Run 25 Status
RHIC Coordination

November 18th, 2025

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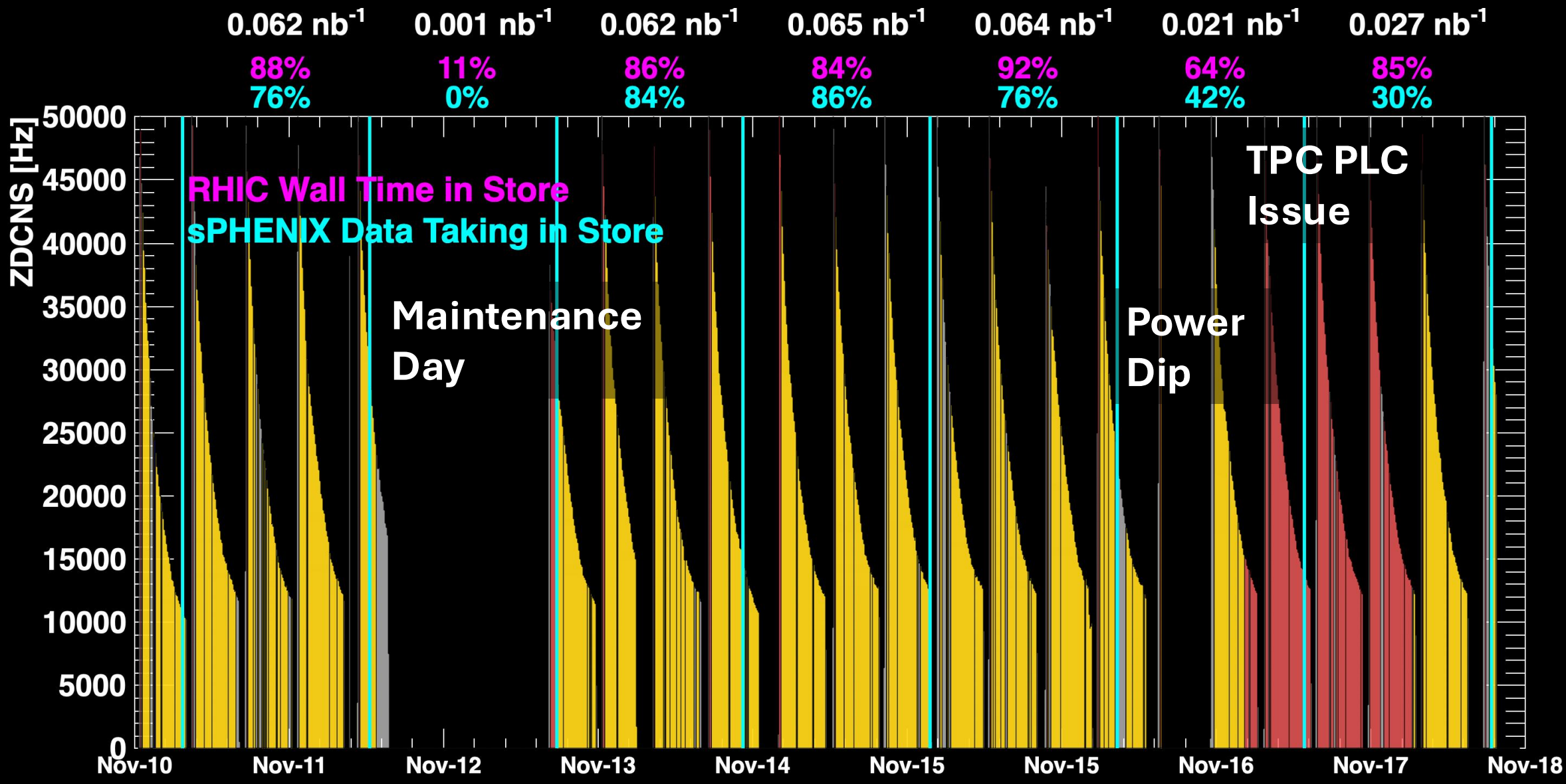
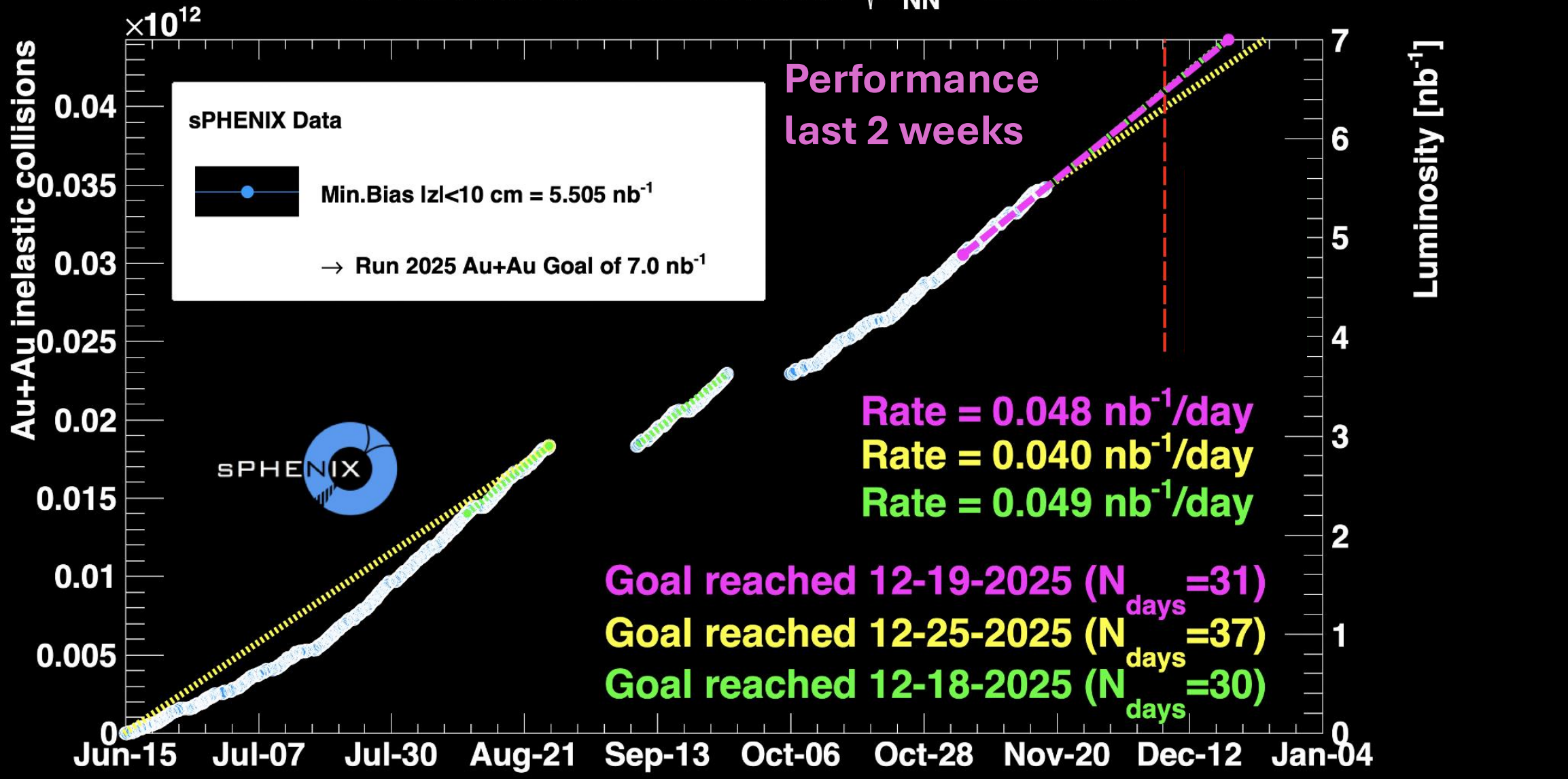
No TPC

sPHENIX Uptime Time



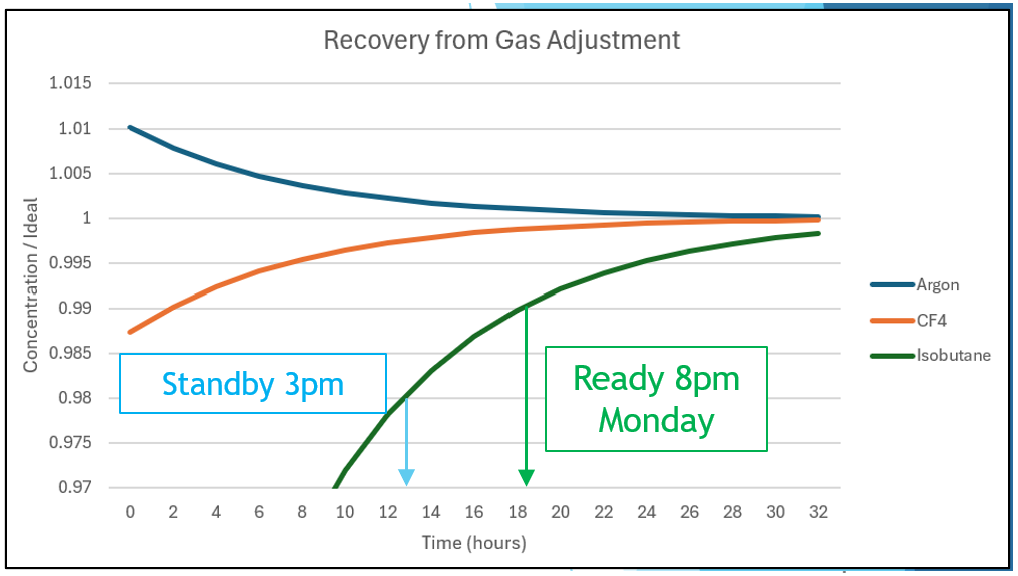
sPHENIX Luminosity

78.6% of our Au+Au goal



TPC Gas Issue

- Sunday night (10:40 pm) TPC gas rack tripped due to a PLC fault
  - The PLC was reset, flow controllers re-calibrated to nominal flow at 2 AM
  - Required 18 hours for TPC gas mixture to return to nominal
- Spare PLC now programmed with firmware for ”fast” turn around
- Potential to install UPS
- New TPC PLC procedure available to sPHENIX Shift Crew



Rosi Reed

PAC Must-Do Recommendations

- The highest **must-do** priority for Run 25 is for sPHENIX to collect **7 $\mathbf{nb^{-1}}$** of Au+Au data
  - "considers this top priority as so high that the target of 7 nb^{-1} of Au+Au data ***must*** be matched to **within at least 90%."**
- The next highest **must-do** priority after the Au+Au run is a 7 cryoweek polarized pp run for sPHENIX to accumulate **13 $\mathbf{pb^{-1}}$** of all-subsystem triggered data
  - "We emphasize that this pp run is **essential** to realizing the scientific impact of the marquee 2025 Au+Au run and **completing the RHIC Science Mission** successfully"
- The next highest **must-do** priority after the polarized pp run is a polarized p+Au run for STAR of **5 weeks of physics** running

Constraints

- The current understanding of Run25 ending on Jan 20th means that the time left is likely insufficient to even achieve the first two must-do physics priorities as recommended by the PAC25
- Need to leave sufficient time to complete the pp running to at least the PAC recommended 90% level
  - Running to 100% of the sPHENIX Au+Au goal (projected to Dec 17) risks only achieving 1 of the 3 must-do physics goals of the heavy-ion community
- Switch over during the holiday week can be risky due to expert availability so we would like to finish C-AD + sPHENIX setup beforehand (~2 weeks)
- In order to follow the PAC guidance, and best meet the sPHENIX physics objectives, we developed a plan to balance Au+Au and p+p running

sPHENIX Proposal
How to achieve the maximum amount of the must-do physics

- sPHENIX would like to take Au+Au data until Monday Dec 8 (projected ~90%) then begin the switchover to polarized p+p operations and proceed with polarized p+p data taking as soon as the machine is ready
- The reasoning is that:
  - **Given the constraint of Jan 20 end of funding for RHIC operations**, we would prefer to **sacrifice the last 10% of Au+Au data** to ensure we collect the necessary p+p reference data, which is critical to the sPHENIX physics program and RHIC Science Mission
  - Allows both C-AD and sPHENIX to complete p+p setup before the holiday weeks
    - Following the C-AD setup, sPHENIX plans to spend **one week (~Dec 13-20) to commission** the photon and jet triggers, commission the new TPC HV system in p+p, and establish the operation of the high-fraction streaming readout
  - Assuming smooth commissioning and no operational disruption, we expect to reach 80-90% of 13 pb^{-1} p+p luminosity by Jan 20
- Under the current funding constraints, we believe this proposal puts us in the best position to meet the top two must-do priorities as outlined in the PAC recommendation