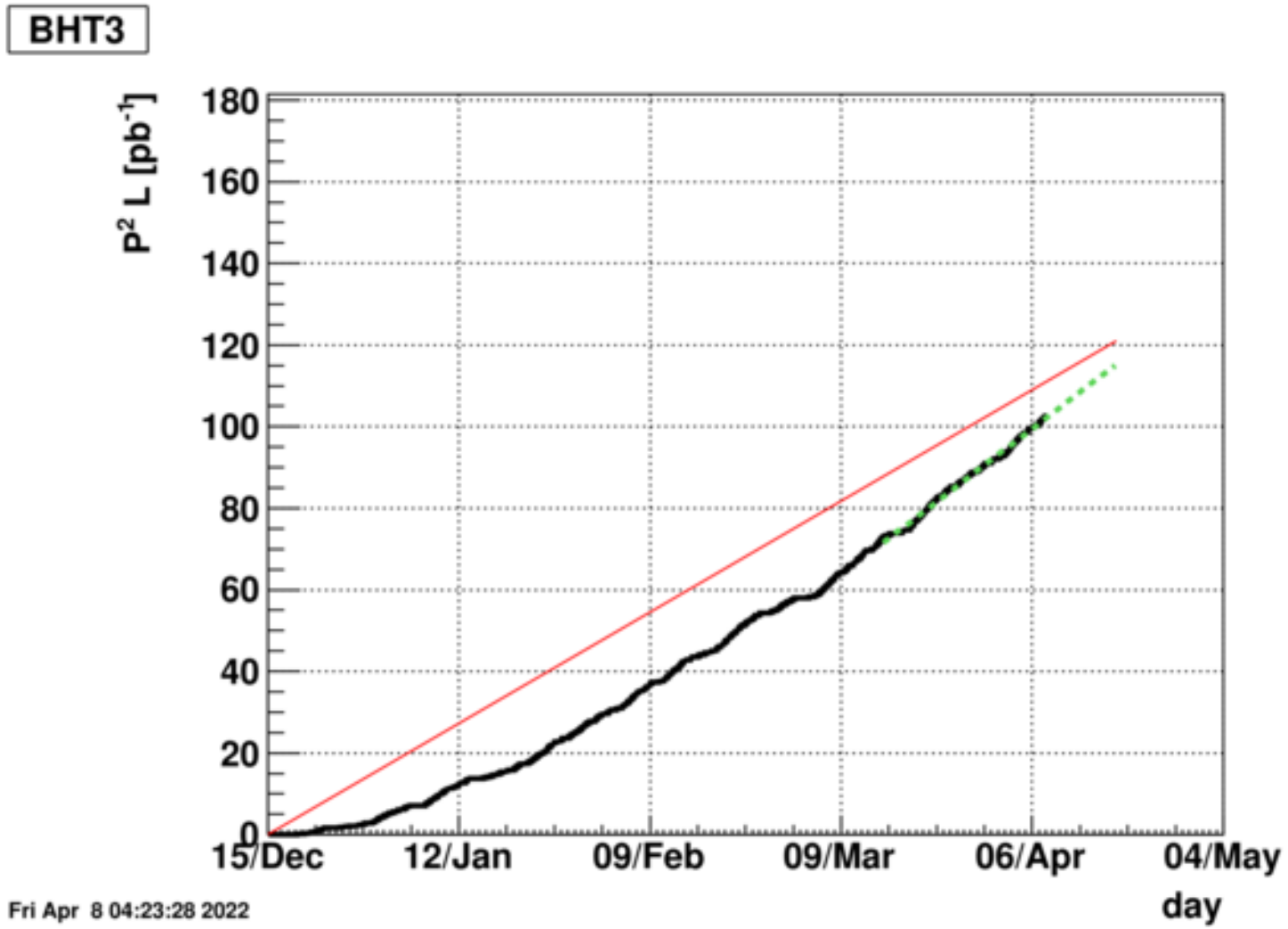
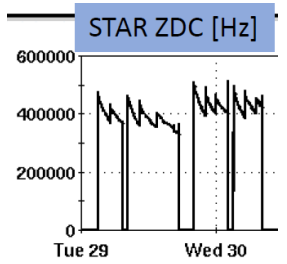
Run 2022 Performance Summary:



Goals and Request for Run22 (Plan was 20 week run: Cool down, 16 weeks of physics, 16 days of CeC, warm up)



- **Request:**
  - Sampled luminosity 400 pb^{-1} ➔ Achieved April 6th
  - Luminosity leveling for maximum FOM at ZDC ~ 330 KHz ➔ Now with two beta squeeze
  - $\mathcal{L} \sim 135*10^{30}\ cm^{-2}\ s^{-1}$ ➔ Achieved early February
  - Polarization ≳55% ➔ Partial Siberian Snake, loss of Siemens motor generator 1/12 to 3/8

- Other beam conditions - spin pattern and abort gap : same as in Run17 ➔ Check

- Commissioning Forward upgrade detector systems (first weeks) ➔ Much achieved with cosmics

- A few special runs will be requested for commissioning and calibration: low-lumi, small number of bunches for setup and calibration ➔ completed

- Running time/time sharing (with CeC) optimization for efficient commissioning with experts availability

Timeline of Notable Events

Forward Upgrade Detectors fully installed on schedule

Magnet power supply and heat run Nov 5-9

2-person shift crews start Nov. 9

Cosmic Data taking start Nov 11

Full 4-person shift crews start Nov. 16th (Expected to be taking data from mid-November until April 4th)

RHIC Start-up delayed due to Cyro upgrade delay

Proceeded with commissioning Forward Upgrade Detectors with cosmics

First Blue injection Dec 3rd, First Yellow injection Dec 7th

Power outages/dips on 12/3 and 12/12 damaged coils in Siberian Snake (operating as a partial snake)

- Blue polarization at 255 GeV: 45-50%
- Yellow polarization at 255 GeV: 45-50%

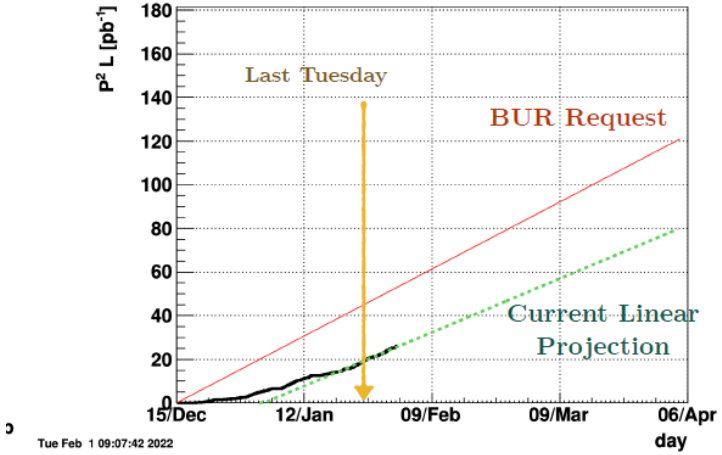
12/18 Start physics running (about one month behind expectation)

Timeline of Notable Events

Jan 12 AGS Siemens motor generator failed, switched to Westinghouse, but with lower polarization in RHIC (40%)

End of January – projecting to finish at only 30% of target

Beginning of February, due to improvements in injection and optimization, stores finally reach the STAR Lumi goals

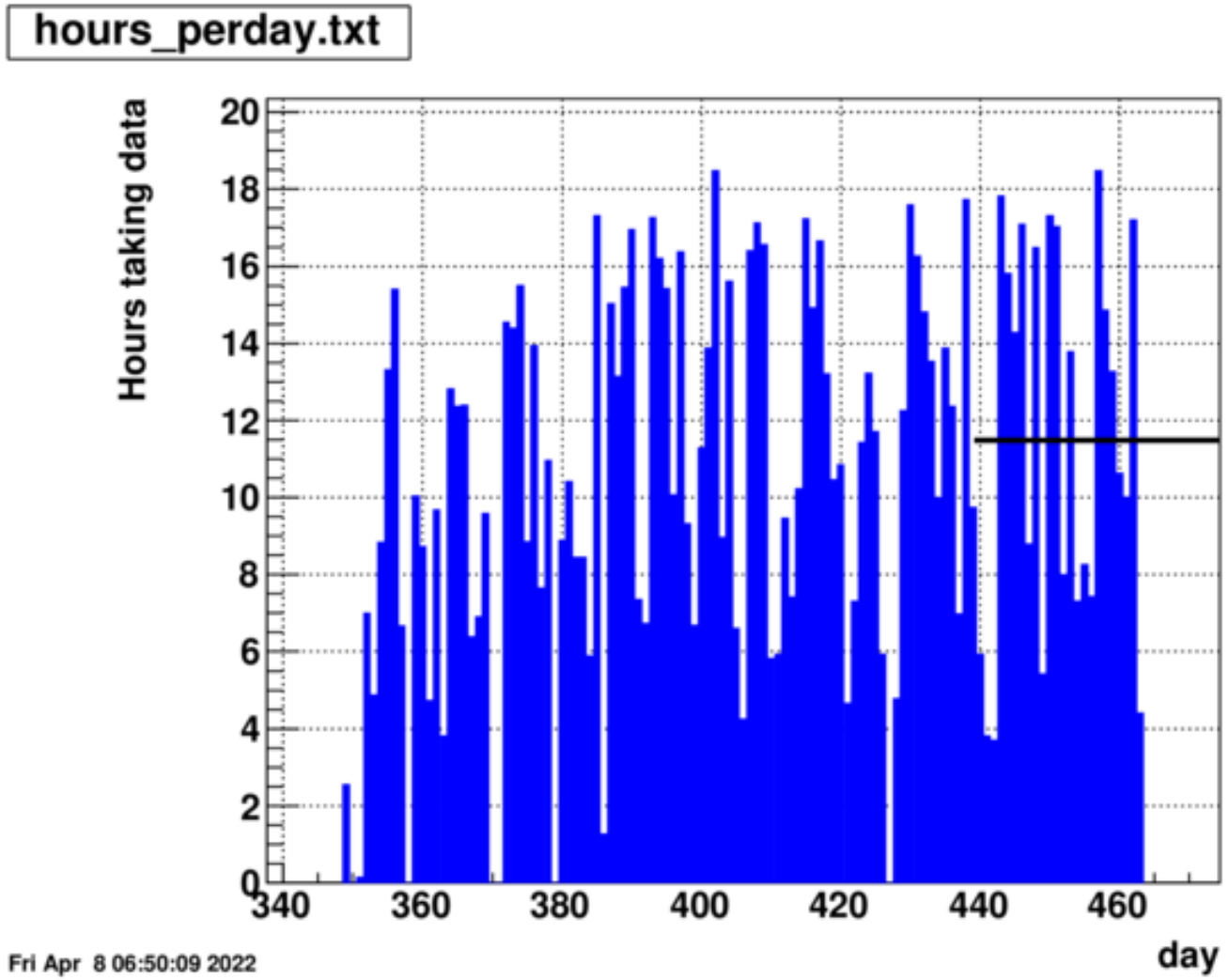


March 8th change back to Siemens motor generator ➔ Polarization back to 55% in each ring

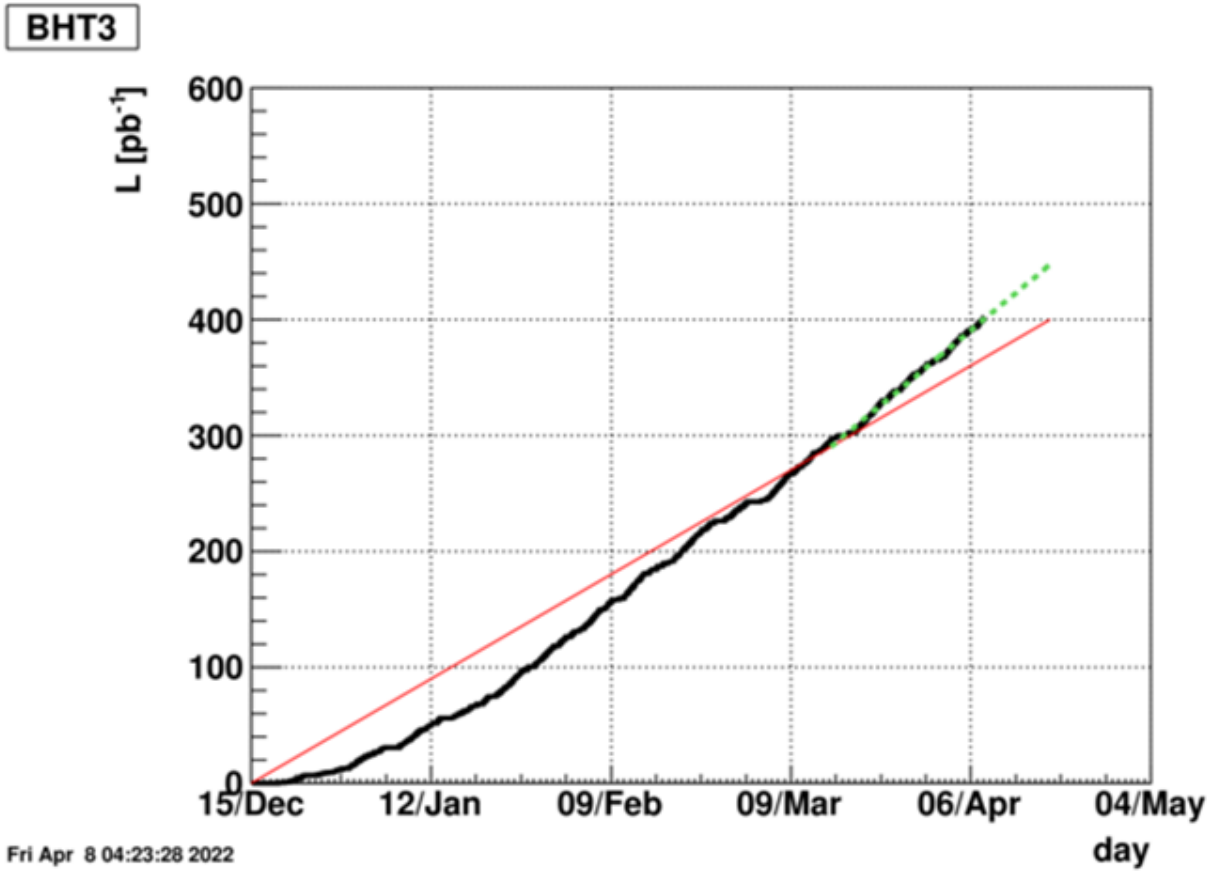
March 15th, Run is extended by two weeks (an extra six days of Physics, 8 more days for CeC). New End April 16th

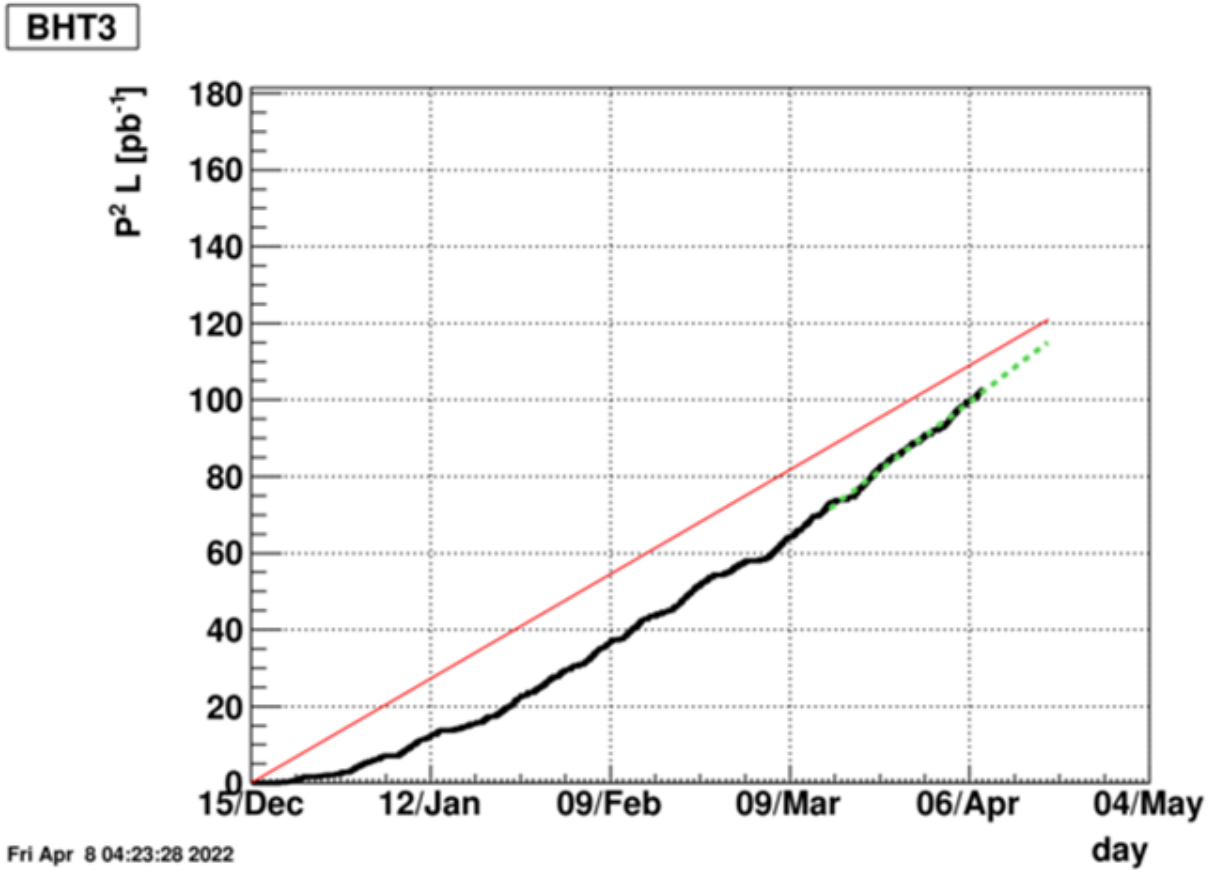
April 4th , STAR has adopted a lower effective cross-section for pp interactions (2.06 mb ➔ 1.86 mb)

- This will affect comparisons with plots and figures of merit from previous weeks (e.g. FOM ^^)


hours_perday.txt
Hours taking data
20
18
16
14
12
10
8
6
4
2
0
340
360
380
400
420
440
460
day
Fri Apr 8 06:50:09 2022

Summary





Although there were several significant challenges, the sampled integrated luminosity exceeded the goals, which the figure of merit will reach 95% of the target.