

sPHENIX Status Coordination Meeting

2025 December 23

Rosi Reed
Lehigh University
sPHENIX Run Coordinator

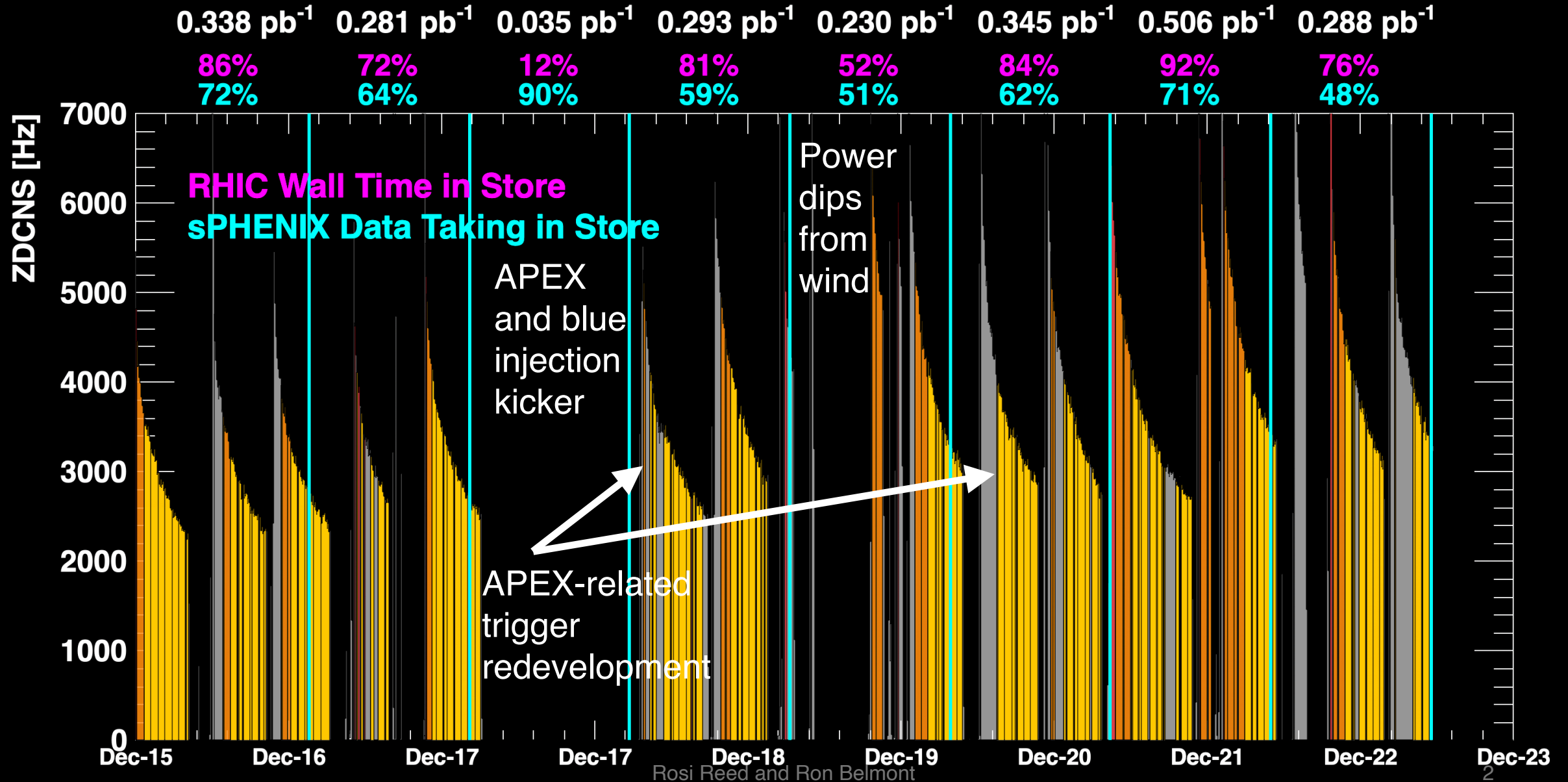
Ron Belmont
UNC Greensboro
sPHENIX Deputy Run Coordinator



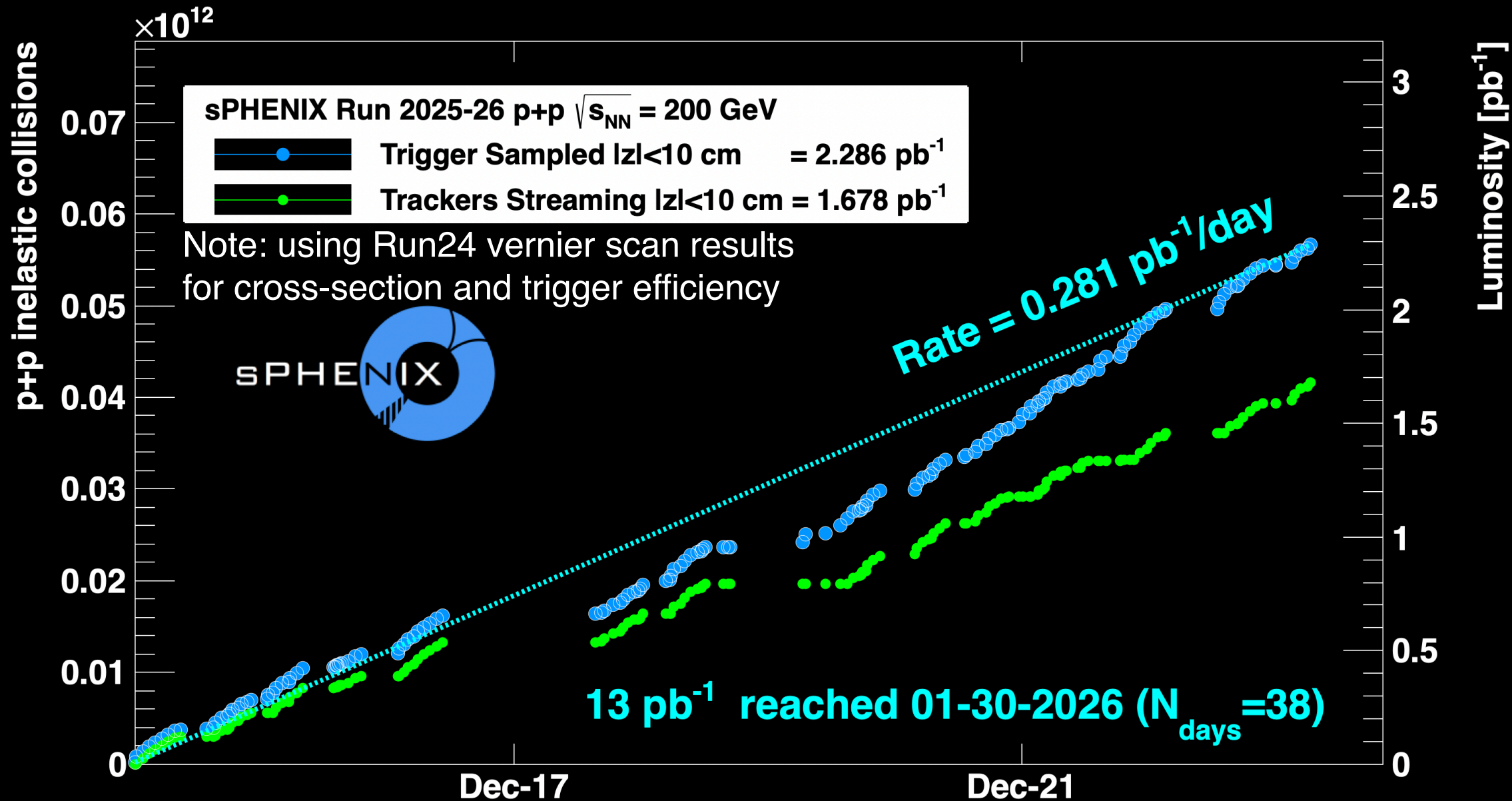
Itaru Nakagawa
RIKEN
sPHENIX Spin Coordinator



sPHENIX uptime



sPHENIX luminosity



sPHENIX p+p operations

- The 12/17 APEX had significant impact on p+p commissioning and operational efficiency
 - 16 hours off for APEX itself, followed by 8 hours of RHIC down time (blue injection kicker; physics beam restored at 08:06 on 12/18)
 - PLL was lost during APEX, leading to several hours of sPHENIX downtime for trigger redevelopment
- Due to a shift in timing following PLL restoration, the trigger rejections changed
 - Differing rejections is a massive complication for analysis and often leads to data being discarded
- The risk to the sPHENIX physics program of any further APEX during the Run is very high
 - Even when PLL is not lost and RHIC recovery is okay, sPHENIX recovery is more difficult (than e.g. Maintenance Day) because of detector state
 - Coming back from mostly off is harder than coming back from mostly on
- sPHENIX triggering in p+p is much more complicated than in Au+Au
 - Trigger experts were present on site during p+p commissioning but will not be on site in January
- We request APEX be postponed to the end of the Run

sPHENIX p+p operations

- Major downtime on Monday 12/22, still investigating the exact cause
- What we know so far:
 - Some communications issue at 11:17 on the sPHENIX side caused the both ECW solenoid valves on all racks and TPC/TPOT gas valves to close, smoke alarms (no real smoke), etc
 - The sudden drop in flow caused a low flow alarm in the pump room
- Our recovery steps:
 - Beam dump at 11:43
 - CA to turn the racks on started 11:59
 - Also opportunistic access to replace an EMCal bias supply
 - Detector subsystem recovery started 12:38
 - Short cosmics runs to verify the detectors recovered without damage at 12:56 and 13:39
- Plug door closed at 13:52, back to NA at 13:54, physics declared at 15:12
 - Many thanks to MCR for the responsiveness and fast turnaround!

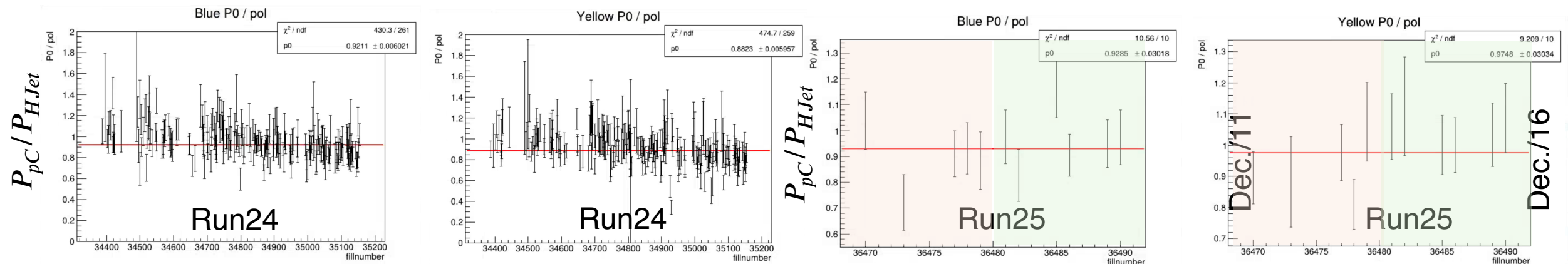
IP12 Polarimetry Normalization Factors

pC/HJet	Run24	Run25
Blue	0.92 ± 0.006	0.92 ± 0.03
Yellow	0.88 ± 0.006	0.97 ± 0.03

At the beginning of p+p, pC tends to measured unusually smaller polarization than Hjet.

However, the discrepancy became rather moderate a couple days later.

At this moment, there is no urgency to warn polarimeter group to debug the polarimeters. We'll continue monitoring these ratio throughout Run25.



This work is done by Jaein, Jeongsu, Devon, and Takahiro

IP12/IP8 Asymmetry Ratio

$$\left[\frac{Pol_{pC}}{Asym_{localpol}} \right]_{Run25} = \left[\frac{Pol_{pC}}{Asym_{localpol}} \right]_{Run24} \left[\frac{Pol_{HJet}}{Asym_{localpol}} \right]_{Run25} = \left[\frac{Pol_{HJet}}{Asym_{localpol}} \right]_{Run24}$$

Any deviation from these equations indicates some condition change.

	Run24	Run25	Run25/Run24
pC	-20.8±0.2	-21.4±0.4	1.03±0.03
	-19.1±0.2	-20.8±0.4	1.09±0.03
HJet	-21.8±0.3	-22.6±0.8	1.04±0.05
	-20.6±0.3	-20.8±0.7	1.01±0.04

The ratio between LPOL asym and pC/Hjet pol are staying consistent to each other within **9%** between Run24 and 25. The largest change in the ratio is seen in yellow pC polarimeter.

The Hjet/LPOL ratios are quite consistent between Run24 and 25. The LPOL supports reliability of Hjet polarization at this point.

*Note Run24 local pol analysis is conducted by offline code, while Run25 is online code (can be minor difference). Verification is underway.

Summary

- Stable machine operations is essential for us to achieve our luminosity goals
 - We request postponement of APEX experiments to the end of the Run
- H-jet operation is essential to properly understand the beam polarization
 - Many thanks to the experts for their hard work to restore operations
- Currently using Run24 vernier scan results for cross-section and trigger efficiency
 - A vernier scan in early January will be needed to verify the numbers
- Is there a Coordination Meeting on 12/30?
 - We are in favor of having one (Rosi, Ron, Itaru will all be on site)
- Happy Holidays!