



RHIC Coordination Meeting

Kin Yip

Oct. 3, 2023

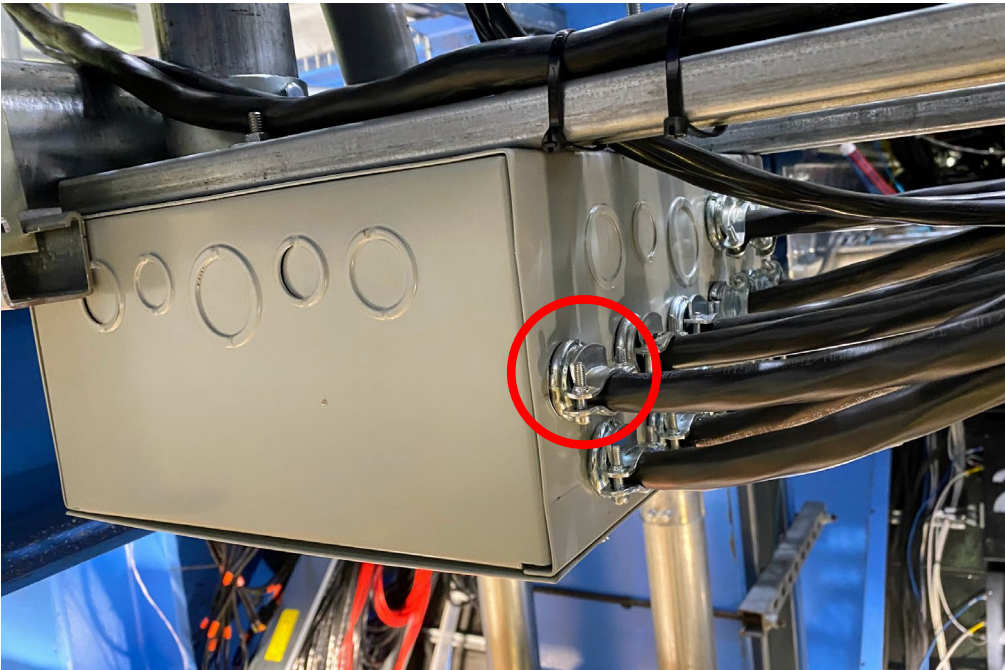


Status before and during this shutdown

- August 5: switched to 2-person shifts
- September 5: begin preparation for TPC diagnostics/repair
- September 13: INTT turned off in preparation for TPC repair
 - End of cosmics data taking for all tracking detectors
- September 15: begin TPC diagnostic/repair
- September 29, 24:00 h: end of shift operation
 - Beginning of shutdown
- Noon, Monday, October 2: End of Run Party!
- October 10 – 27: electrical work: all racks off except for TPC
 - The water-group is also helping us to implement some additional controls.
- December (?): tentative start of shift for Run 2024

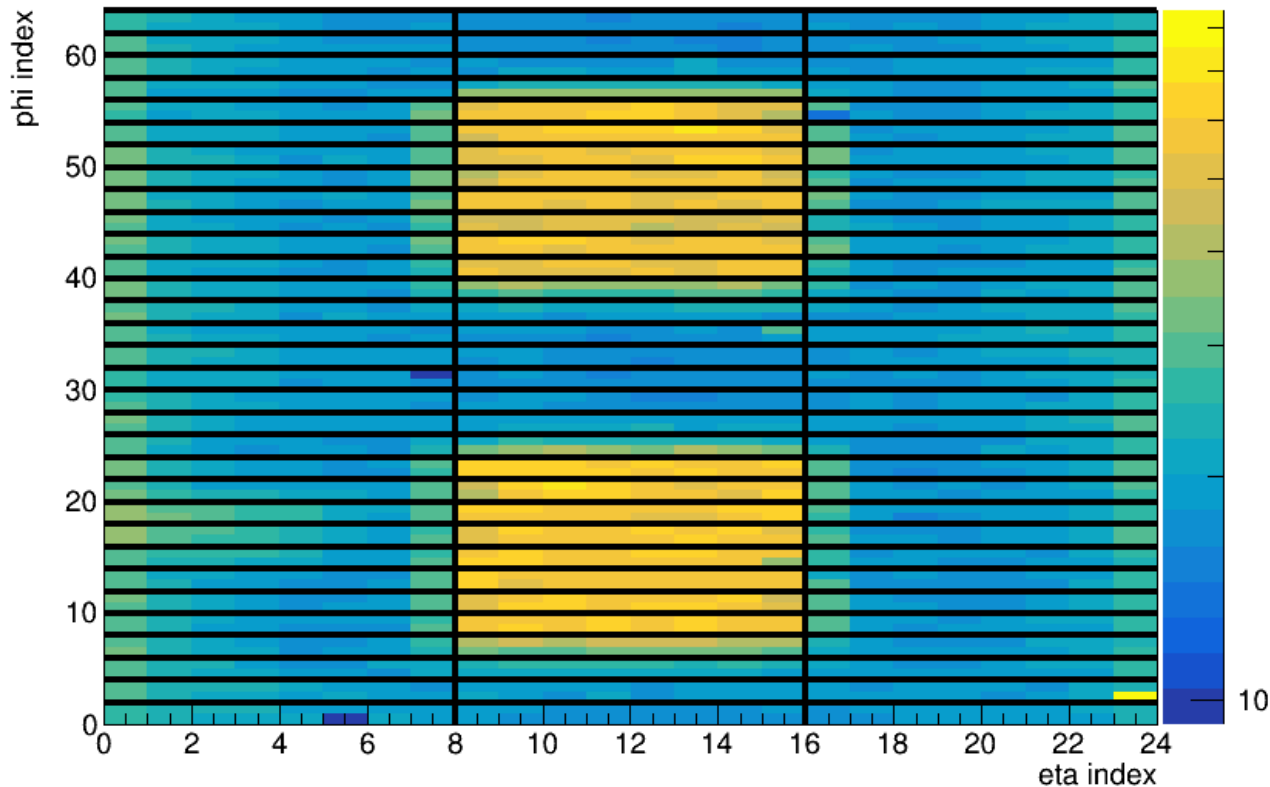
Upcoming Electrical Work

- **October 10 – October 27**
- West Carriage transformer will be locked out to replace NM clamps with TC clamps
 - Mandated by IRR (as NM clamps not UL-listed for tray cables); no benefit to sPHENIX, only delay
- This makes HCAL, EMCAL, MVTX inoperable



Cosmics data taking

Tower Average Energy[ADC]



- Outer HCal coincidence trigger (top/bottom) with z crossing provides cosmics tracks at 60 Hz
- August 3: trigger becomes available
 - Beginning of cosmics data taking for tracking detectors
- September 13: INTT turned off
 - End of cosmics data taking for **ALL** tracking detectors
- September 29: end of shift operation
 - End of cosmics data taking

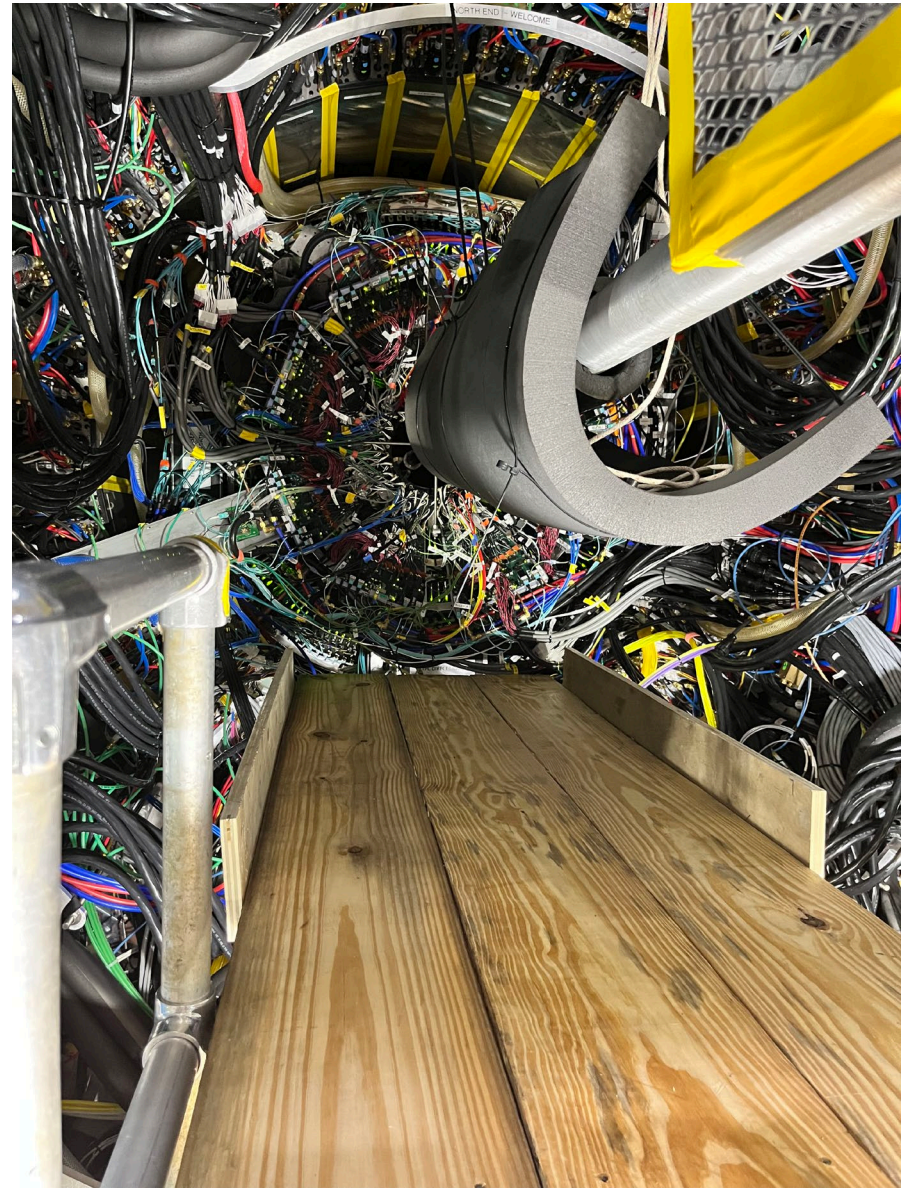
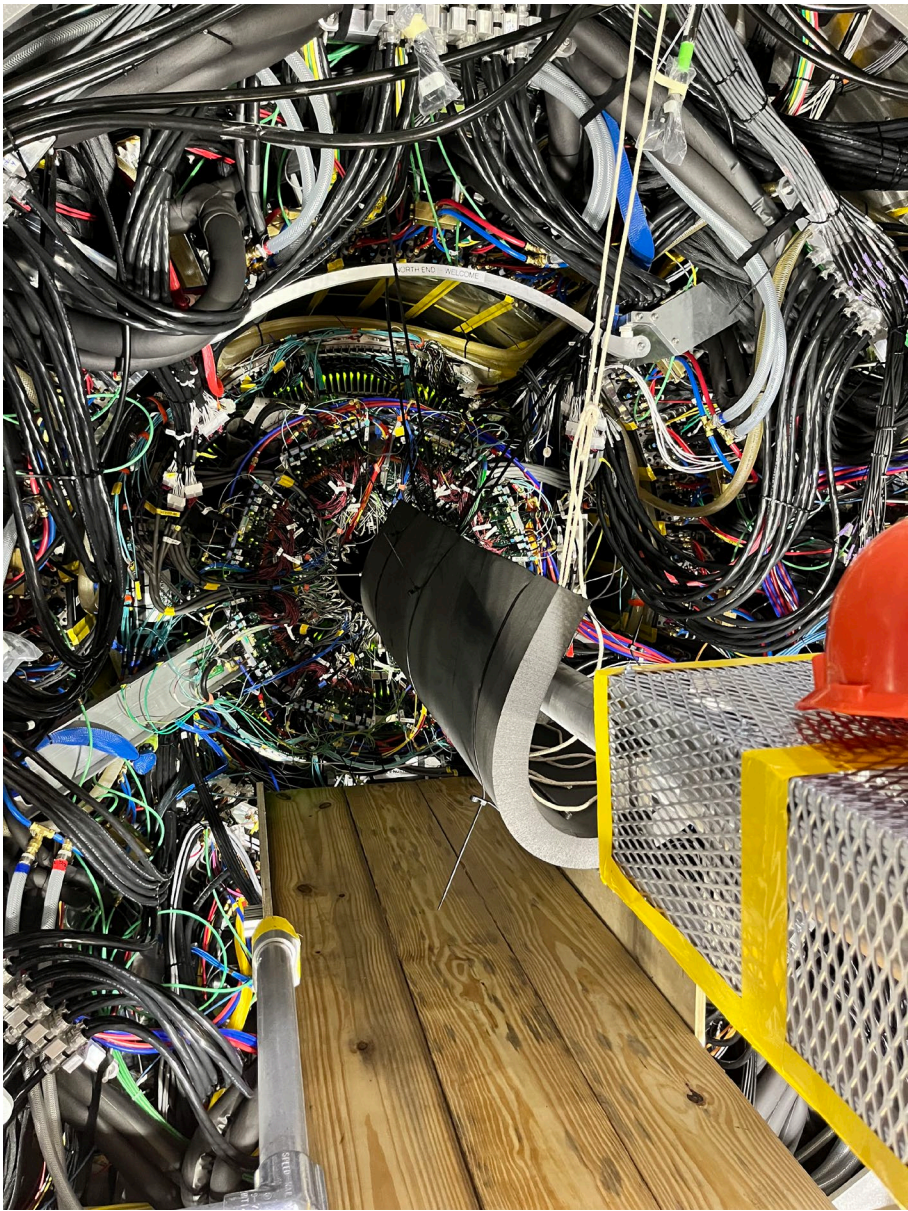
- 3 weeks of cosmics at 60 Hz for all tracking detectors: ~ 50 M events.
- If needed, the TPC group can still use this same method to take cosmics.

Shutdown Mode

- All racks remain on
 - Mandated by Electronics Cooling Water (ECW) considerations
- All crates inside racks remain off unless subsystem expert (or designee) present in 1008
 - Mandated by concerns about overheating in case of ECW failure
- All work needs to be planned in advance at weekly planning meeting (Thur., 11:00am)
- Daily work planning for local expert or designee at 8:30

Mainly TPC works

- The 1st step of TPC diagnostics was taking 3 weeks of cosmics data.
- September 15: diagnostics/repair work began at detector face.
- Example of success:
 - Shorted stripes: For one module, we demonstrated that resistor chain can be altered to recover module.
- For another example, we've discovered very recently that TPC gas volume is hotter than expected.
- The investigation/repair works for TPC will take at least another month.
 - There is work that we may want to do related to MVTX ...



Need wider diving board & beam pipe protection cage closer to the detector

10/3/2023

Run Coordination Meeting

From Sept 12 TPC repair meeting⁷

Responses to questions:

- Whether sPHENIX has substantial needs for C-AD support out at 1008 in the next few months, and if so when that would be needed.

We continue to need good support (in the form of carpenters, riggers, techs, specialists such as the water group, vacuum group etc.) like what we have been getting in the last month or so from C-AD ES&F Div. through the Liaison Engineer.

We need key support from the Instrumentation Division (Bldg. 535). The engineers who have helped us are oversubscribed. Any help from the ALD or others will be useful. We may ask C-AD for a firmware design expert ...

C-AD has also requested some information for the discussion:

- what we need to settle as soon as possible: order of species, the C-AD proposal is p+p followed by Au+Au, no preparations for p+Au

We can decide only after we know the no. of cryo weeks available, and the 4 o'clock repair schedule is clearer. In the PAC review, we said we'd decide in ~Nov. sPHENIX will assess the requested order once the necessary information is available.

- what p+p luminosity is needed for sPHENIX (the 45 pb⁻¹ have a number of qualifiers)

Calo. triggered luminosity of 45/pb: assuming 60% operational eff. → delivered luminosity of 75/pb within ±10 cm vertex with decent polarization. Of course, the higher the better.

- can we count on sPHENIX running with a crossing angle (reduces the beam-beam effect)

We'd like to see an **updated projection document** based on recent corrections on the luminosity reductions due to various crossing-angles and how much sPHENIX is affected if STAR has zero or non-zero crossing-angles.

- polarization directions (STAR requested radial)

Partly because of the previous point, we'd like to have a "RHIC-Spin collaboration meeting" so that we can discuss this with all relevant RHIC parties, exchange information and then decide.