Brookhaven National Laboratory

U.S. DEPARTMENT OF ENERGY

RHIC Status

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July 9, 2024

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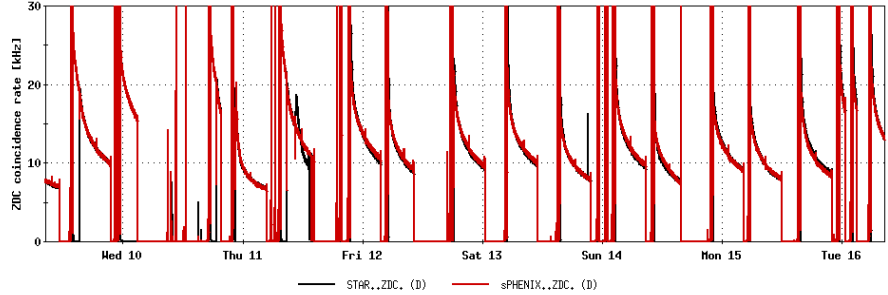
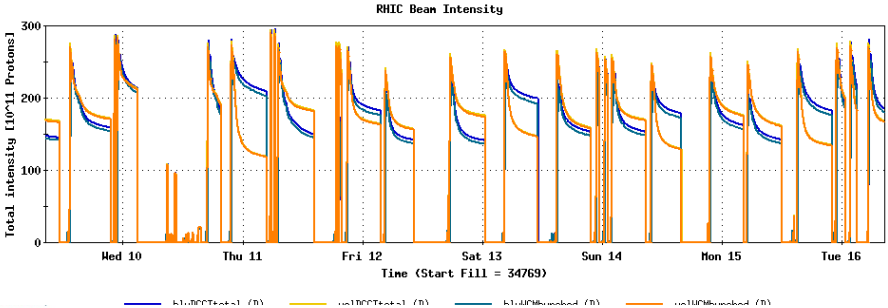
Last Week at RHIC

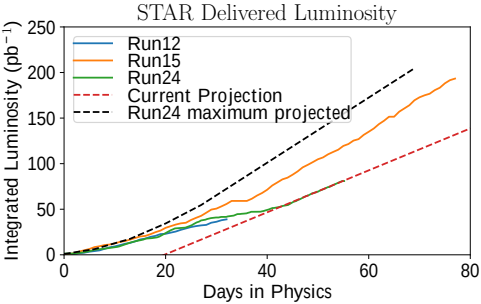


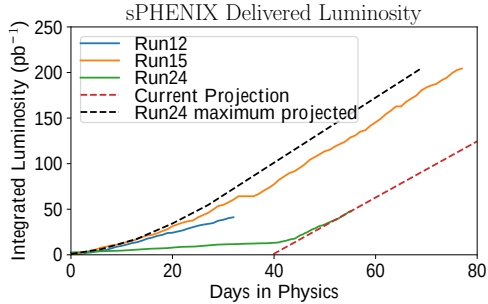


RHIC Status

- STAR and sPHENIX operating with 0 mrad crossing angles
- Delivered intensity up to 2.4e11 at physics, lower on recent stores
- Delivered polarization is up to 55%
- STAR and sPHENIX being collapsed at separate times since July 5th
- STAR being collapsed when sPHENIX ZDCs=24 kHz
- APEX last Wednesday where MCR was able to recover within an hour following an access
- Ramp Optics measurement yesterday
- Bump added to IP12 on Friday 7/12 to improve ability to scrap on the blue mask, insignificant change to STAR's backgrounds

RHIC Performance Outlook



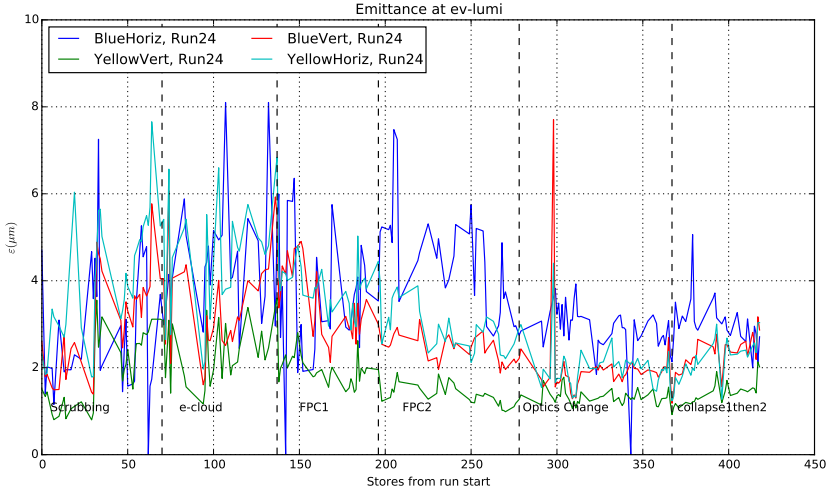


L_{max}; L_{min} =25, 17.0 pb ^{1}/week with = 0 *mrad*

Trajectories from last meeting: $L_{STAR,proj}$ = 16:1 pb ^{1}/week, $L_{sPHENIX,proj}$ = 21:6 pb ^{1}/week

Trajectories as of this meeting: $L_{STAR,proj}$ = 17:1 pb ^{1}/week, $L_{sPHENIX,proj}$ = 17:6 pb ^{1}/week

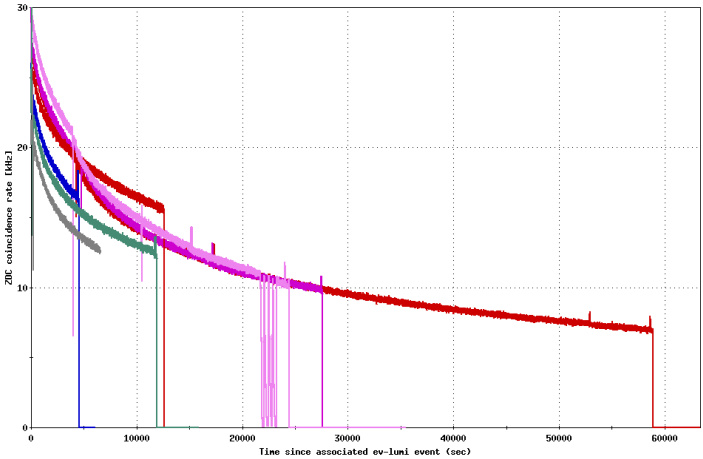
RHIC Performance



a small uptick in our emittances at ev-lumi

this coupled with hitting some intensity limits, have reduced recently delivered rates

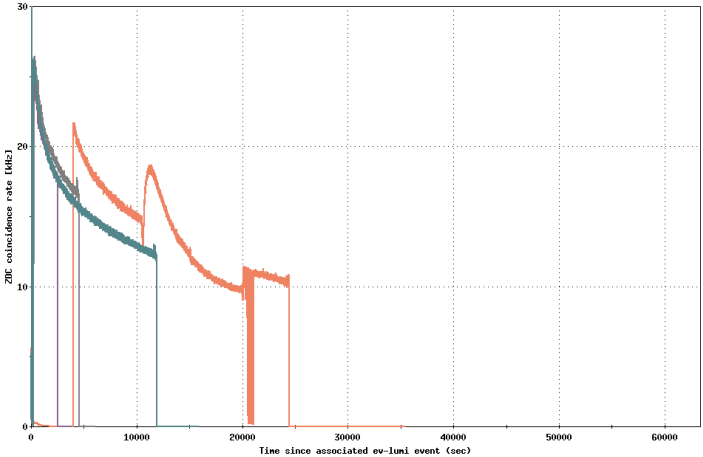
Delivered Luminosities, sPHENIX



3 stores from last week with peak ZDC rates close to 30 kHz (red-tone)

3 most recent stores with peek ZDC rates close to 24 kHz (blue-tone and grey)

Delivered Luminosities, STAR

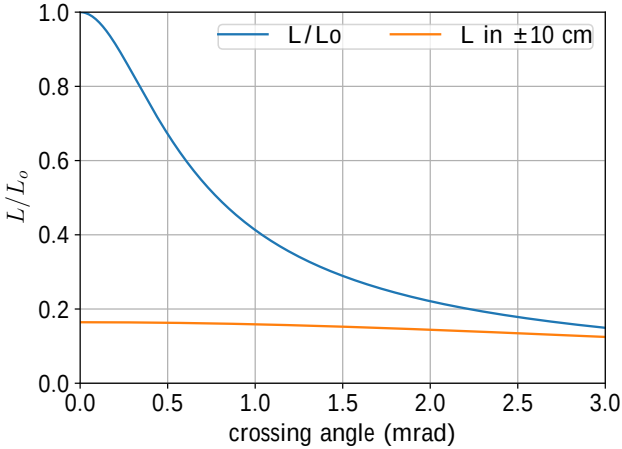


1 stores from last week with peak ZDC rates close to 30 kHz (red-tone)

2 most recent stores with peek ZDC rates close to 24 kHz (blue-tone)

Reduced sPHENIX ZDC rates facilitated STAR being turned on almost immediately

Lumi Scaling, revisited



= 1.5 mrad corresponds to $L=L_o$ =31% and 50% of the collisions occur within 10 cm

Largest angle supported given (+) crossing angle and = 60 cm squeeze

Going forward

1. Resolve emittance growth on ramp to deliver higher luminosities
2. Resolve intensity related limitations to allow further advancement of luminosity
   - This includes analysis of the recent ramp optics measurements and possibly additional measurements, and RF related intensity limitations.
3. Investigate the backgrounds at STAR and possibly commission a new ramp
4. Investigate other AGS setups to allow for higher intensities with improved emittances
5. Need to demonstrate higher intensity to deliver maximum rates to sPHENIX within 10 cm
6. Test squeeze ramp and work into nominal rotation
   - With the collapse of IP6+IP8 separated, development work needs to be done to allow for the additional ramp and more so the supporting mechanics
   - Ramping directly into 60 cm lattice at IP8 would not need additional work and would just require setup time
7. Finalize sPHENIX =+1.5 mrad crossing angle lattice