

sPHENIX Status

RHIC Coordination Meeting

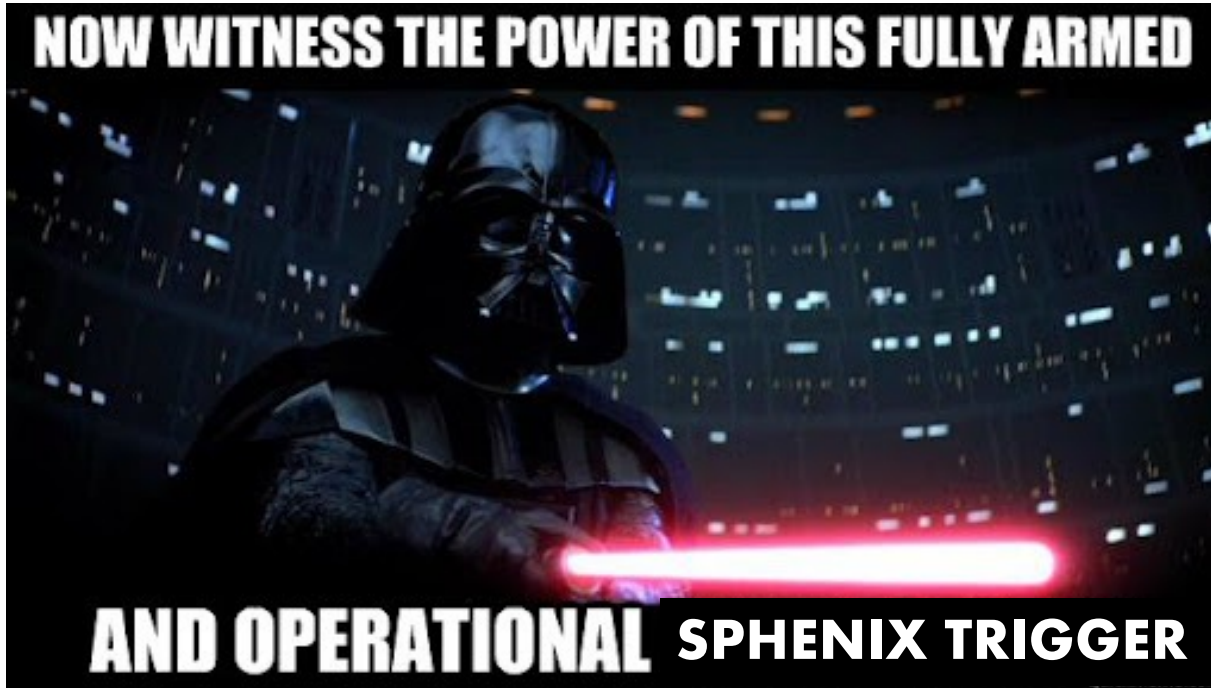
June 11, 2024

Jamie Nagle
University of Colorado Boulder
sPHENIX Run Coordinator

6/10/24

sPHENIX 2024



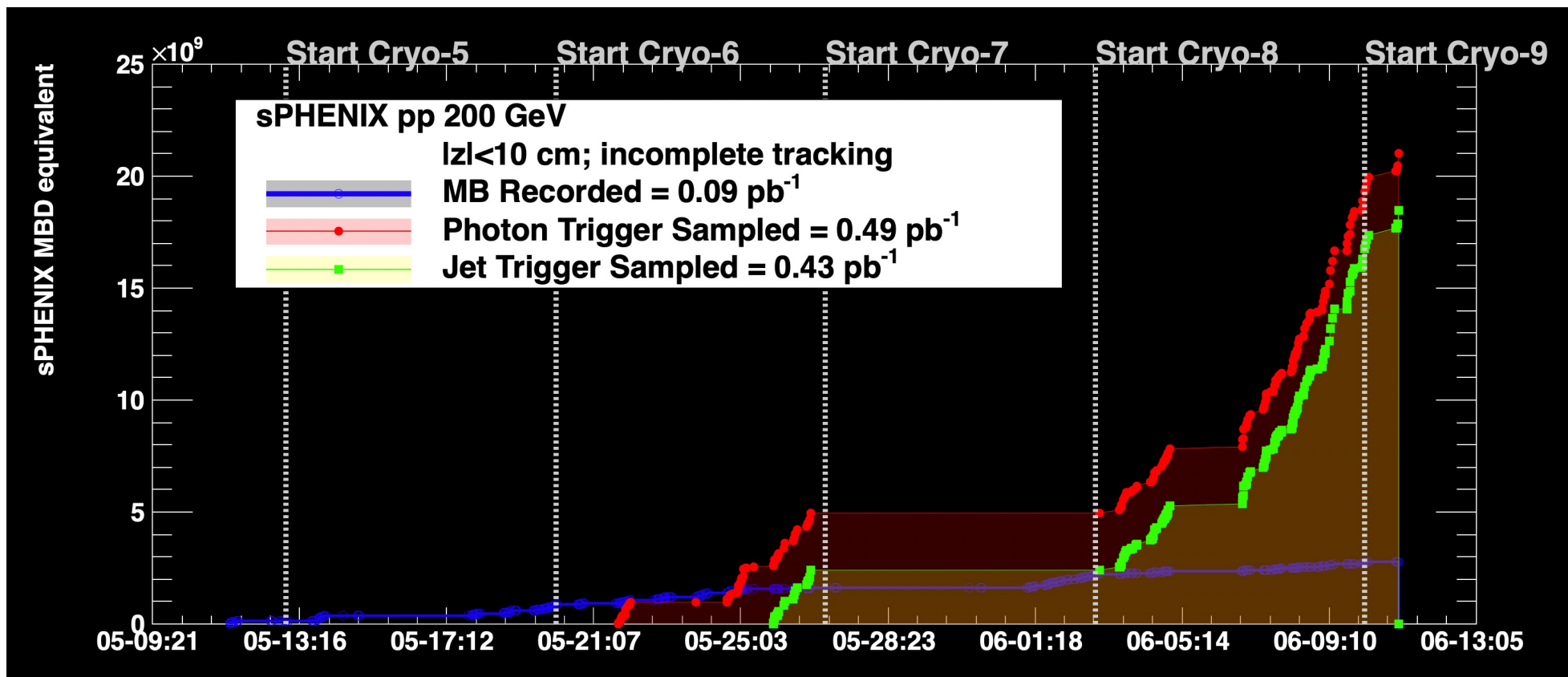


Photon > 4 GeV and Jet > 10 GeV
sampling full luminosity

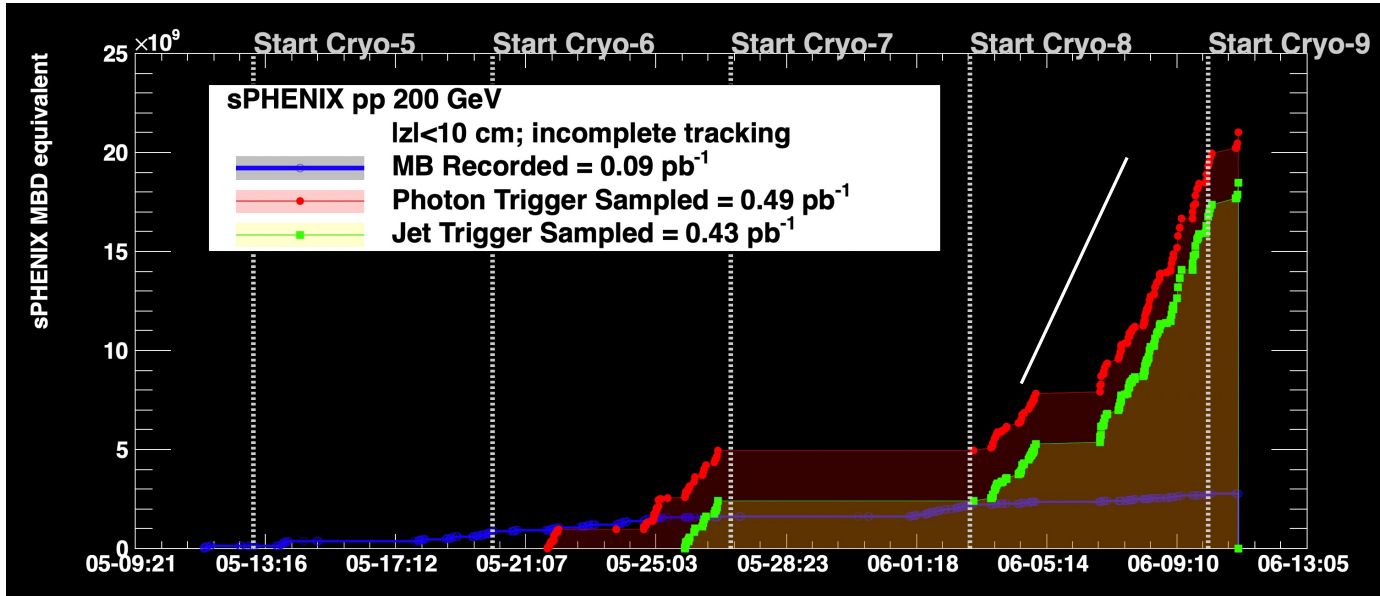
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		Trigger Control				
		Rejection Factors (MBD)				
		Raw	Live	Scaled	Livetime	
LL1 Server OK		Jet 4: 11	Photon 1: 3			
ZDCN+ZDCS/ZDC Coinc: 27.14		Jet 6: 113	Photon 2: 28			
MBD N+S >= 1/ZDC Coinc: 69.62		Jet 8: 756	Photon 3: 109			
		Jet 10: 1341	Photon 4: 372			
0: Clock	off	Modify	9383.00 kHz	9253.17 Hz	0.00 kHz	98.62%
1: ZDC South	off	Modify	37.37 kHz	36.84 Hz	0.00 kHz	98.60%
2: ZDC North	off	Modify	33.65 kHz	33.18 Hz	0.00 kHz	98.59%
3: ZDC Coincidence	32	Modify	2.62 kHz	2.58 Hz	0.08 kHz	98.70%
4: HCAL Singles	off	Modify	1.62 kHz	1.59 Hz	0.00 kHz	98.50%
5: HCAL Coincidence	off	Modify	9383.02 kHz	9253.19 Hz	0.00 kHz	98.62%
8: MBD S >= 1	off	Modify	292.56 kHz	288.39 Hz	0.00 kHz	98.57%
9: MBD N >= 1	off	Modify	289.25 kHz	285.13 Hz	0.00 kHz	98.58%
10: MBD N&S >= 1	70	Modify	182.02 kHz	179.44 Hz	2.53 kHz	98.58%
11: MBD N&S >= 2	off	Modify	88.79 kHz	87.53 Hz	0.00 kHz	98.58%
12: MBD N&S >= 1, vtx < 10 cm	off	Modify	48.01 kHz	47.34 Hz	0.00 kHz	98.60%
13: MBD N&S >= 1, vtx < 30 cm	off	Modify	116.96 kHz	115.29 Hz	0.00 kHz	98.58%
14: MBD N&S >= 1, vtx < 60 cm	off	Modify	172.66 kHz	170.22 Hz	0.00 kHz	98.59%
15: HCAL Singles + MBD NS >= 1	off	Modify	23.29 kHz	22.96 Hz	0.00 kHz	98.59%
16: Jet 4 GeV + MBD NS >= 1	off	Modify	15.90 kHz	15.68 Hz	0.00 kHz	98.60%
17: Jet 6 GeV + MBD NS >= 1	0	Modify	1.59 kHz	1.57 Hz	1.57 kHz	98.48%
18: Jet 8 GeV + MBD NS >= 1	0	Modify	0.24 kHz	0.24 Hz	0.24 kHz	98.06%
19: Jet 10 GeV + MBD NS >= 1	0	Modify	0.13 kHz	0.13 Hz	0.13 kHz	98.29%
20: Jet 4 GeV	off	Modify	30.52 kHz	30.09 Hz	0.00 kHz	98.58%
21: Jet 6 GeV	1	Modify	3.21 kHz	3.16 Hz	1.58 kHz	98.49%
22: Jet 8 GeV	0	Modify	0.55 kHz	0.54 Hz	0.54 kHz	98.28%
23: Jet 10 GeV	0	Modify	0.33 kHz	0.32 Hz	0.32 kHz	98.25%
24: Photon 1 GeV + MBD NS >= 1	off	Modify	51.14 kHz	50.42 Hz	0.00 kHz	98.59%
25: Photon 2 GeV + MBD NS >= 1	off	Modify	6.25 kHz	6.16 Hz	0.00 kHz	98.56%
26: Photon 3 GeV + MBD NS >= 1	0	Modify	1.66 kHz	1.63 Hz	1.63 kHz	98.57%
27: Photon 4 GeV + MBD NS >= 1	0	Modify	0.49 kHz	0.48 Hz	0.48 kHz	98.77%
28: Photon 1 GeV	off	Modify	229.01 kHz	225.84 Hz	0.00 kHz	98.61%
29: Photon 2 GeV	off	Modify	12.28 kHz	12.11 Hz	0.00 kHz	98.59%
30: Photon 3 GeV	1	Modify	3.31 kHz	3.27 Hz	1.63 kHz	98.64%
31: Photon 4 GeV	0	Modify	1.02 kHz	1.01 Hz	1.01 kHz	98.73%



- This is high quality photon and jet physics data
- MVTX and INTT tracking are in these runs; we are working on “data dropping” issue during streaming readout
- TPC is not in operational, physics mode for these runs



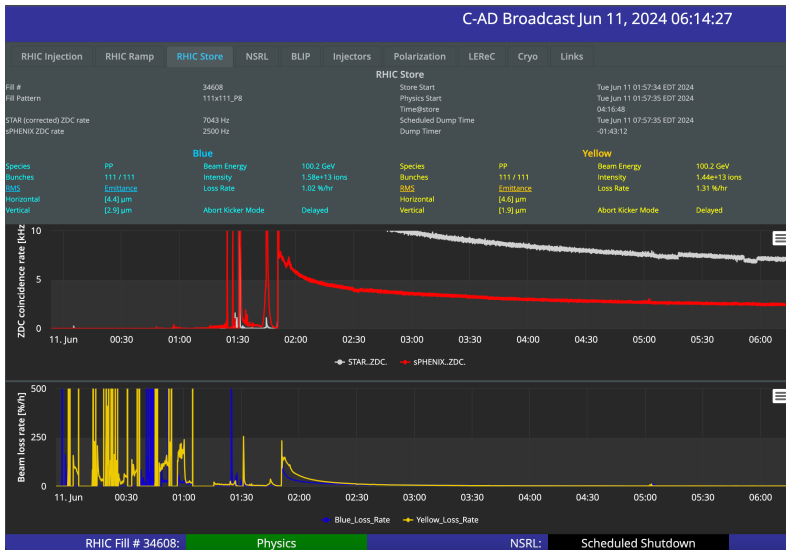
If one takes the best slope, it will take 50 weeks to get to goal of 45 pb^{-1} .

However, luminosity is x2 below Run-15 levels, and we are hoping for another x2 from higher bunch intensities, β squeeze. That would reduce things to 12.5 weeks.

Note that uptime will also be an important consideration.

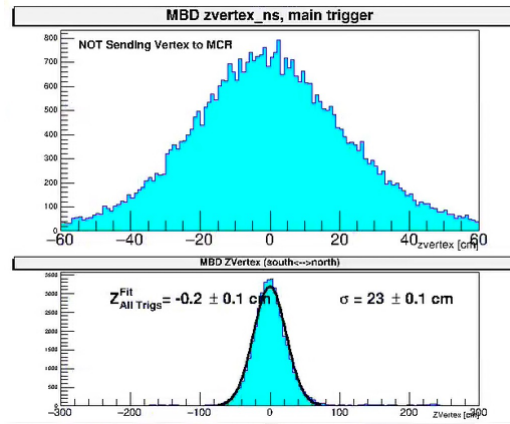
For γ -jet we are already counting; however, not for track-based physics (e.g., Y).

For the next couple of days, since we are not running the full tracking (following Wolfram's suggestion), sPHENIX switched from -2 mrad to -1.2 mrad (more luminosity for jet/photons, though wider z-vertex).



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Run #45390 Events: 46602 Date: Tue Jun 11 03:46:53 2024

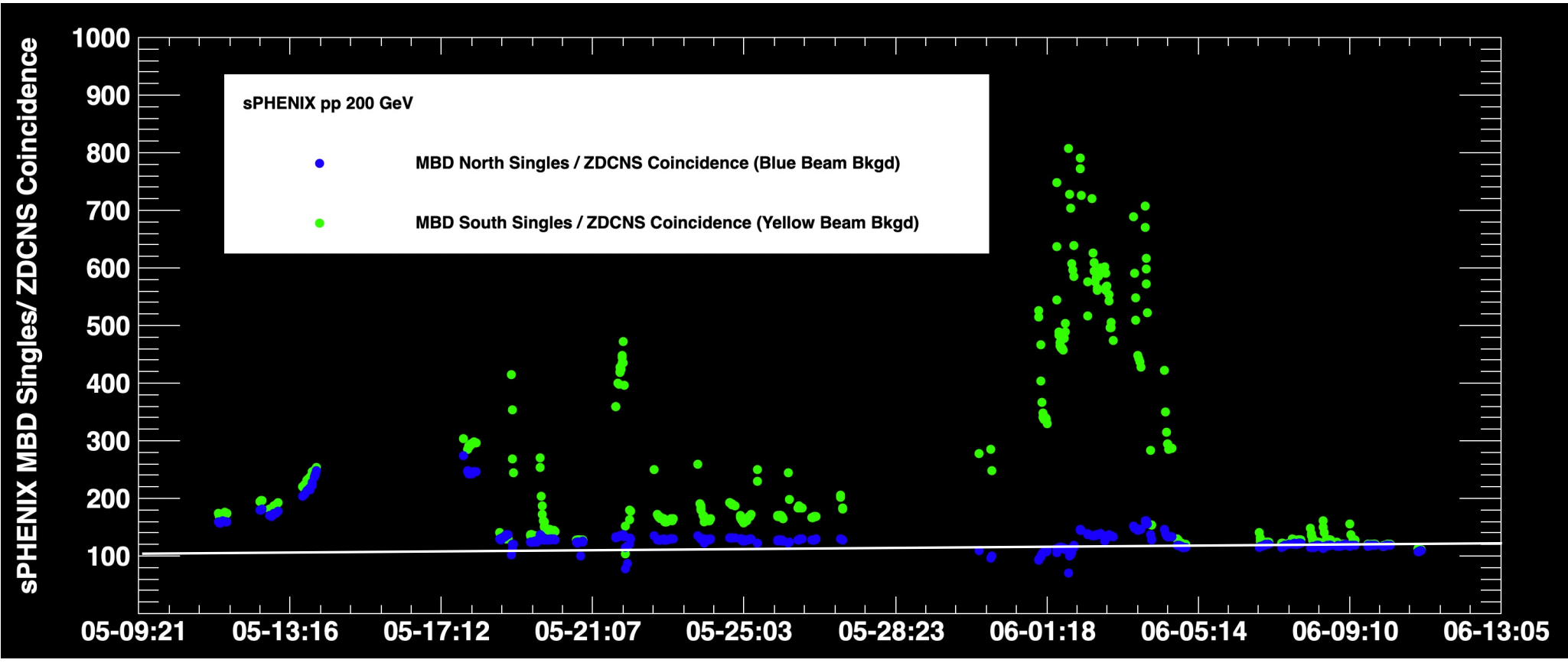


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Trigger Control

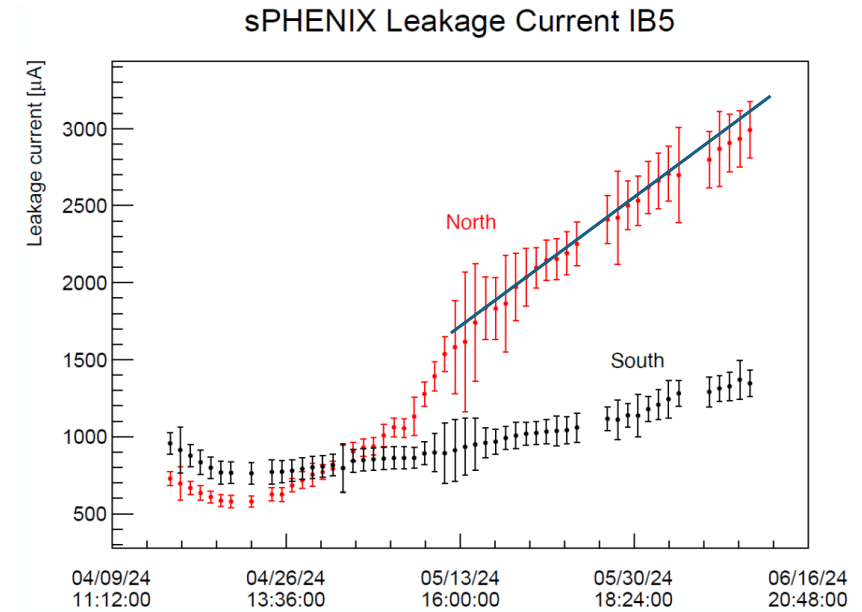
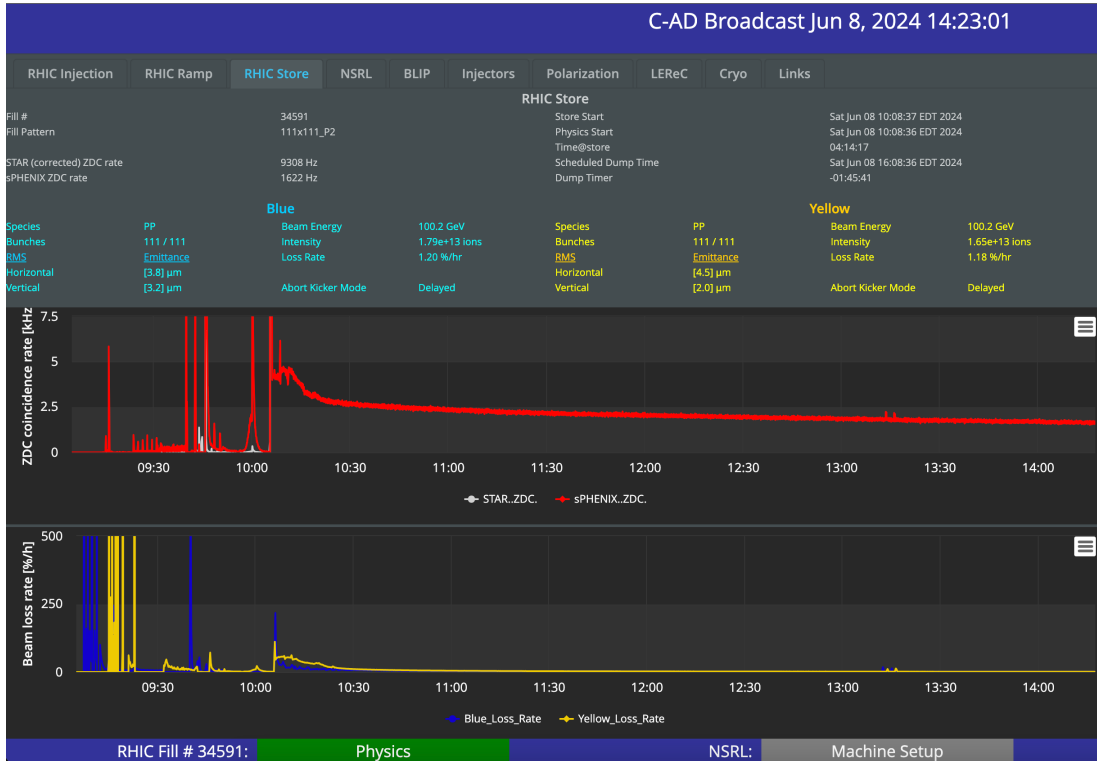
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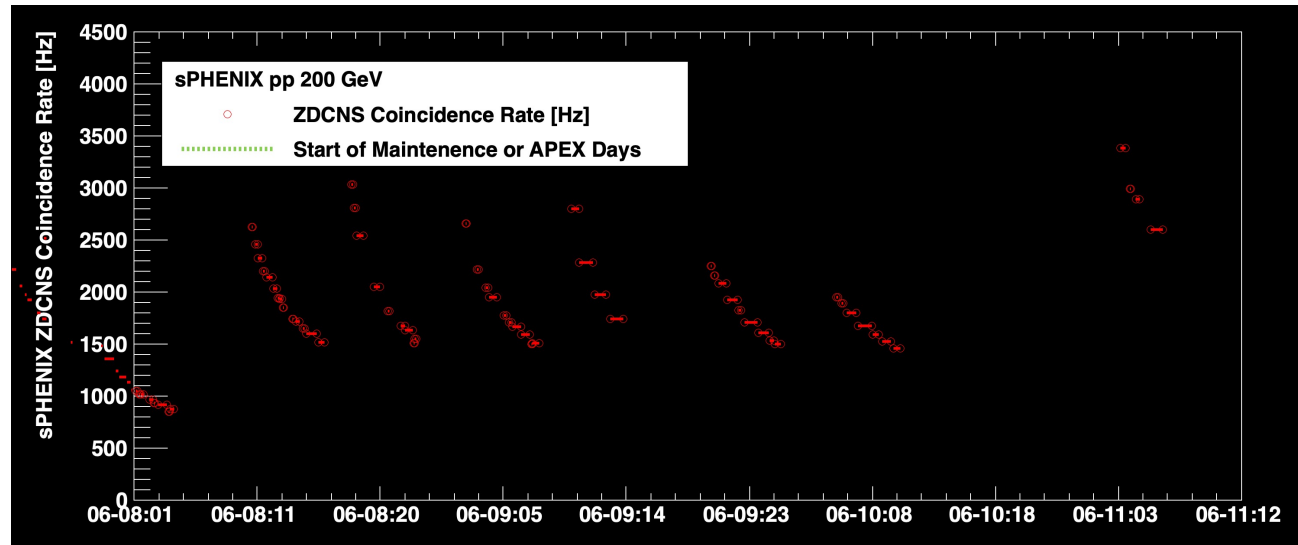
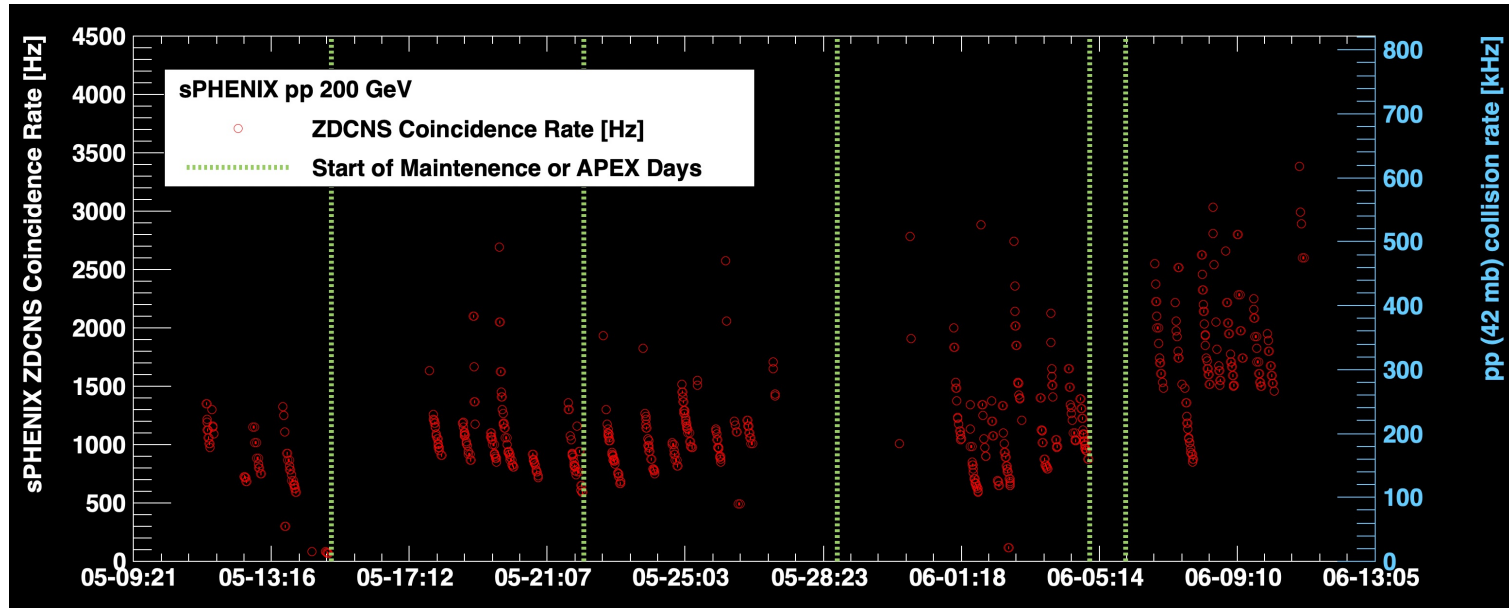


120 is approximately the value expected just from the physics cross section;
 therefore, almost no additional background in MBD.

Comment on the start of stores....

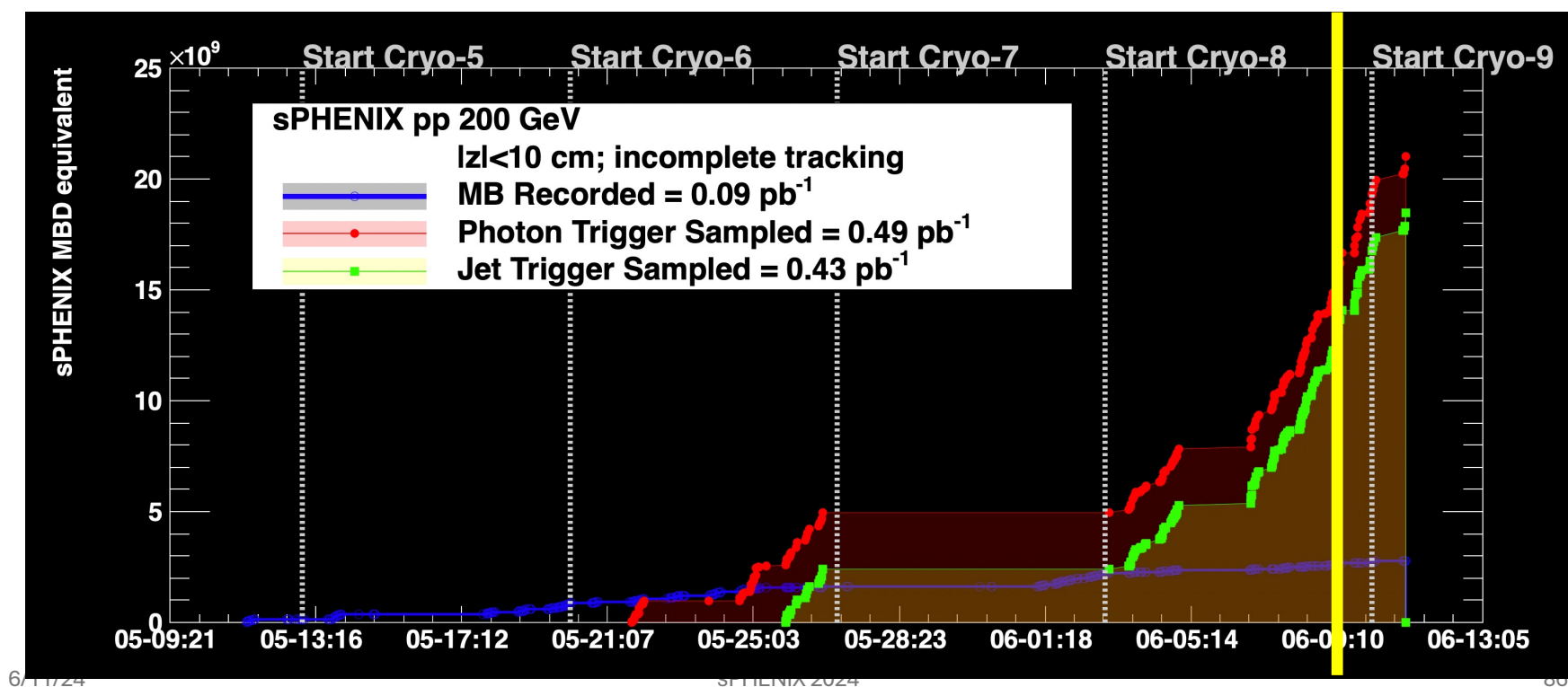


Rates and sPHENIX data taking stability status



sPHENIX Spin Team checked the GL1p scaler for recent runs and identified the run the GL1p started functioning correctly is Run#45235 (June 9th 2:29AM).

This is going to be official start of sPHENIX Spin physics data taking (luminosity counting starts from this run).



TPC plan and schedule this week

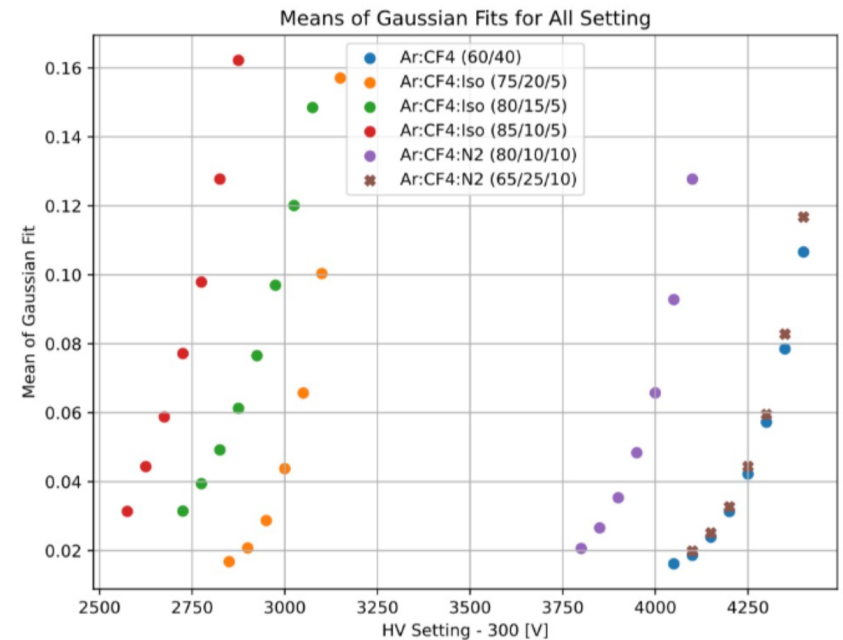
TPC group has been checking different gas mixtures in “canary chamber”. Goal is to run at high gain setpoint with lower sparking.

Decision to change to Nitrogen admixture today.

Will give update in the next days.

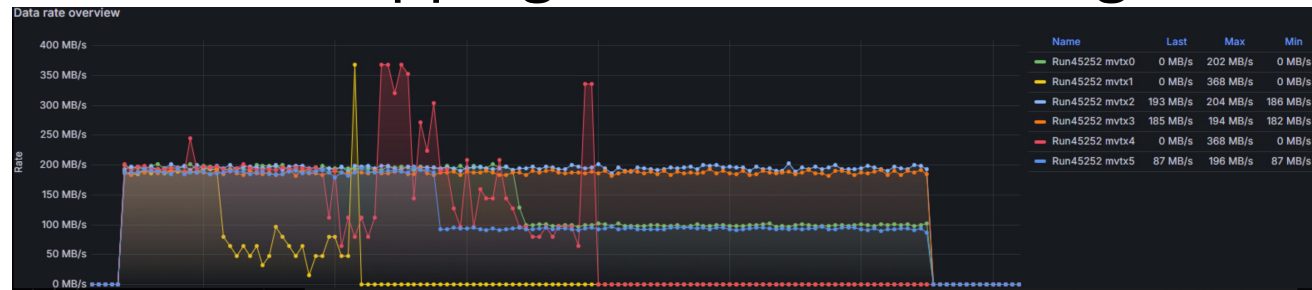
One decided, 5 turnovers in one day and then can test new working point next day.

In parallel, working on firmware and zero suppression tests.



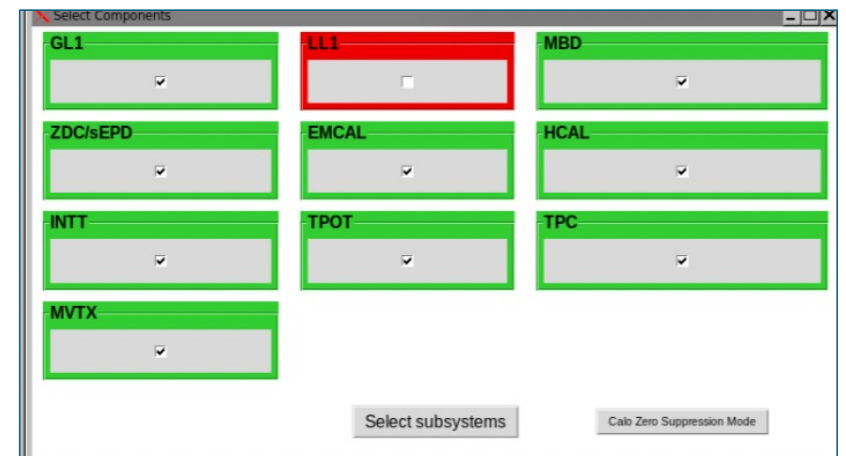
Other major goals this week

(1) Work session today on "data dropping" issue in streaming detectors and also bbox / Lustre issues.



(2) Work session Wednesday on "BCO" data alignment for MVTX, INTT, TPOT

Note we are often running with full detector suite for checking DAQ/firmware, but just not with TPC at "physics mode" voltage.



Taco Party at sPHENIX last night!



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