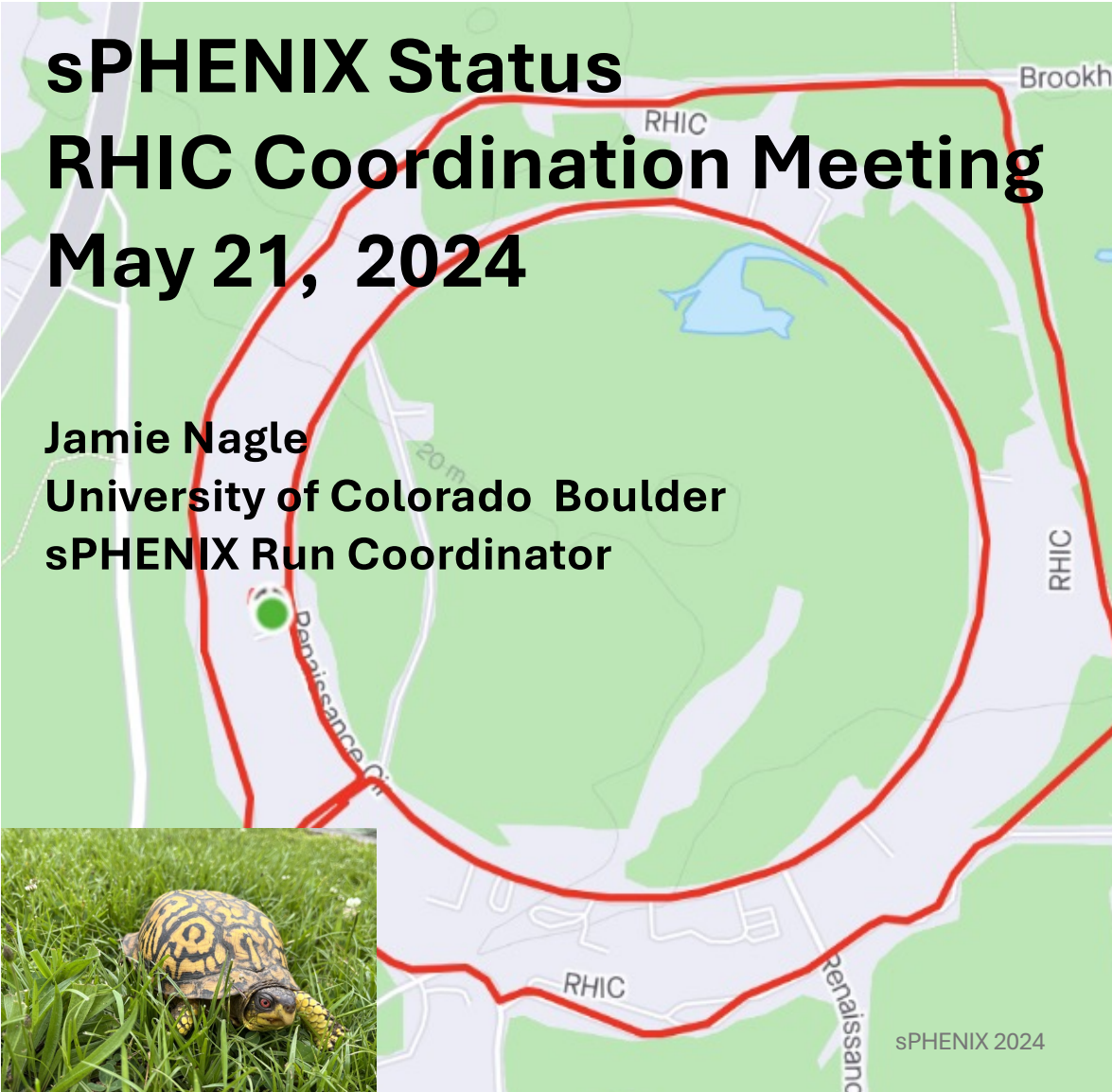


sPHENIX Status

RHIC Coordination Meeting

May 21, 2024

Jamie Nagle
University of Colorado Boulder
sPHENIX Run Coordinator

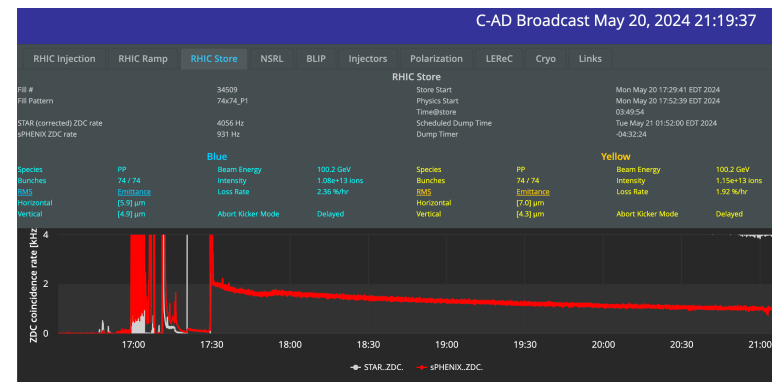
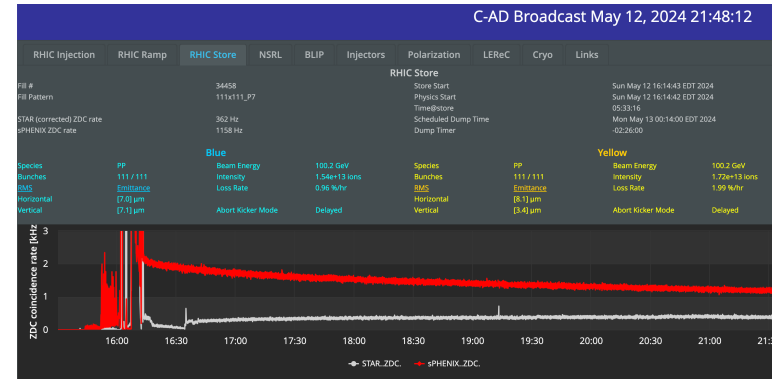
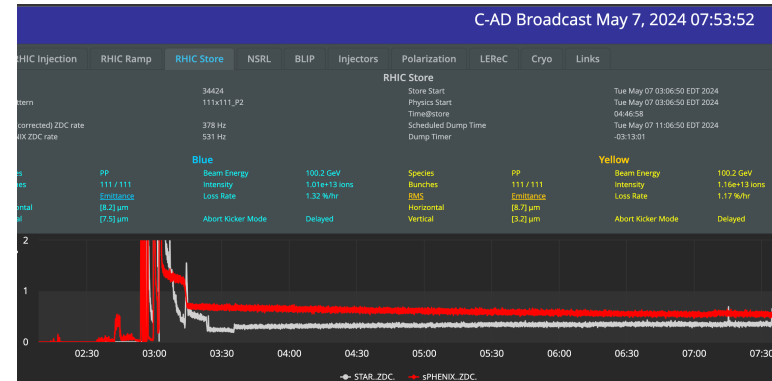


Progress in the Last Week

- Delivered collision rate improving:
sPHENIX ZDCNS rate: 700 → 2000 Hz
at the start of physics in store
(x2.5 below Run2015, x5.0 below run goal)
- Somewhat stalled at this point, though
improvement in bunch intensity with 56x56
and 74x74 runs.
- Luminosity is most critical to sPHENIX
Polarization is secondary.
Important that this is reflected in priorities.

5/20/24

sPHENIX 2024

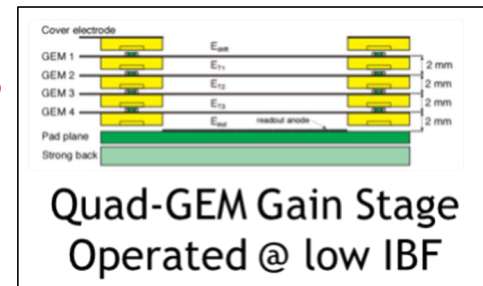


TPC Progress Report

TPC holds HV in region of optimal gain for cosmic data taking

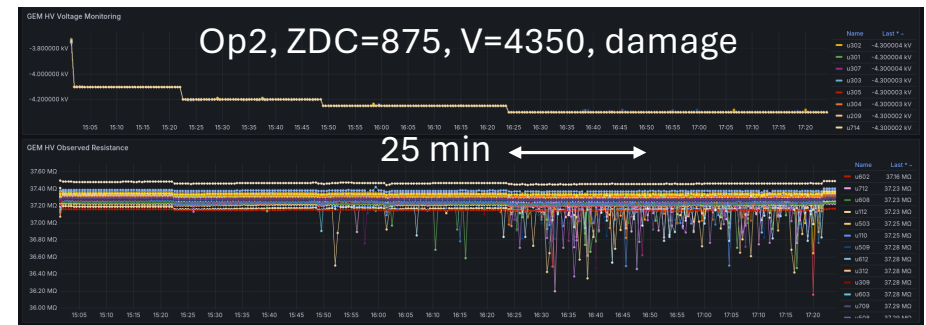
TPC does not hold HV in region of optimal gain with collisions

- Hypothesis: *Probably is in the GEM4 which is at highest Voltage*
- Test: *Last Wednesday changed Resistor Chain configuration to lower GEM4 Voltage by 15%*
This is not a running option (IBF too high)
- Result: *No significant improvement*



Mini-Review on Monday, May 20, 2024

- *Plan to change R-Chain back on Maintenance Day (Wednesday, May 22, 2024)*
- *Run with lower Voltage for now*
- *Developing tests to increase gain*

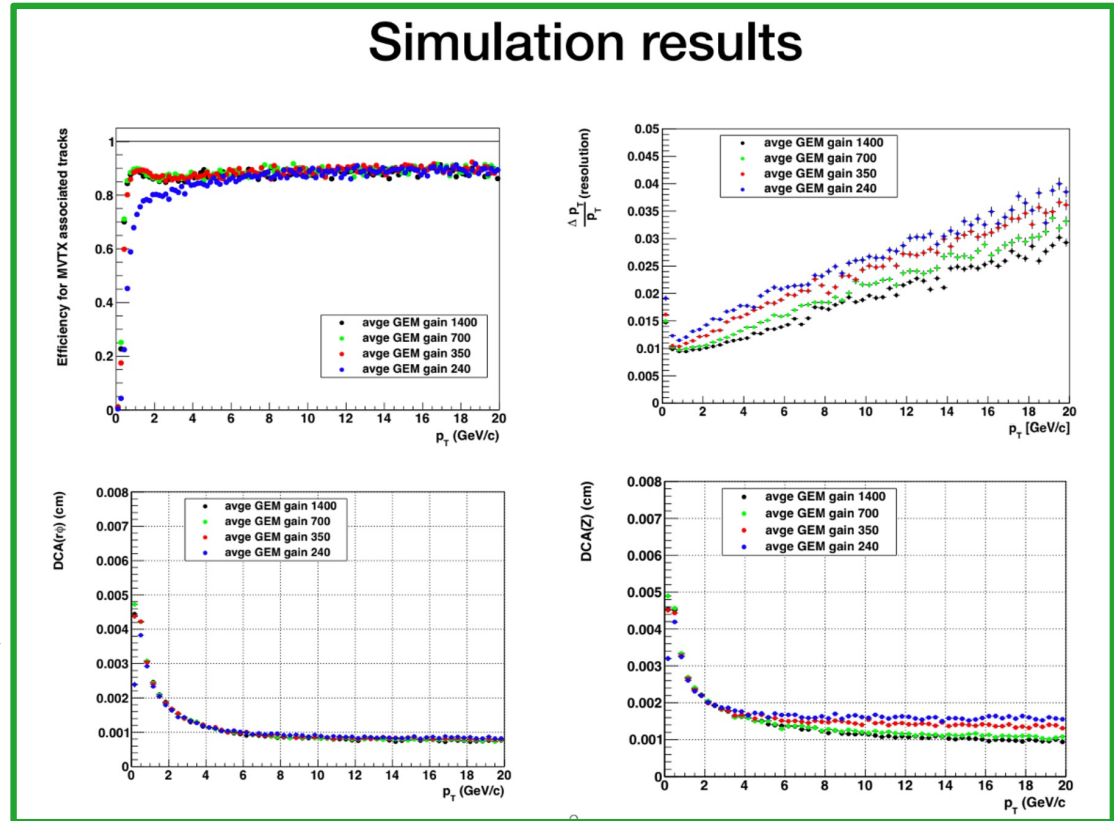


sPHENIX needs to gain experience continuously running TPC.

sPHENIX ran a test of full SAMPA chip zero suppression yesterday with the diffuse laser running.

Plan to run for now at lower Voltage with lower gain (but no damage).

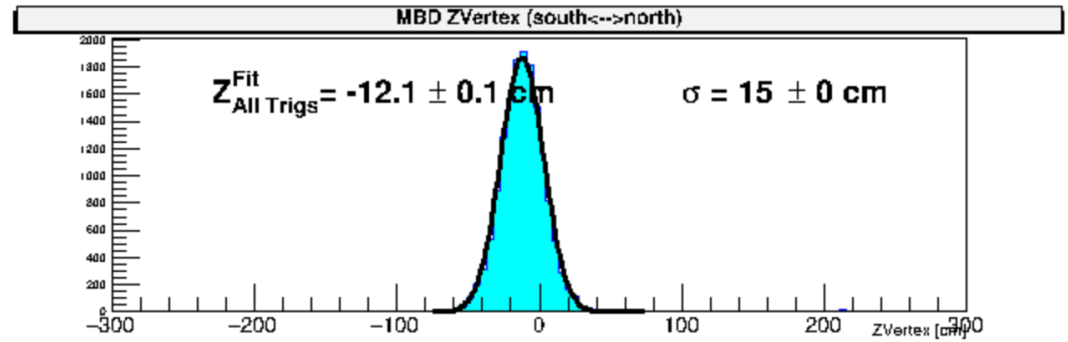
This has implications for the sPHENIX physics program.



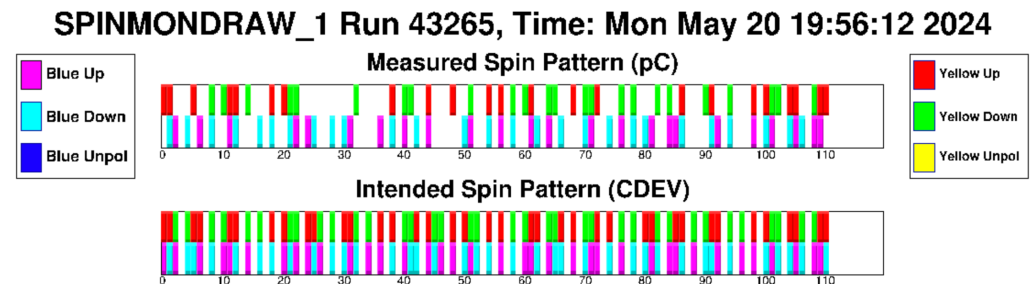
Continue to push in parallel for better working point.

Also, need to understand potential contributions of large background related to larger emittance. Will request steering out of collisions...

Preparing to send z-vertex mean and sigma to C-AD for collision centering in automated way this next week.



Struggling a bit to see neutron spin polarization. Still debugging.



Magnet suffered from fast-discharge due to cryo interlock (caused by lost cryo communication that also aborted the beam in RHIC) ~10:42 am. It was ramped back up to the top field around 7:49 pm after a new store was established

It'll be good to know the cause of the “cryo communication” issue.

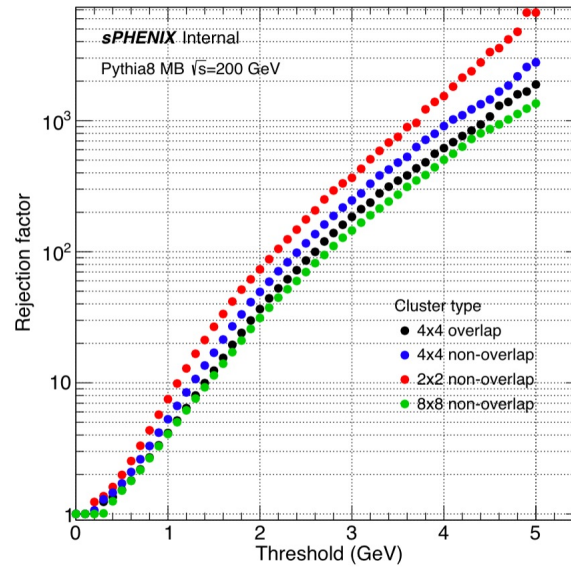
Major progress this past week

- Multi-Event Buffering working: running at 15 kHz with $> 90\%$ livetime
- MVTX now running with 10 microsecond strobe length
- INTT almost timed in to one beam crossing as required
- Significant improvement in OnlineMonitoring / Error Checking
- Shift Crews running data taking sessions
- Rare event photon trigger now online (full evaluation underway)
- Rare jet trigger being commissioned

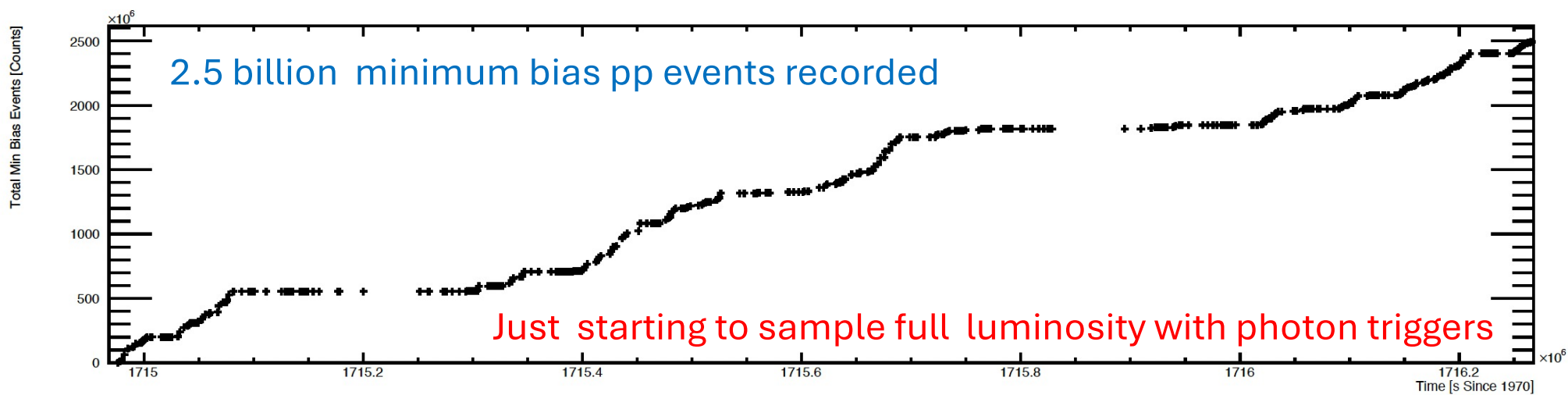
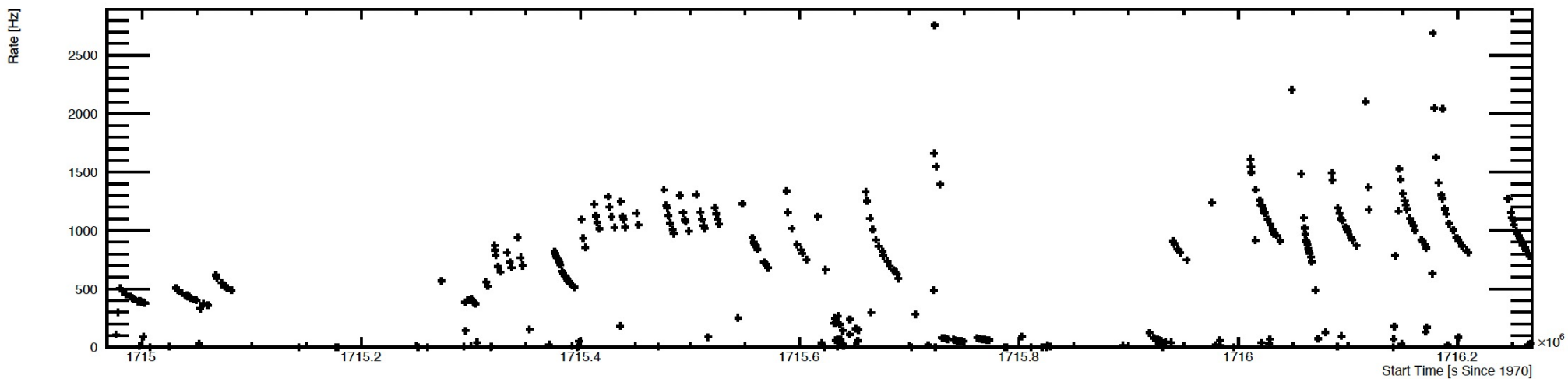
Starting “Physics Running”
for Jet & Photon Program this week

Rare Event Triggers Running

Running 4-photon thresholds and checking turn on curves and rejections.



		Trigger Control			
		Raw	Live	Scaled	Lifetime
LL1 Server OK		ZDC N+ZDCS/ZDC Coinc. 30 Hz			
		MBD N+S => 1/ZDC Coinc. 77 Hz			
0: Clock	off	9383000.00 Hz	9166298.20 Hz	0.00 Hz	95.75%
1: ZDC South	off	15070.51 Hz	14659.86 Hz	0.00 Hz	95.35%
2: ZDC North	off	13602.84 Hz	12911.76 Hz	0.00 Hz	93.02%
3: ZDC Coincidence	off	935.77 Hz	889.07 Hz	0.00 Hz	93.19%
4: HCAL Singles	off	0.00 Hz	0.00 Hz	0.00 Hz	0.00%
5: HCAL Coincidence	off	9383000.00 Hz	9166298.42 Hz	0.00 Hz	95.75%
8: MBD S >= 1	off	121259.37 Hz	118429.70 Hz	0.00 Hz	95.71%
9: MBD N >= 1	off	118336.08 Hz	115521.10 Hz	0.00 Hz	95.70%
10: MBD N&S >= 1	5	73713.45 Hz	72016.65 Hz	12002.74 Hz	95.75%
11: MBD N&S >= 2	off	38428.32 Hz	37516.23 Hz	0.00 Hz	95.75%
12: MBD N&S >= 1, vtx < T1	off	26301.92 Hz	25686.05 Hz	0.00 Hz	95.75%
13: MBD N&S >= 1, vtx < T2	off	57975.53 Hz	56619.45 Hz	0.00 Hz	95.76%
14: MBD N&S >= 1, vtx < T3	off	72594.82 Hz	70914.03 Hz	0.00 Hz	95.75%
15: HCAL Singles + MBD NS >= 1	off	70.16 Hz	67.97 Hz	0.00 Hz	96.04%
16: Jet 1 + MBD NS >= 1	off	6.36 Hz	6.14 Hz	0.00 Hz	94.54%
17: Jet 2 + MBD NS >= 1	off	1.53 Hz	1.32 Hz	0.00 Hz	92.48%
18: Jet 3 + MBD NS >= 1	off	0.44 Hz	0.44 Hz	0.00 Hz	93.51%
19: Jet 4 + MBD NS >= 1	off	0.00 Hz	0.00 Hz	0.00 Hz	100.00%
20: Jet 1	off	35.52 Hz	17.32 Hz	0.00 Hz	48.45%
21: Jet 2	off	10.09 Hz	4.60 Hz	0.00 Hz	48.03%
24: Photon 1 + MBD NS >= 1	0	253.24 Hz	246.22 Hz	246.22 Hz	95.76%
25: Photon 2 + MBD NS >= 1	off	71.48 Hz	70.16 Hz	0.00 Hz	95.92%
26: Photon 3 + MBD NS >= 1	off	21.05 Hz	20.17 Hz	0.00 Hz	95.97%
27: Photon 4 + MBD NS >= 1	off	7.45 Hz	7.02 Hz	0.00 Hz	95.48%
30: Photon 3	off	52.18 Hz	50.43 Hz	0.00 Hz	95.89%
31: Photon 4	off	19.51 Hz	18.86 Hz	0.00 Hz	95.86%



DOE Mile Race Earlier Today!



DOE Mile Race Earlier Today!

