Brookhaven National Laboratory

U.S. DEPARTMENT OF ENERGY

RHIC Status

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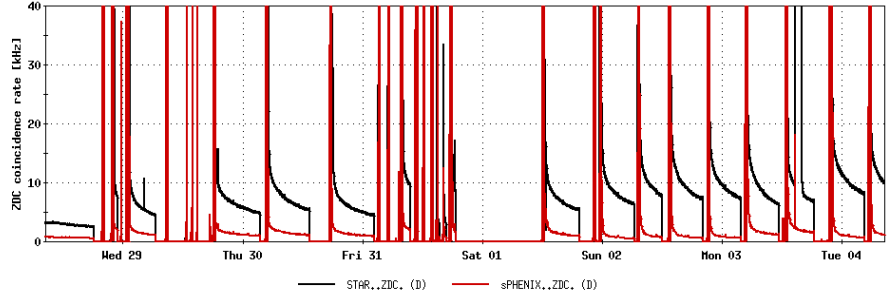
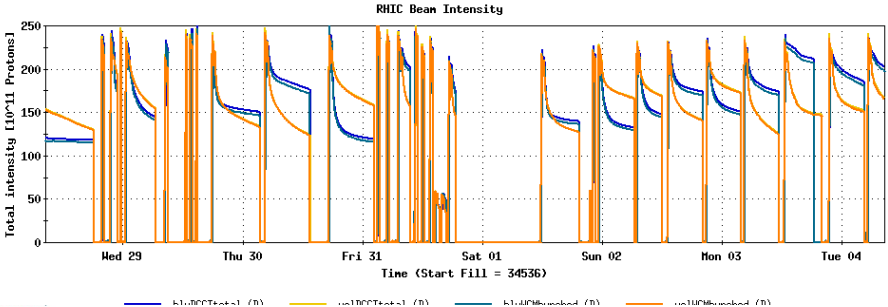
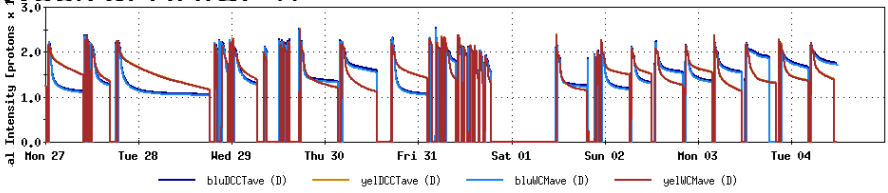
@BrookhavenLab

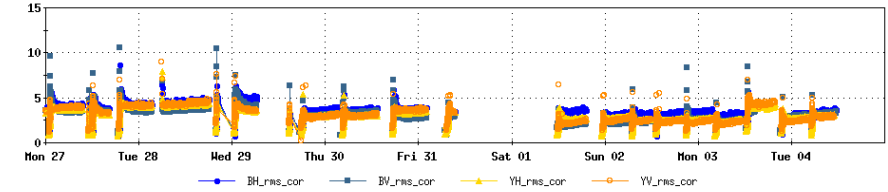
Last Week at RHIC

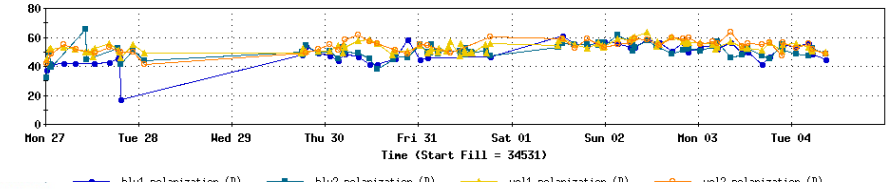




Last Week at RHIC. II



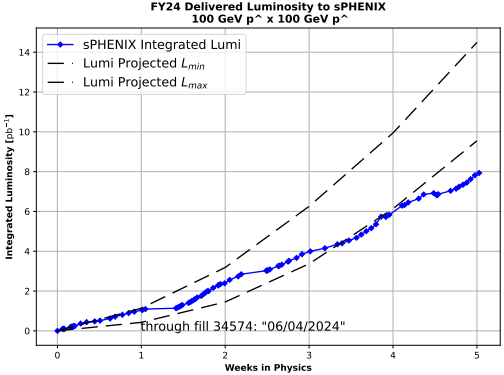


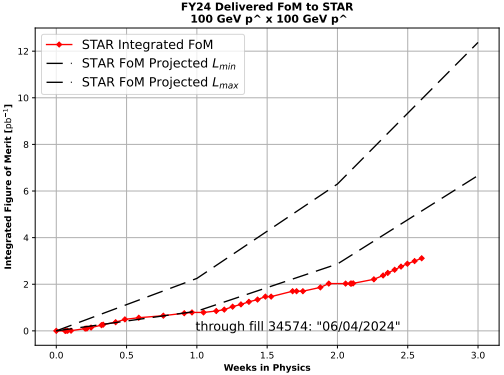


RHIC status and Lumi Projections

→ 111x111 physics running since 4/30.

Preliminary luminosity accounting





RHIC Status

- → physics running with 2.1e11/bunch at store
- → we are now at the end of the ”ramp up” period so luminosity projections are constant
- → integrated luminosity still a factor of 2 off from best Run15 stores
- → polarization up into the 50-60%, higher in yellow
  - → take spin tune measurement in blue to check snake rotations
- → Machine development Wednesday improved emittance growth along the energy ramp
  - → Inserted 56 MHz FPC more to further damp HOMs
  - → adjusted octupole strengths along ramp and further optimized lifetime
- → bug with feedback editor and implementation with feedbacks
- → power dip Friday due to vehicle accident at Bellport
- → cold snake has increase heat load
- → Single ring background studies for sPHENIX ongoing
- → Maintenance tomorrow, 6/5
- → APEX Thursday, 6/6

Moving Forward

To improve luminosity:

- → reinstall tune bridge to move away from higher order resonances to study cause of emittance growth
- → ramp with different crossing angle at sPHENIX to determine if that is exciting higher order resonances on ramp
- → β^* squeeze MD
- → investigate collapse of IP8+IP6 bumps at different times
- → continue optimizing store lifetime
- → advance intensity

To improve polarization

- → measure spin tune of blue at injection to verify:
  - → nominal snake rotation at injection
  - → spin match from AGS to RHIC

Physics Checkpoints

- ☐ β squeeze at IP8
- ☑ 1.0e11 protons per bunch @physics
- ☑ complete low-luminosity run for STAR
- ☐ sPHENIX running with nominal store conditions
- ☑ 1.7e11 protons per bunch @physics (Run12 maximum)
- ☑ 2.0e11 protons per bunch @physics
- ☐ 2.4e11 protons per bunch @physics (Run15 maximum)
- ☐ 2.4e11 protons per bunch and 60% polarization @physics (Run15 maximum)
- ☐ switch to alternate AGS setup
- ☐ 2.5e11 protons per bunch @physics
- ☐ 3.0e11 protons per bunch @physics