sPHENIX Status
RHIC Coordination Meeting

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sPHENIX Run Coordinator

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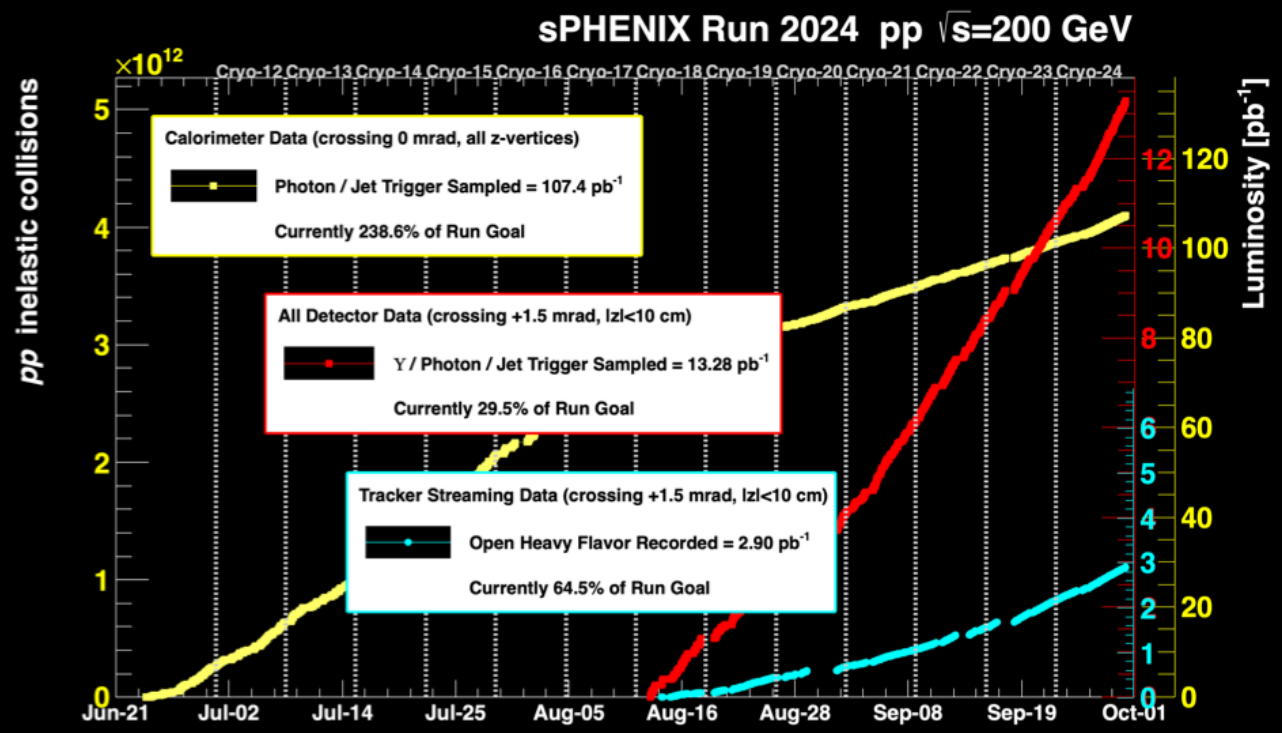
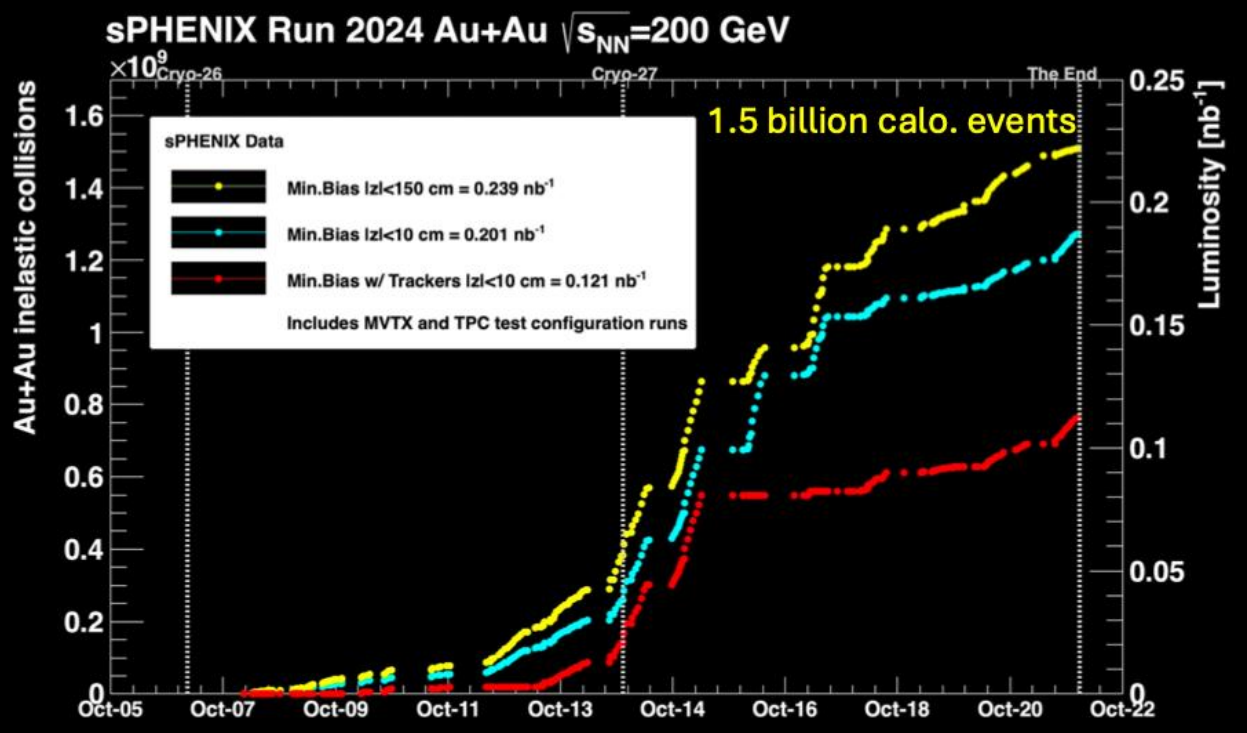
sPHENIX Deputy Run Coordinator


Time until Run 25
16:20:42:13
days
hours
minutes
seconds
Mar 24, 2025
SHARP

Run 24 Luminosity



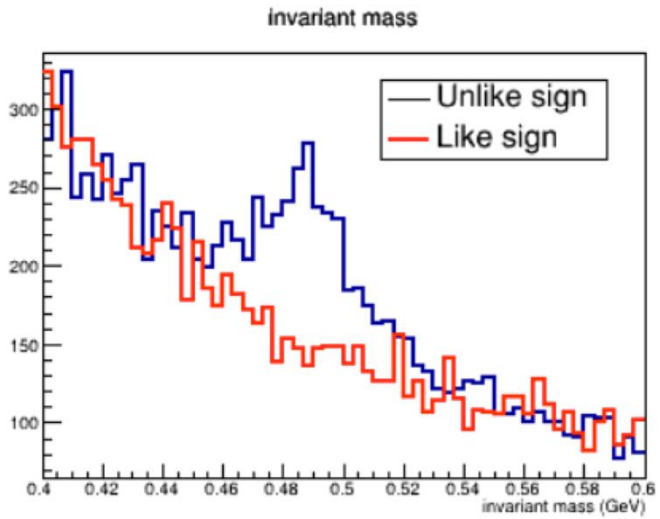


Run 2024 pp data set

- **230% BUP jets/photons**
- **65% BUP open heavy flavor**
- **30% BUP Upsilon/full program**

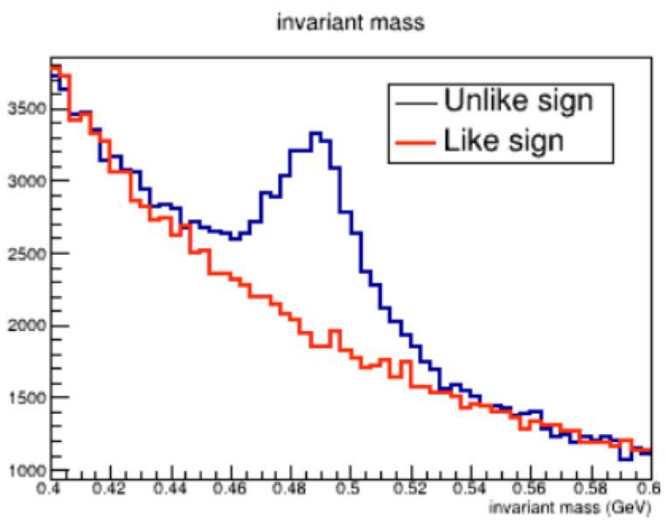
We ran very efficiently post-commissioning!

Successful Run 24 Streaming Program



Crossing 0:
1,223 Ks

All crossings:
14,411 Ks

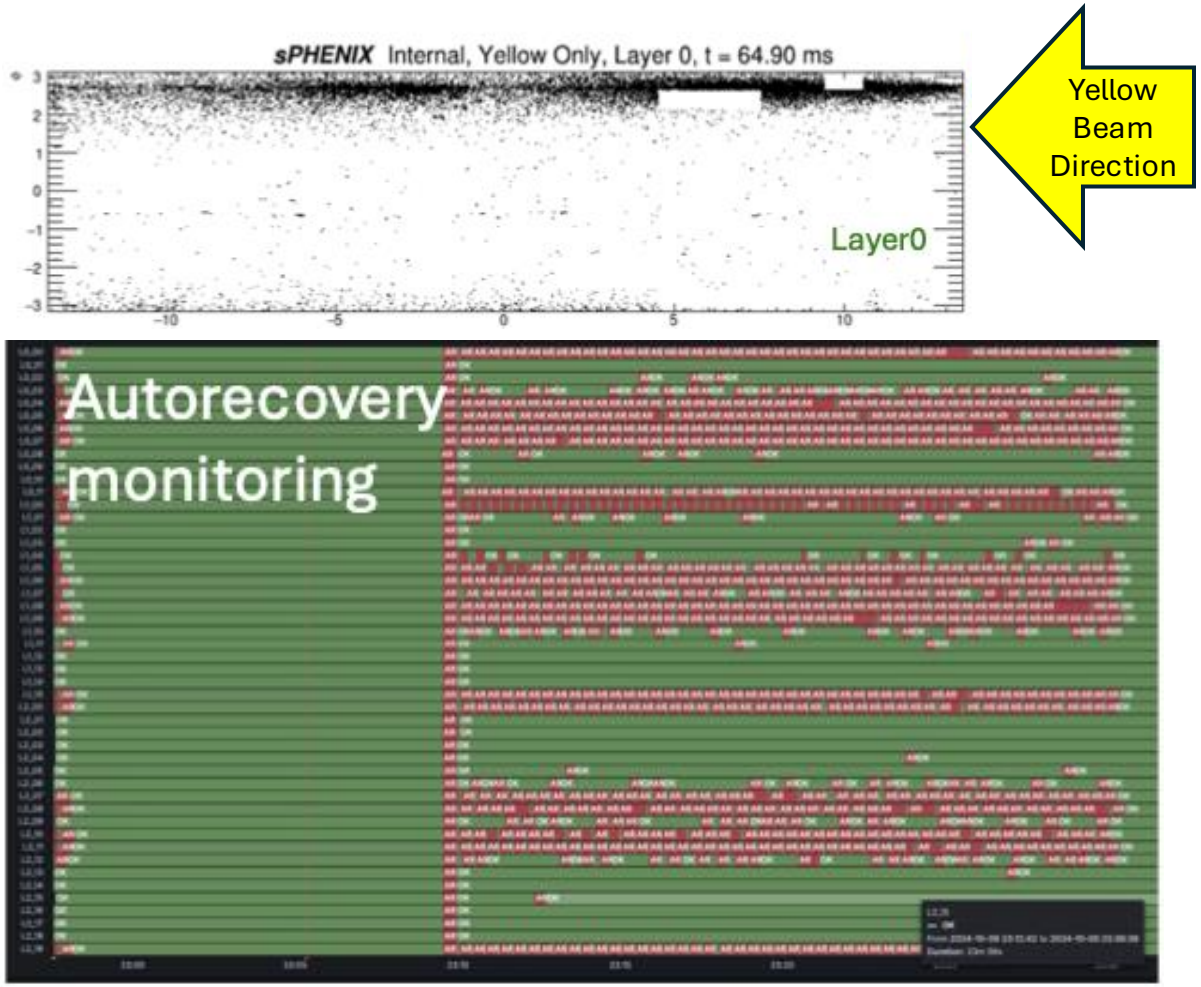


A few minutes of data that has not yet been calibrated!

- Work on track reconstruction and calibration progressing very rapidly since end of run24
  - K^0_s reconstruction in both triggered crossing and all streaming readout crossings – streaming readout data taking was successful
  - Significant progress on understanding alignment of silicon and space charge distortion corrections in TPC

MVTX Backgrounds

- No problems in proton-proton
- Background in Au+Au even with one bunch in the yellow ring
- Beam background causes auto-recoveries in MVTX
- Plan to run in trigger mode, only susceptible to “splash” events within 5 μs of triggered event



Streaming Mode

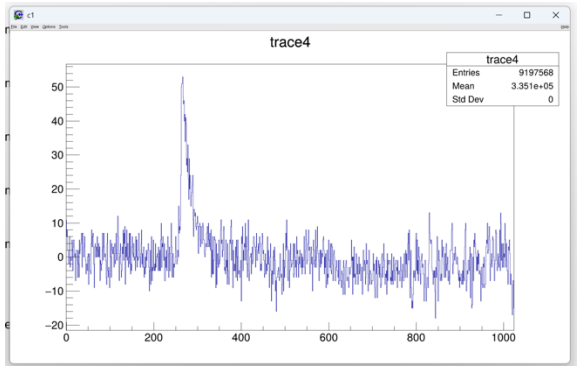
Run 25 BUP → 7 nb^{-1}

Run-25 Projection, sPHENIX Physics Target: **7 nb^{-1} (50B events)**		
Collision Species	Cryoweeks	Projected luminosity, $\|z\| < 10$ cm
Au+Au 200 GeV	20	2.8 – 5.4 nb^{-1} recorded
Au+Au 200 GeV	28	4.2 – 8.1 nb^{-1} recorded

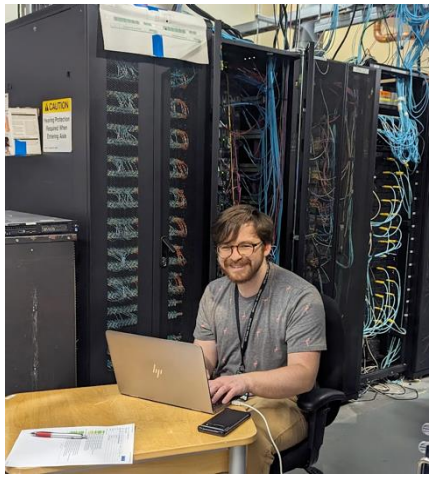
Ordered priority list for additional running in FY26		
Collision Species	Physics weeks	Projected luminosity, $\|z\| < 10$ cm
1. p+p 200 GeV (*)	8	13 pb^{-1} sampled + 3.9 pb^{-1} streaming
2. p+Au 200 GeV	5	80 nb^{-1} sampled + 24 nb^{-1} streaming
3. O+O 200 GeV	2	13 nb^{-1} sampled + 3.9 nb^{-1} streaming
(*) If sufficient running time is available.		

Shift Accomplishments

- TPC
  - Line laser electronics completed
  - High voltage completely moved to CAEN, vastly simplifying gain balancing and operation
  - Operated with Isobutane for an extended period
- Calorimeter DAQ-fest resulted in operation of calorimeter digitizers
  - Everything is in the hands of the shift crew (with local expert support)



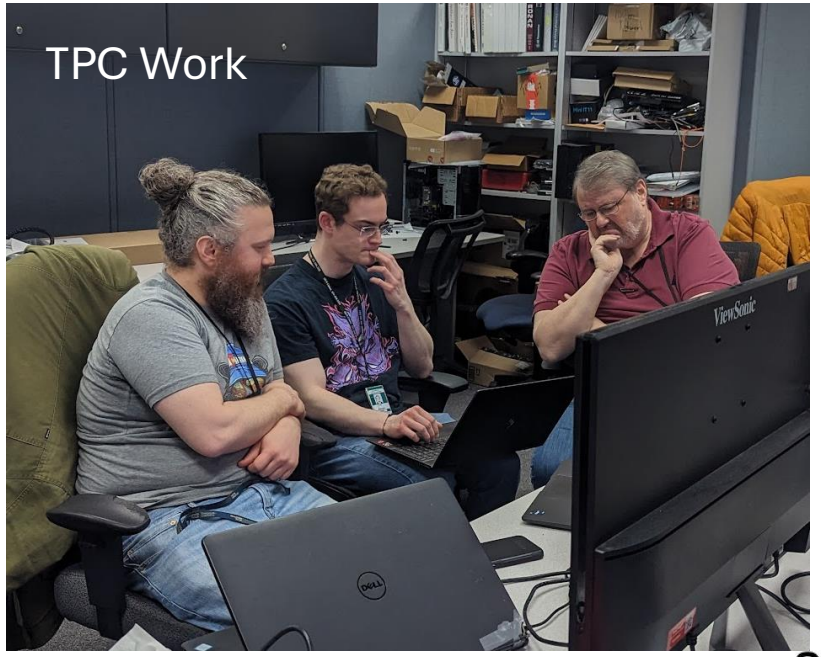
First results from laser alignment scan!
Left is one photodiode quadrant



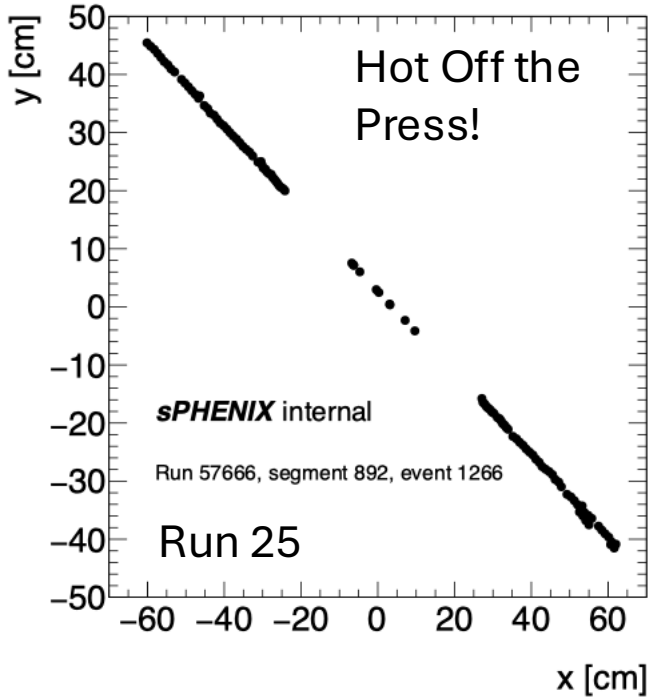
Sam, Joey, John H, Skaydi, Martin in person
Jamie, Dan and JaeBeom remote

Run 25 Accomplishments

- We have run in the Big Partition **with all tracking detectors**!



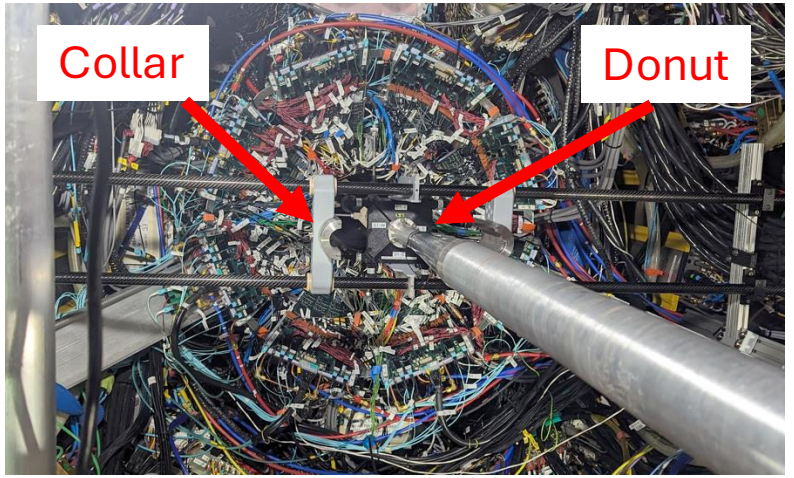
sPHENIX Shift Crews

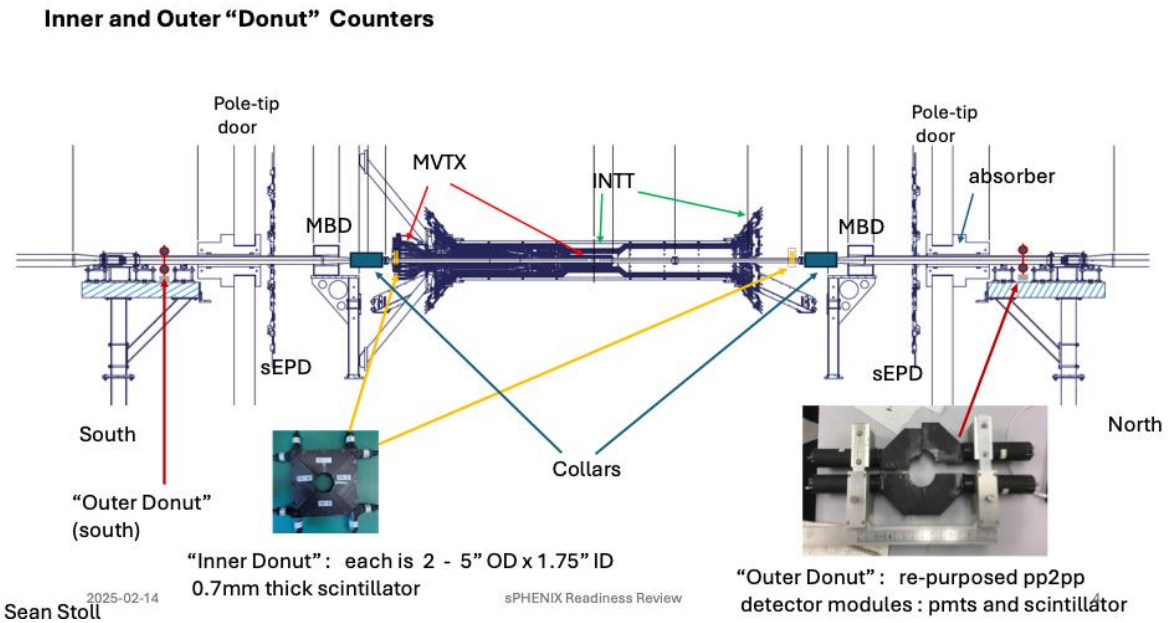


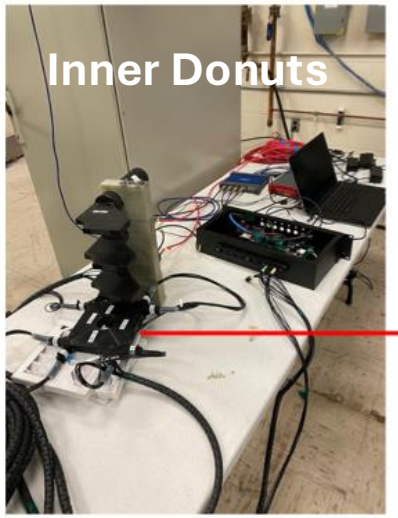
We have recorded 2.1 Billion Cosmic Events so far!

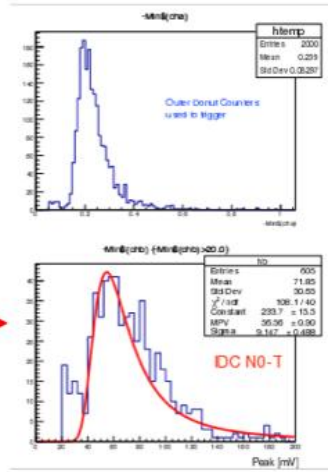
MVTX Background Mitigation

- Donut Review: Indico
- Collars will start in open mode
- Donut commissioning: Indico







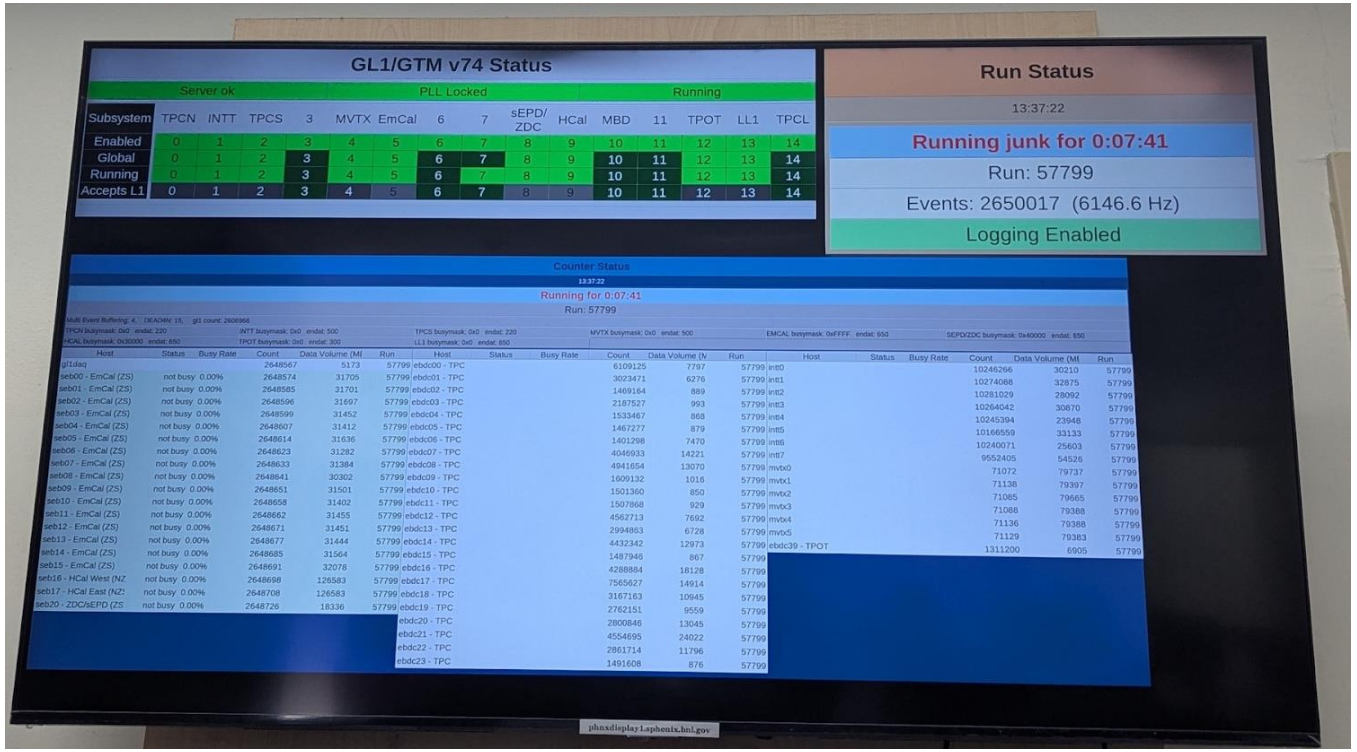


Trigger

Inner Donut MIP

Current Status for Run 25

- Ran with all detectors except for MBD yesterday (work on MBD electronics while test is ongoing)
  - sEPD, MBD not installed yet
- 3 full weeks of 2-person gas shifts completed!
- Shutdown left to do
  - Installation of IDC.S, MBD, sEPD, ODC
  - Writing data to all 12 buffer boxes
  - GTM/GL1 to accommodate all external trigger inputs



ODC = Outer Donut Counter

IDC = Inner Donut Counter

Conclusions/Outlook

- All sub-systems have turned on and have been run in the Big Partition (BP) in some fashion
  - Next goal would be to run BP with all detectors
- Tracking detectors successfully run together and can be operated by the shift crew!
- TPC Laser work, gain determination ongoing
  - Mapping done
  - TPC noise work
- MVTX – All tests suggest no issues running in trigger mode
  - “Status” in Grafana so we can see what mode we are in
  - Background mitigation meetings with C-AD have been productive

sPHENIX is Ready for Beam!

Shift Type	Open Slots	Open Slots, %	Total Slots
Coordinator	2	5.9%	34
Shift Leader	3	2.9%	102
Detector Operator	1	0.5%	183
Data Monitor	2	2.5%	81
SUMMARY NON-TRAINEE	8	2%	400
Total number of unique persons signed for shifts:			146