×111 bunches at 0 and +1.5 mrad crossing with RHIC beams, after previous tests of cosmics, 6×6, 28×28, and 56×56 bunches.
- With firmware upgrade on Sunday (August 11 during machine down time), sPHENIX has also tested TPC at high rates with zero suppression. TPC HV control is being handed to the shifters for routine operation today.
- Zero-suppression tuning, data compression and I/O tuning is progress.

111×111 bunch fill run report

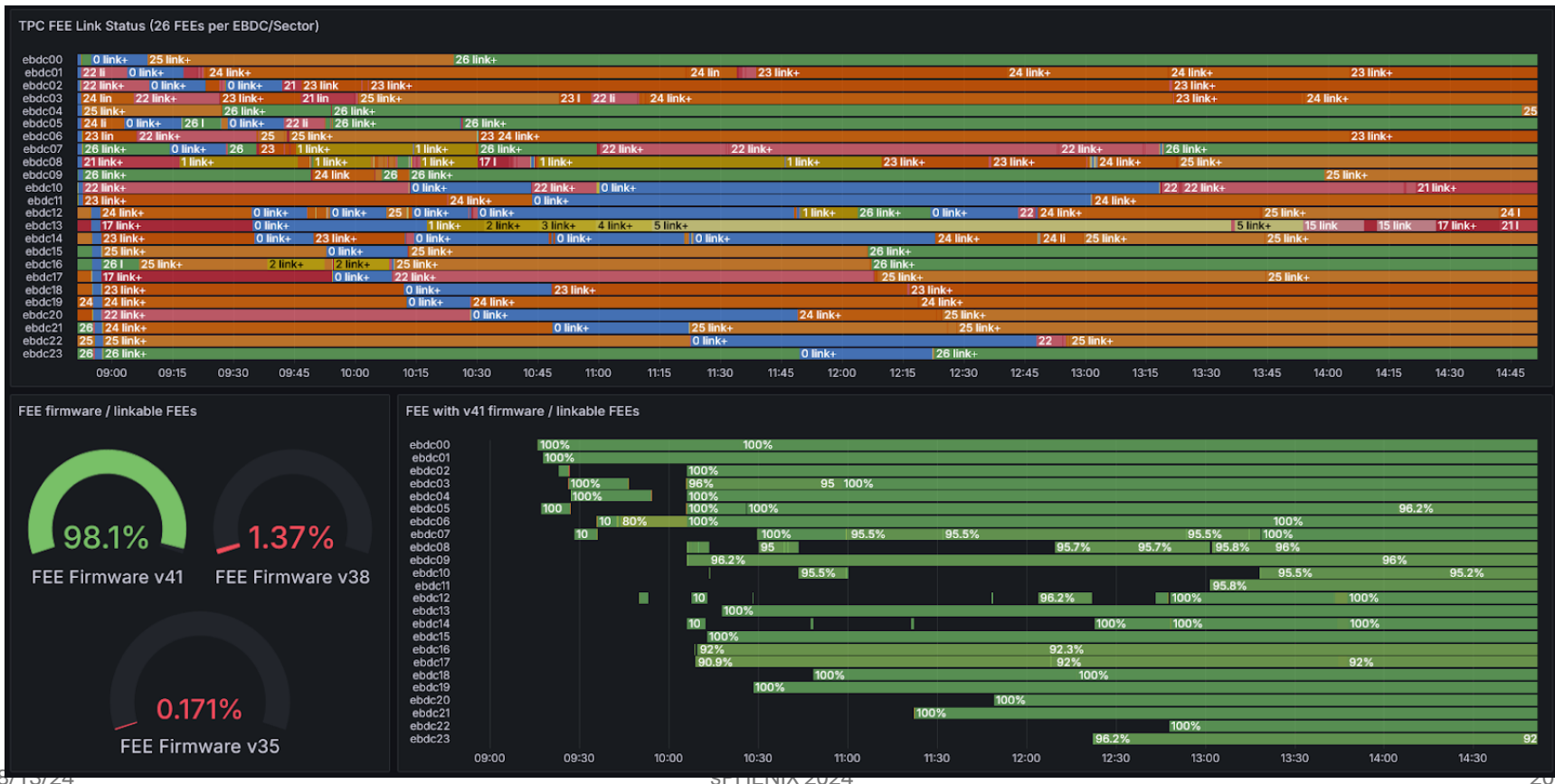
GEM gain balancing and damage survey/compensation was performed on Aug. 6 and 8 Aug. 9, 12 : 111×111 bunch run configuration;

- HV scan: 3.25kV...3.35kV in 50V interval; 0mrad and +1.5mrad beam crossing angle
- Big partition run with MBD Trigger, GL1+TPC+TPOT+INTT+MVTX+EMCal+HCal

Main outcome: GEM is very stable under 111×111-bunched beam at both 0 and +1.5mrad



TPC new firmware appears to resolve e-link dropping issues.
 Firmware testing and development continuing which will probably require re-programming.

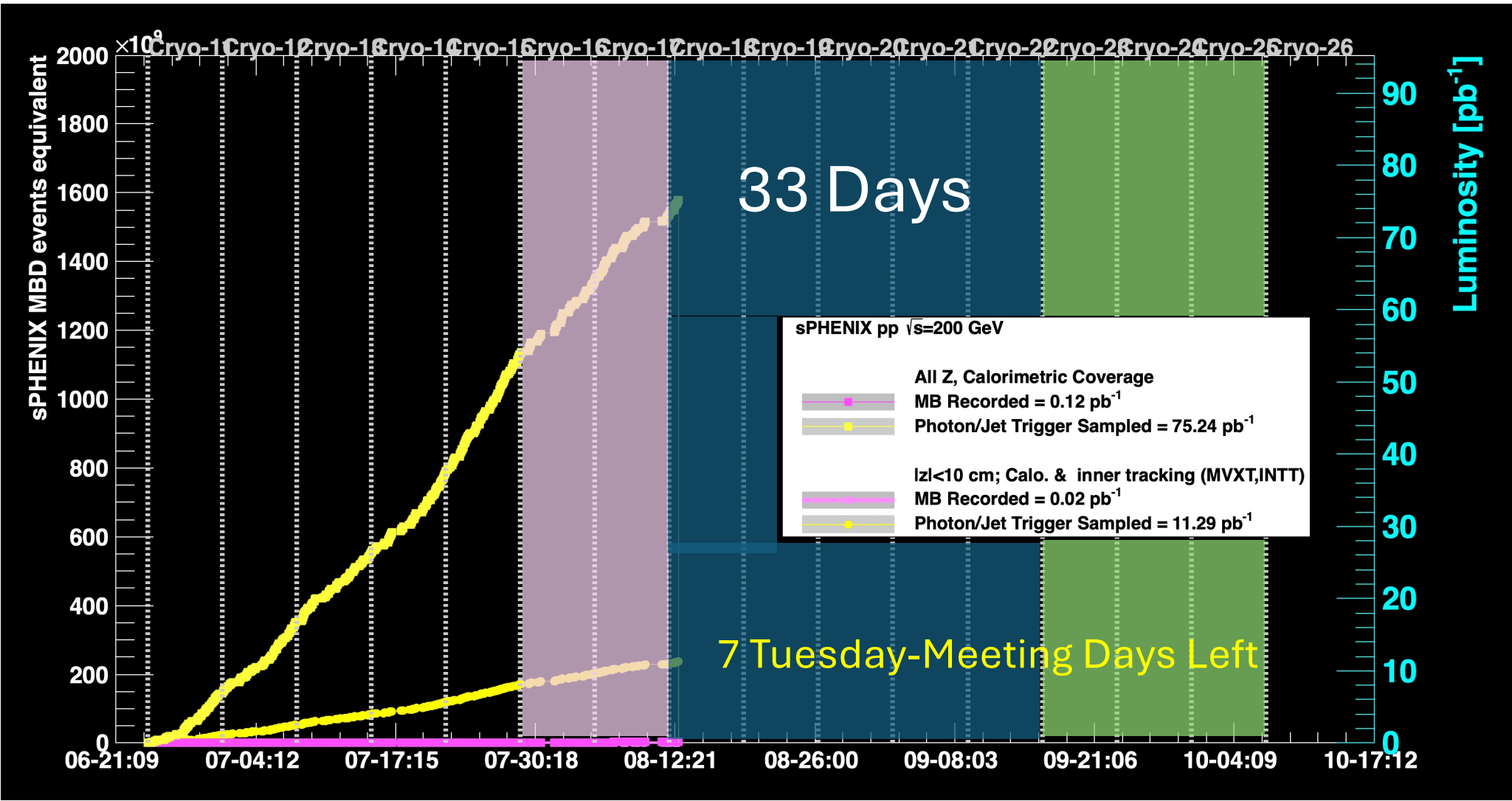




Step 4.1:
TPC operation with
111x111 beam

First 9 kHz
physics-trigger run,
with entire sPHENIX
taking data

Data I/O issues will be
next hurdle



Status Summary

Two modes of physics data taking with TPC

- 1) Triggered mode, sampling jet/photon physics with tracks (!)
- 2) Streaming mode, important for open heavy flavor program.

Running #1 starting tonight. Projected time for #2 is Monday next week.
Working to address challenges wrt TPC firmware, data throughput, BCO matching.

Currently ramping at +0 mrad, steering into +1.5 mrad very stable, low backgrounds.

C-AD projects 20% more luminosity within $|z| < 10$ cm if they ramp directly into +1.5 mrad. Machine Development on Thursday.
Note limited remaining time in run.