sPHENIX Status
RHIC Coordination

June 3rd, 2025

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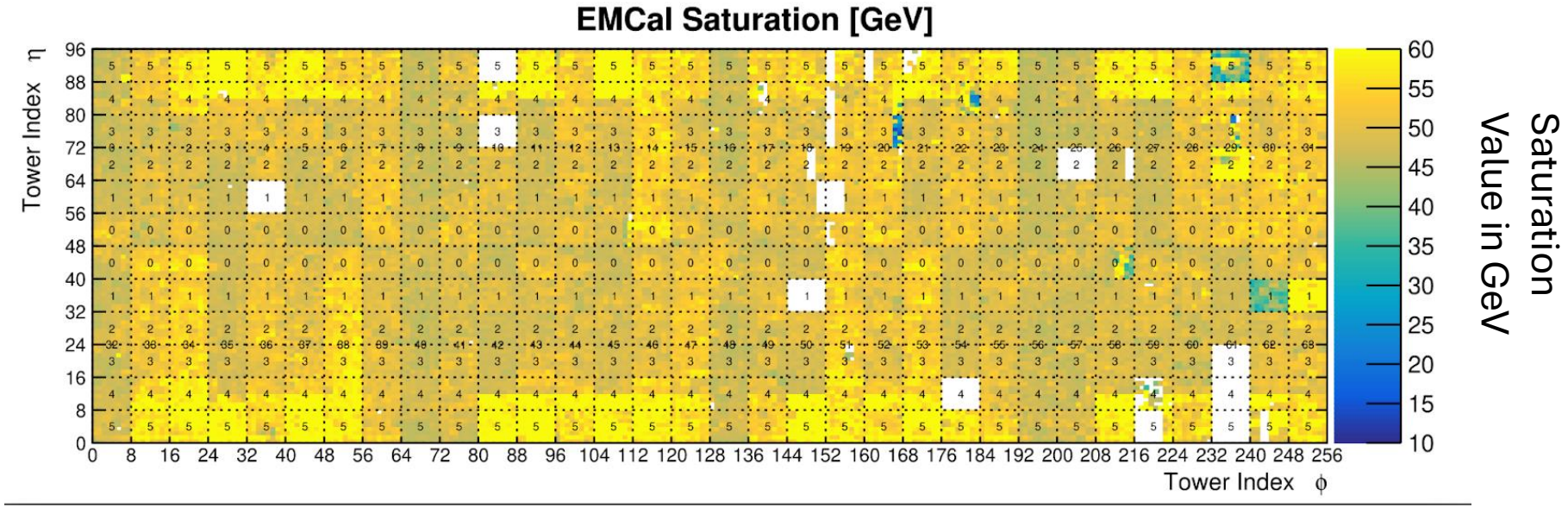
sPHENIX Status

- Chillers and AC have been working fine ☺
  - Pump package for chiller 4 has been installed
  - Chiller 3 will be inspected soon
  - Then we will run on the rental chiller, with 3 and 4 as back-up
    - Successful oil change today!
- Completed 7 laser dances for TPC static corrections
  - Currently improving cooling by separating line laser cooling from TPC cooling

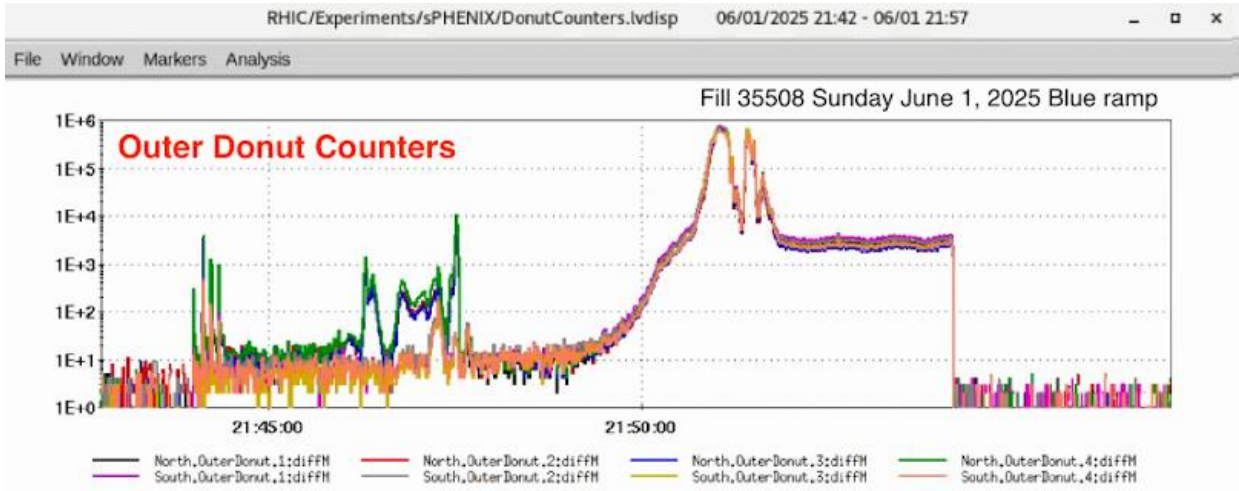
- TPC Digital Current firmware still under development by Instrumentation
  - Wednesday starts meetings for deployment

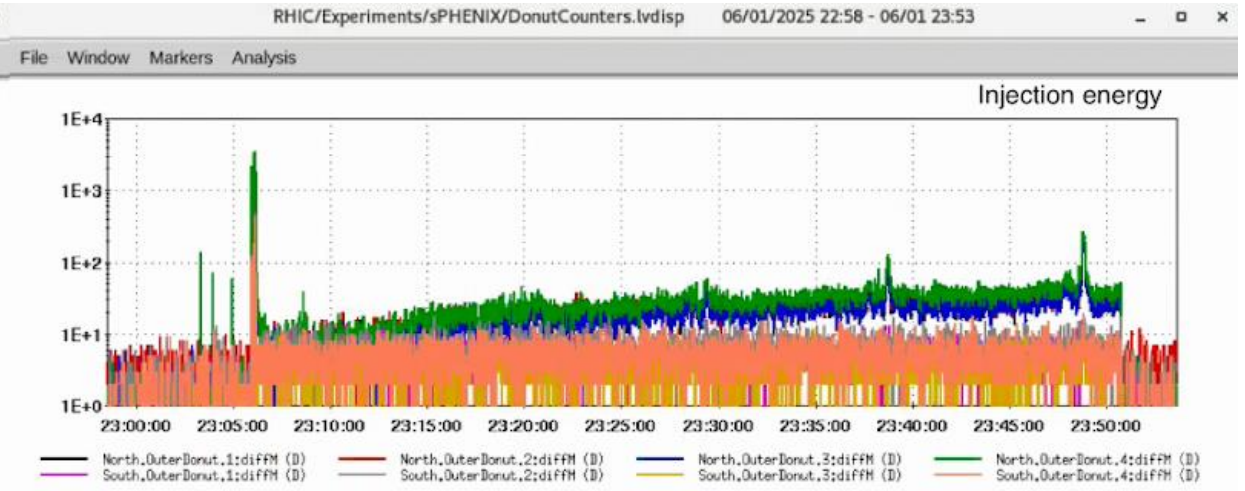
EMCal Saturation

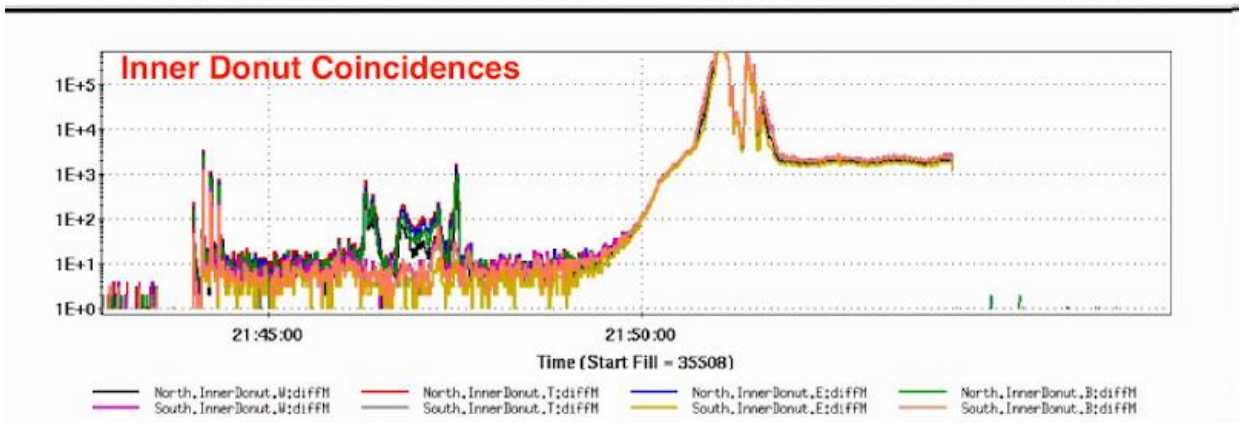


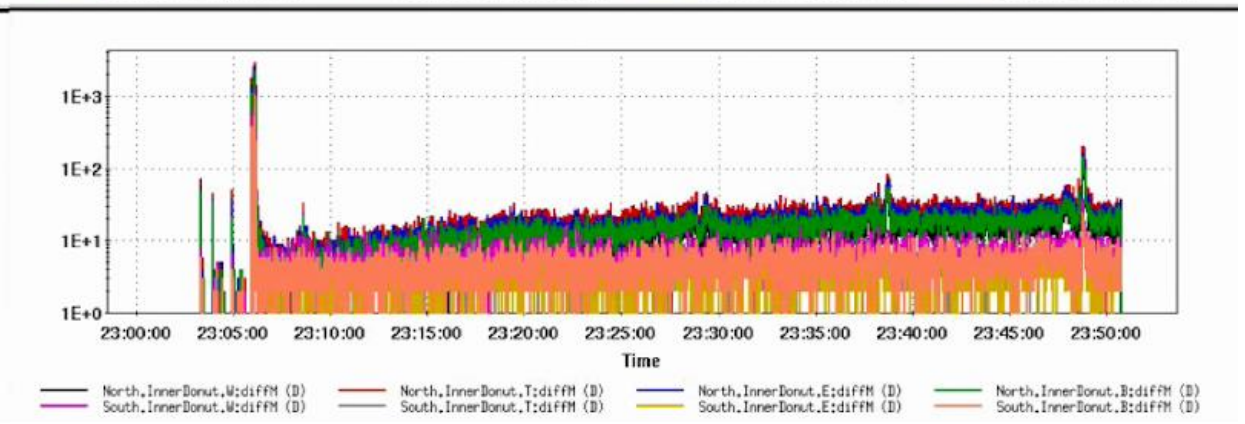
- EMCal towers were saturating at ~25 GeV in Run 24
- We want additional dynamic range, change the bias voltage so the saturation scale is higher
- Additionally, gain match the biases

Donuts Saw the Beam





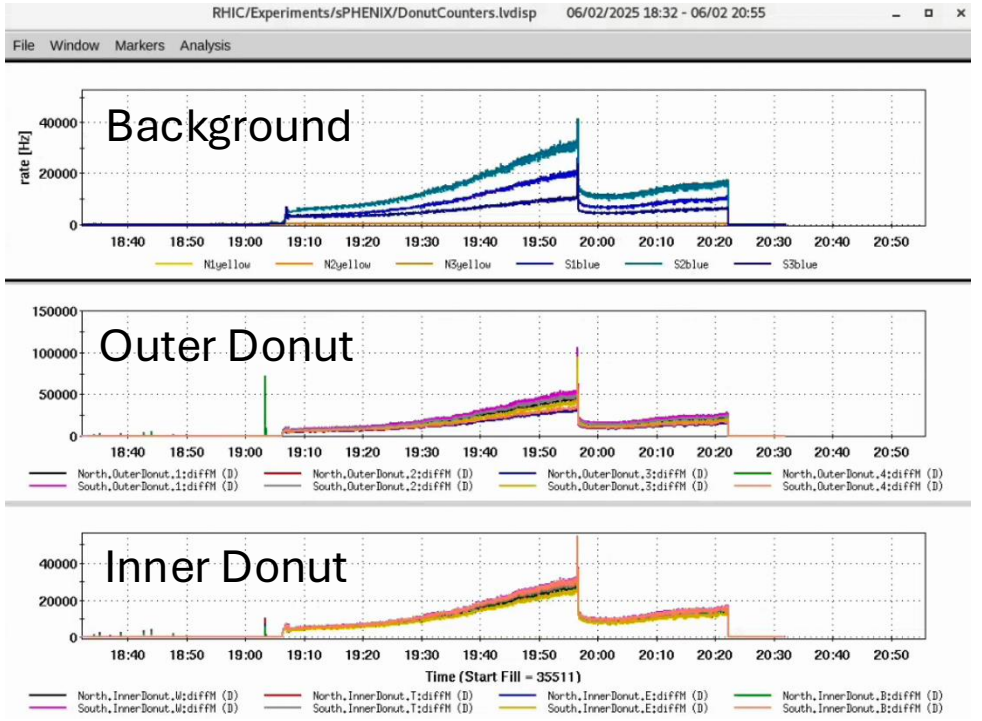




MVTX Tests

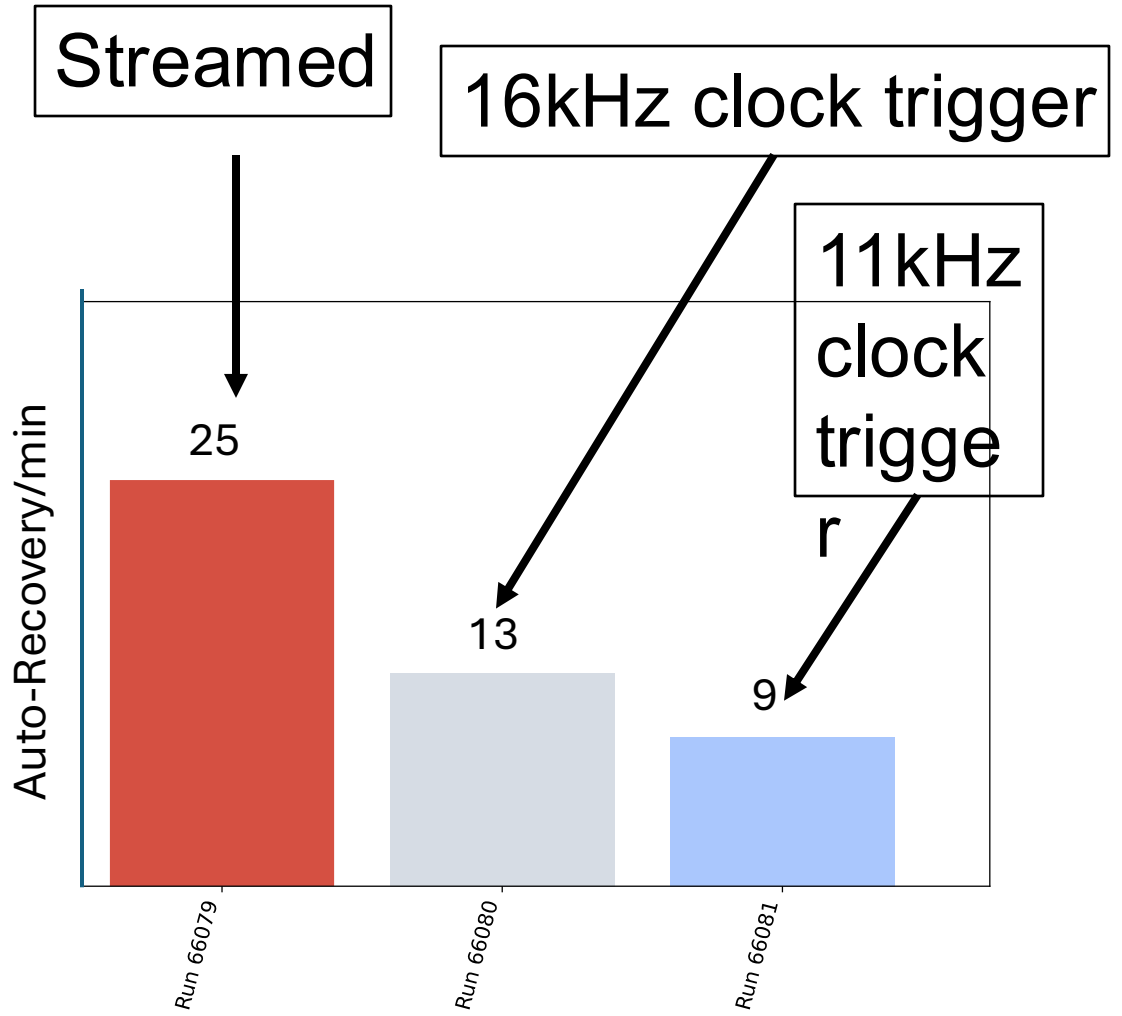
- We took a very short run to test the MVTX framework for our future tests
- Everything worked very well! We will be able to evaluate all the planned accelerator tests
  - Including a Figure of Merit (FOM) that connects physics to Auto-Recovery Rate
- Do not interpret the results as calibrations have not been applied

Background during MVTX Test Time

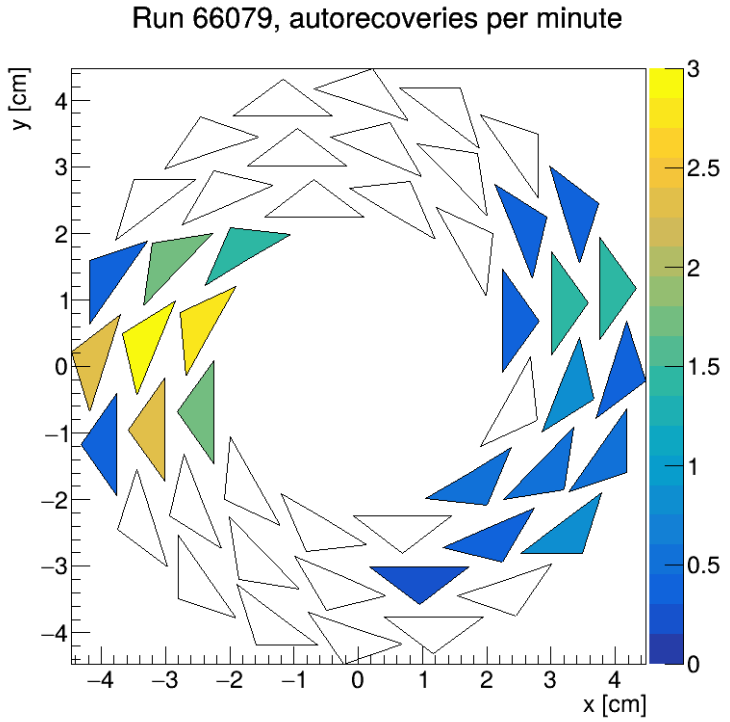


Exercising MVTX Auto-Recovery Analysis

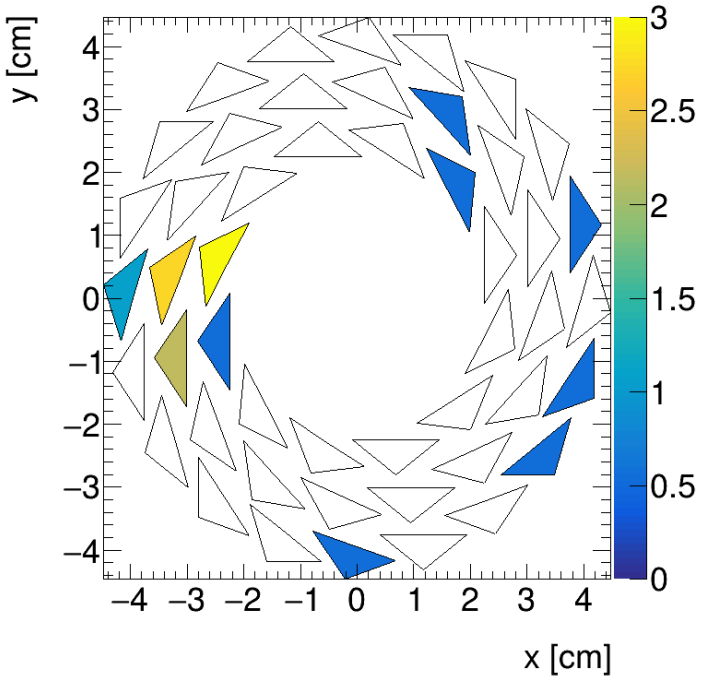
- Plot from Hao-Ren Jheng
- Value is over all 48 staves
- **Recall – each stave can have at most 3/min**



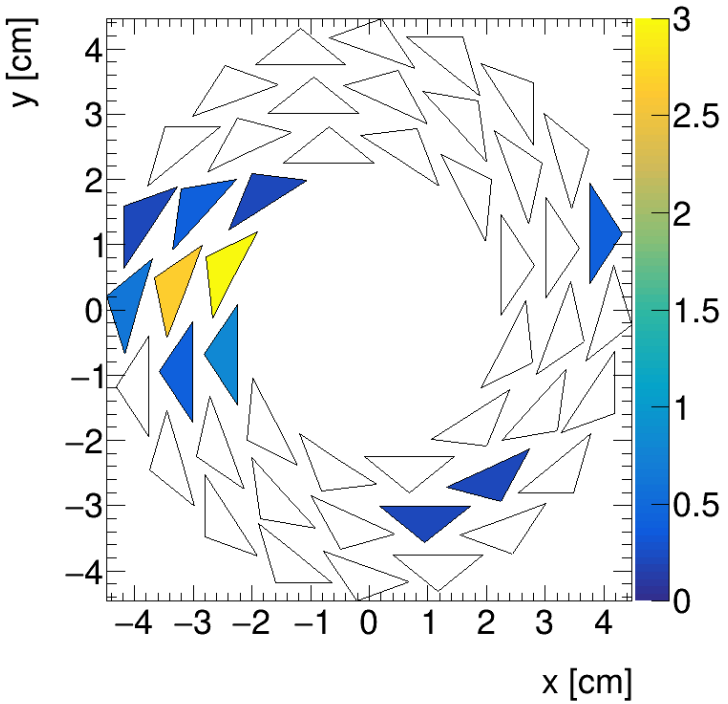
Auto-Recovery Rate Per Stave



Streamed



16 kHz trigger

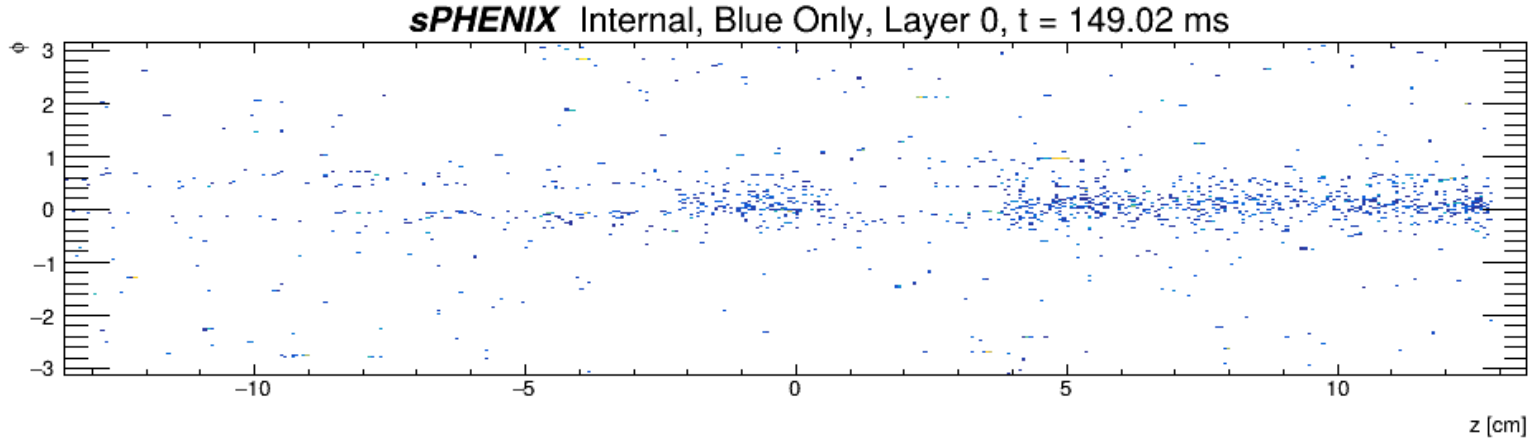


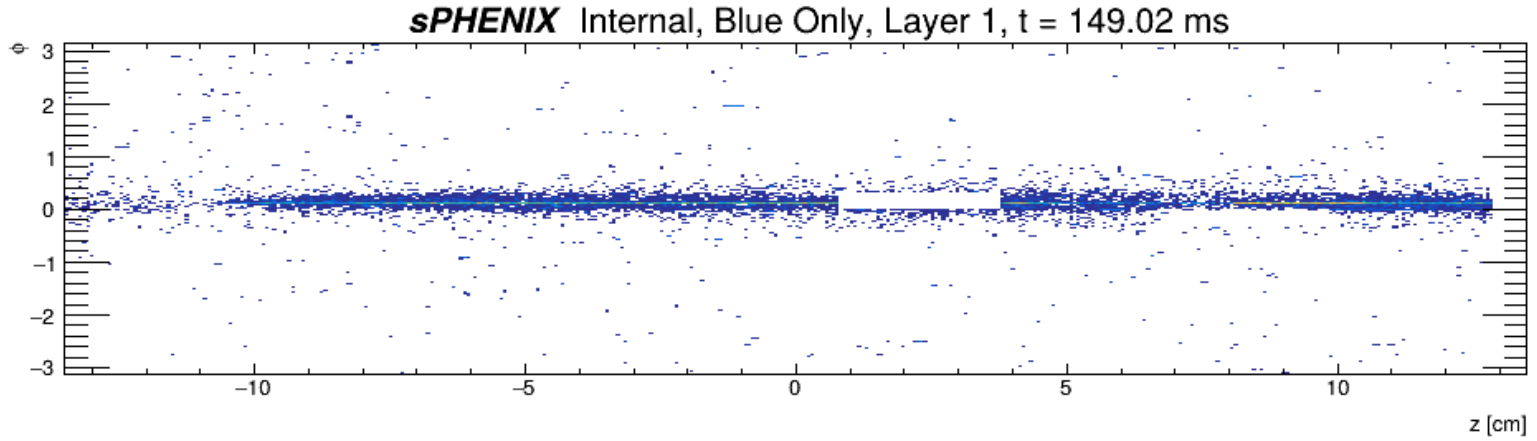
11 kHz trigger

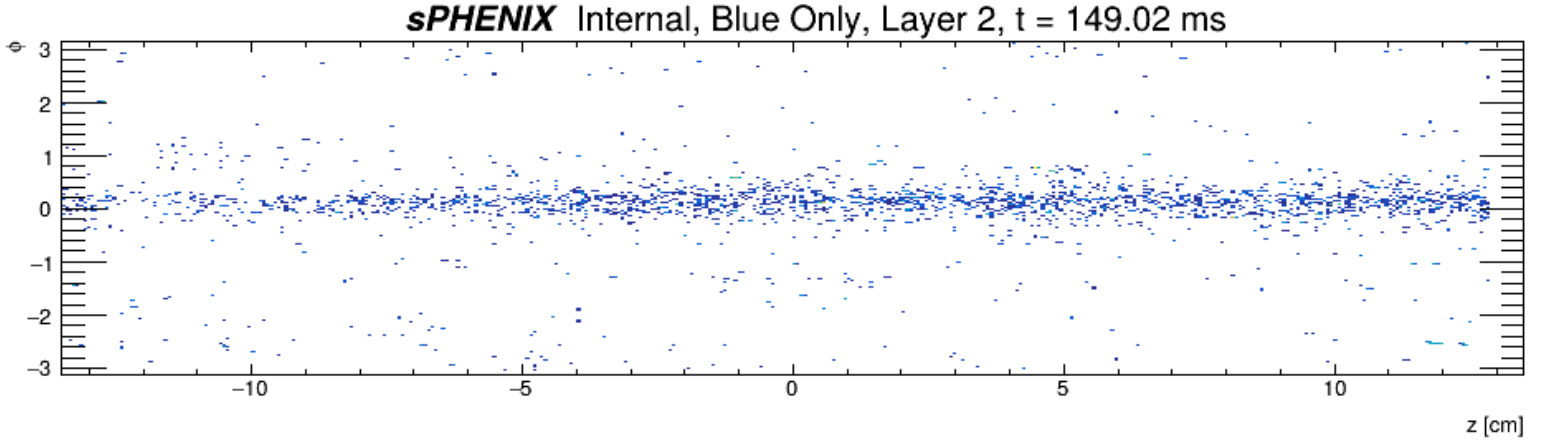
- Autorecovery takes ~ 20s. Max rate per stave is ~ 3

Select hit maps

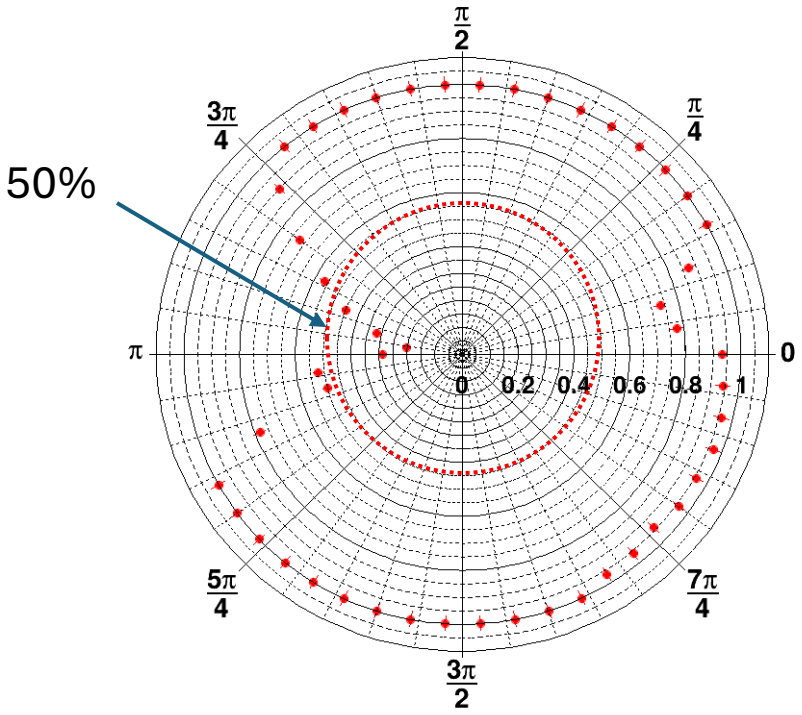
- Z is along beam axis (-z is south or incoming blue)
- Phi is around MVTX (phi = 0 is outside of the ring)



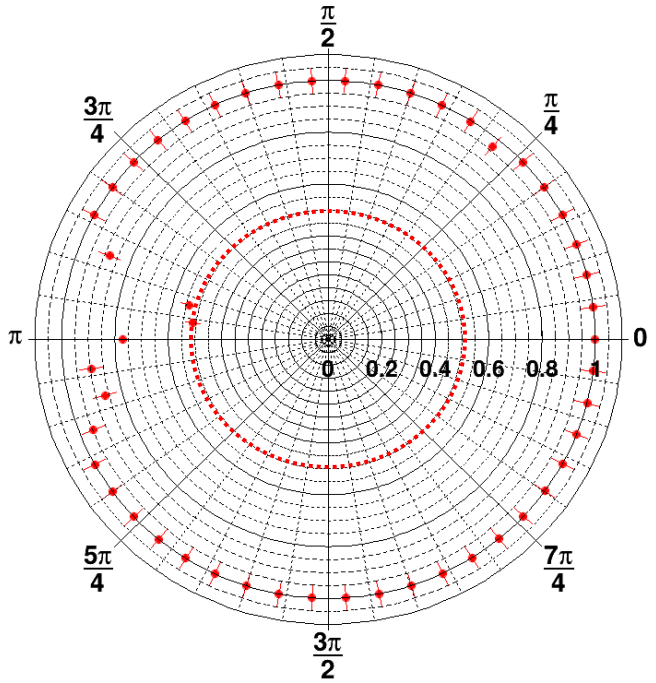




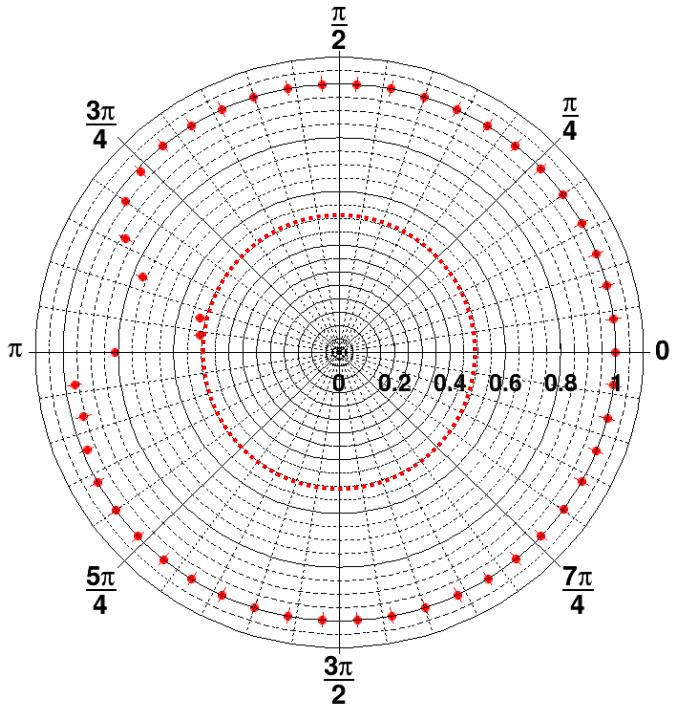
Testing Acceptance Analysis Chain Tracking FOM for Evaluation



Streamed



16 kHz trigger



11 kHz trigger

- Acceptance derived assuming 2 staves in a row are not simultaneously in autorecovery (does not account for low momentum

Conclusions

- MVTX tests last night allowed us to exercise our system, software and detectors
  - Train more junior MVTX Operators
  - Make sure the data flow allows for quick turn around and evaluation of conditions → Near Real Time Analysis!
- Donut Counters showed life and were well correlated with the background monitors
  - Calibration is still needed
  - June 6th is National Donut Day
- All other subsystems good to go!