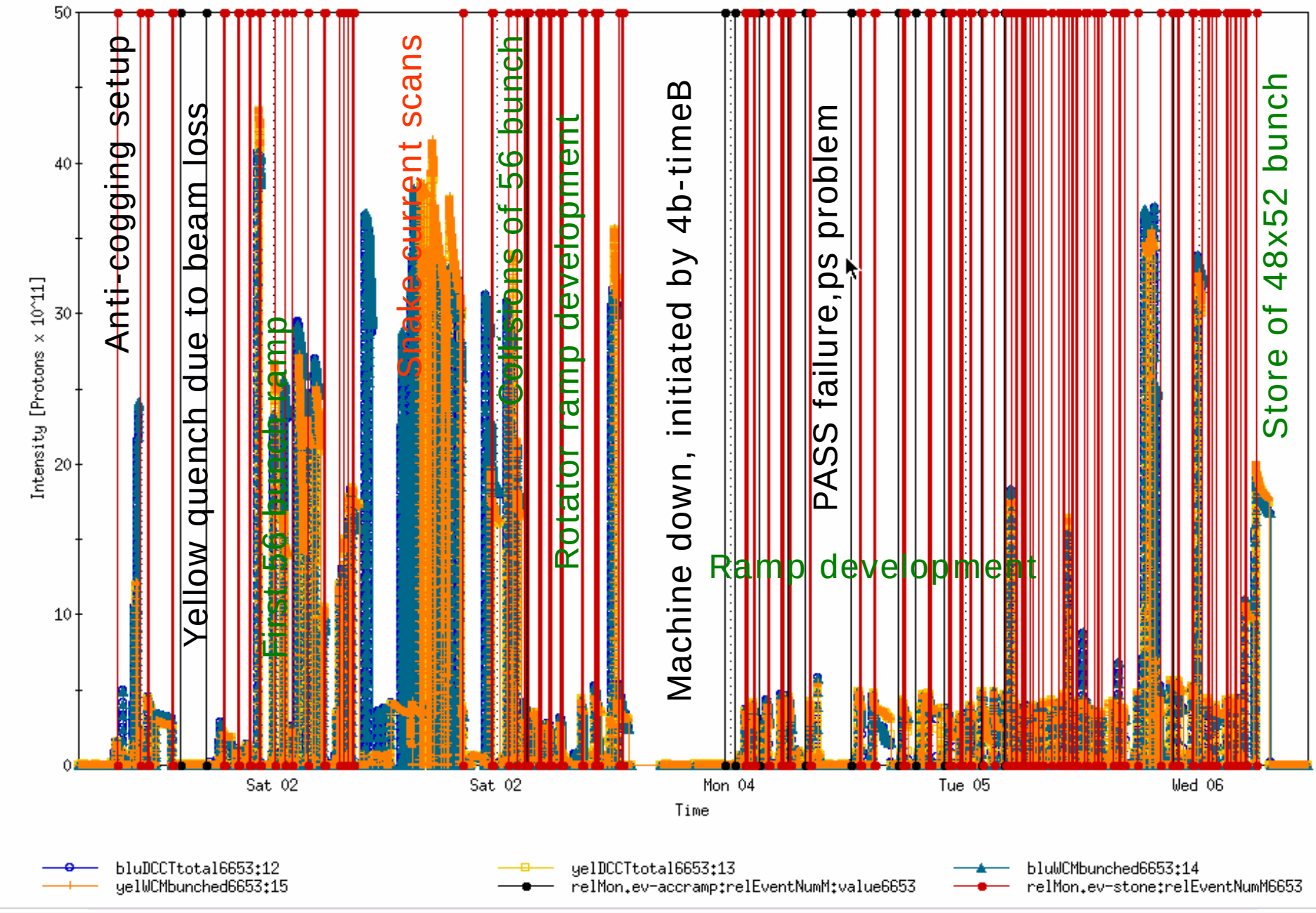
RHIC pp Status – week 2

http://www.agsrhichome.bnl.gov/AP/Spin2005/


Anti-cogging setup
Yellow quench due to beam loss
First 56 bunch ramp
Snake current scans
Collisions of 56 bunch
Rotator ramp development
Machine down, initiated by 4b-timeB
PASS failure,ps problem
Ramp development
Store of 48x52 bunch
Intensity [Protons x 10^11]
50
40
30
20
10
0
Sat 02
Sat 02
Mon 04
Tue 05
Wed 06
Time
bluDCCTtotal6653:12
yelWCMbunched6653:15
yelDCCTtotal6653:13
relMon.ev-accramp:relEventNumM:value6653
bluWCMbunched6653:14
relMon.ev-stone:relEventNumM6653

Progress and Status

- Two days access
  - Jet installed
  - CNI new target/detector installed
  - AGS cold snake installed
- Energy ramp pp21 development
  - Modified the configuration for 56 bunch collisions
    - Restore separation bumps between flattop and beta1
    - Setup anti-cogging condition for injection and ramp
  - tunes in both rings are in a reasonable state. Still working on minimizing coupling along the ramp to gain more precise tune controls
  - Orbit rms in both rings is around 1mm. But still has a lot of room for improvement
    - orbit correction from store to store should help to keep the orbit from running away
    - improving the robustness of the bpms should help the quality of orbit correction

Progress and Status

- First collisions were established on Sunday morning
- The collision was also tuned up early this morning.
- Both polarimeters was ready for polarization transmission efficiency measurement
- The new polarimeter application now allows one to execute polarization measurement in blue and yellow at the same time!
- Rotator ramp was developed through the weekend. Good transmission efficiency. Currently, working on orbit correction, decoupling and tune/chromaticity adjustments
- Snake current scans in both rings were done. Yellow is similar to last year. Blue shows a more interfered structure. Further studies needed to understand the blue snake scans results.

Issues

- RHIC was done for about 10 hours on Sunday till because of the failure of 4b-time. The root cause is the failure of ps of this crate. Since this FEC is one of the most critical devices for the system, the failure also triggered many other problems
- Vacuum at CNI polarimter.
  - It is currently sitting at 10^{-7} level in both rings. The slope is pretty slow
  - Not a problem for 56 bunch ramping and collision. Should evaluate what's the impact on total beam intensity
- Missing bunches during fill: working progress
- Couple of operation's errors due to the complication of two ramps, one for energy and one for rotator
  - Modify Sequencer to simplify the procedure
  - For the long run, we shall merge the two ramps

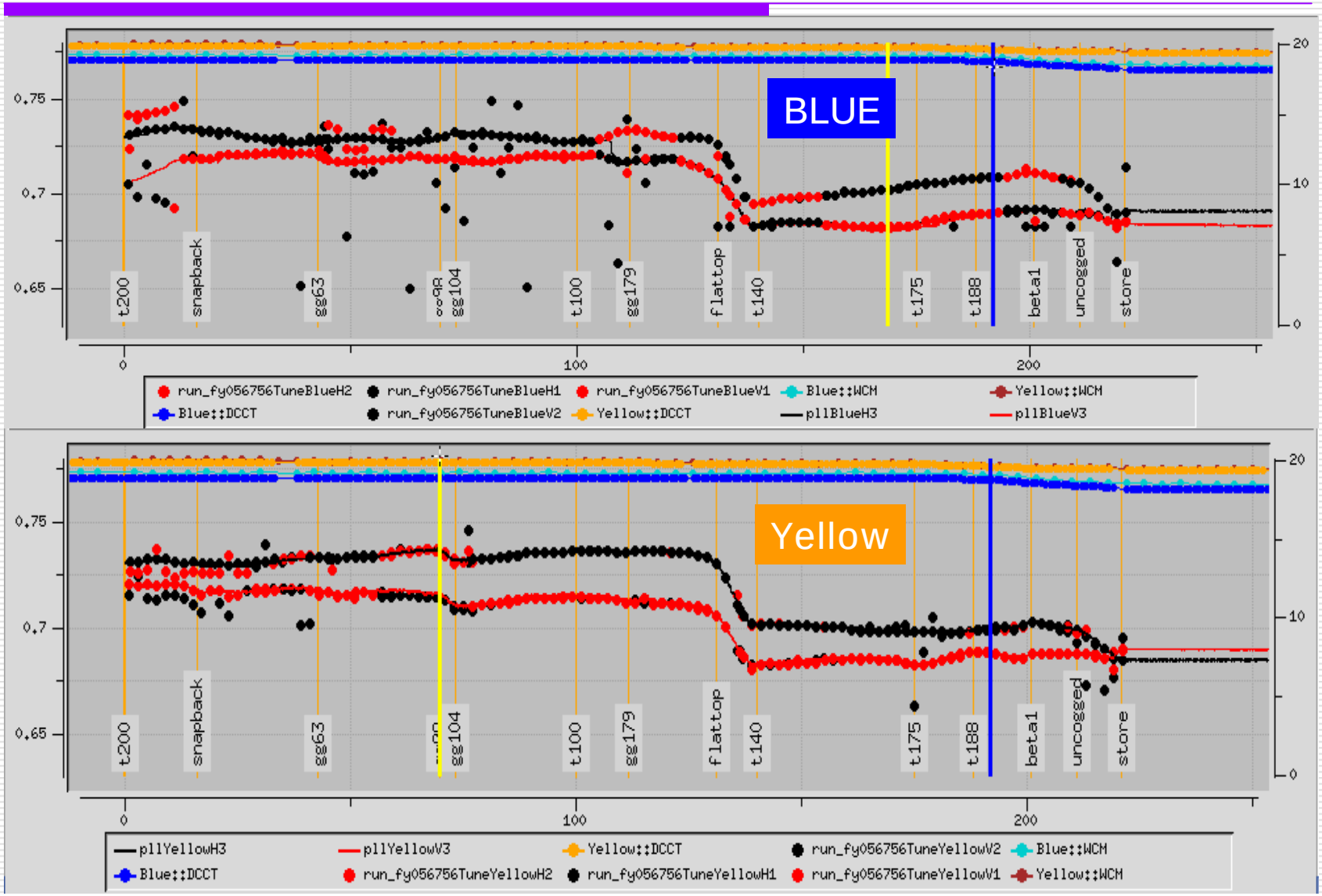
Plan

- Continue ramp development
  - pp21
    - Further decoupling in both rings to have more precise control of the betatron tunes along the ramp
    - improve the orbit rms along the ramp
    - collision tuning
      - Optics measurement at store to confirm the beta*
      - Local non-linear correction
      - Collimation setup
  - Rot3: improve the orbit and tune/chromaticity along the ramp
- Polarimeter setup
  - Figure out the difference between AGS CNI and RHIC CNI
  - Commission the polarization ramp measurement. This will really helps on identifying where the polarization gets lost to make improvements on polarization transmission efficiency.

Plan

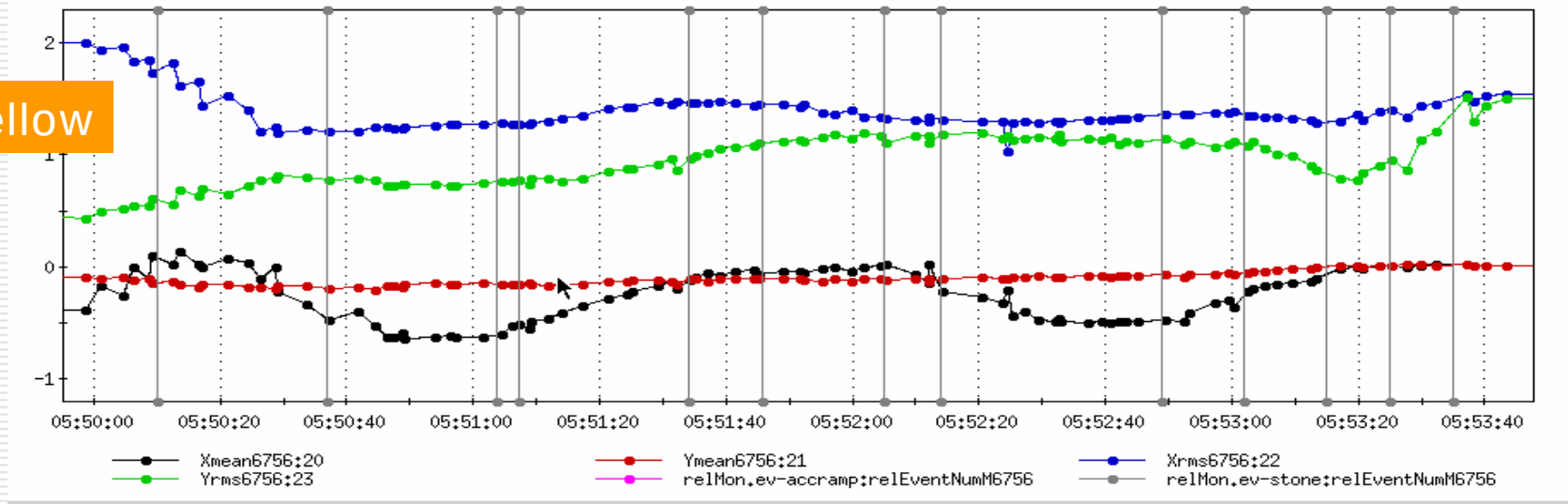
- start to provide overnight collisions tonight
  - Collimation setup
  - Experiment detector timing setup
  - Local polarimeter setup using transverse polarization
  - Jet setup
  - Examine the polarization lifetime at store

Tune measurements along the ramp

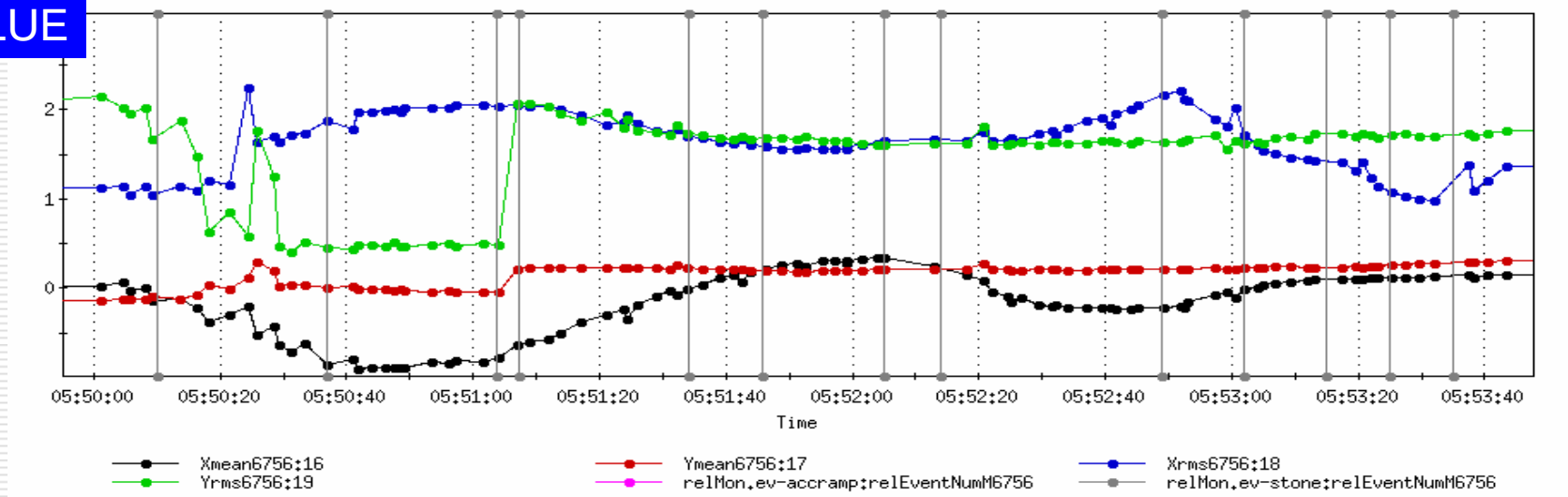


orbit along the ramp

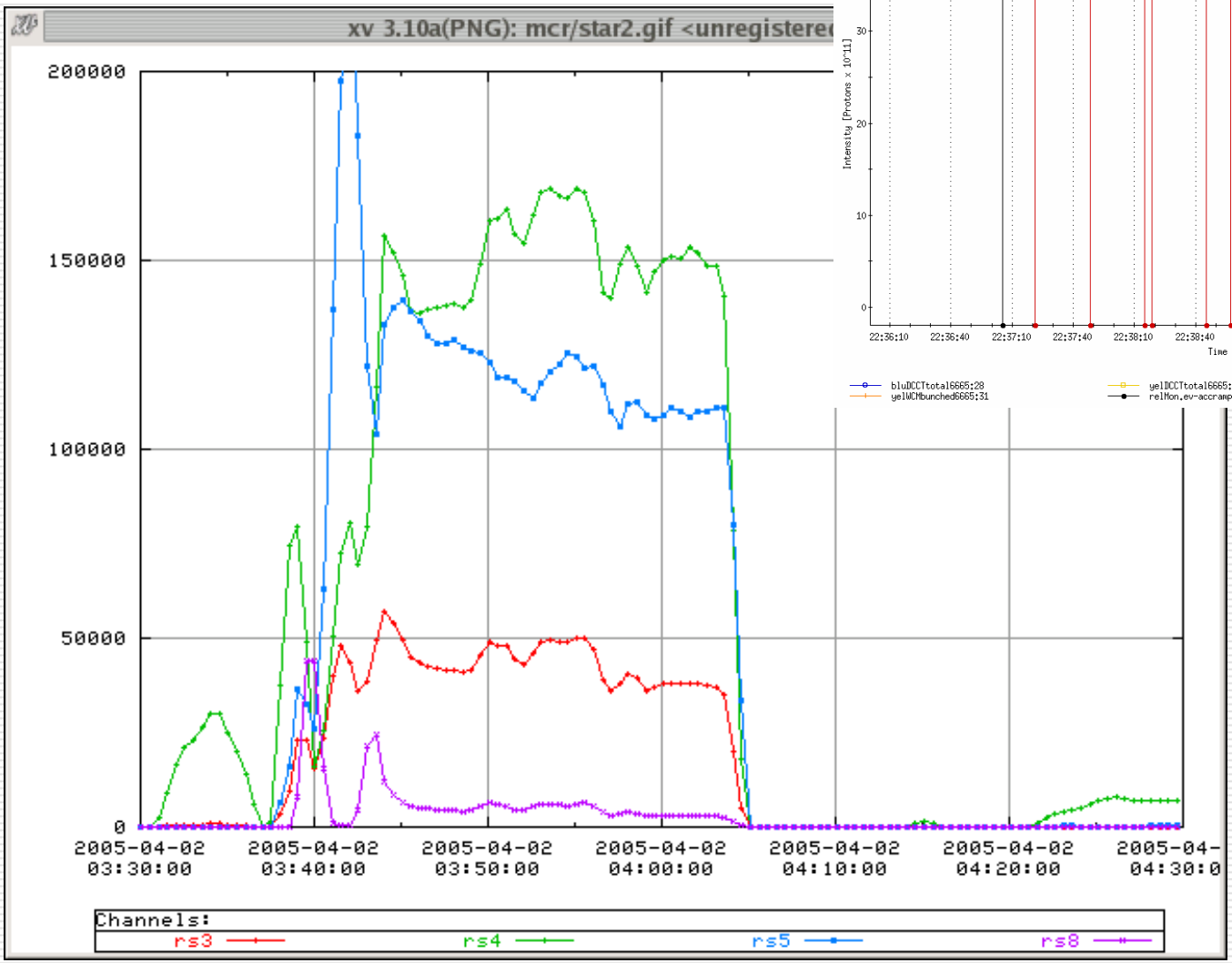
Yellow

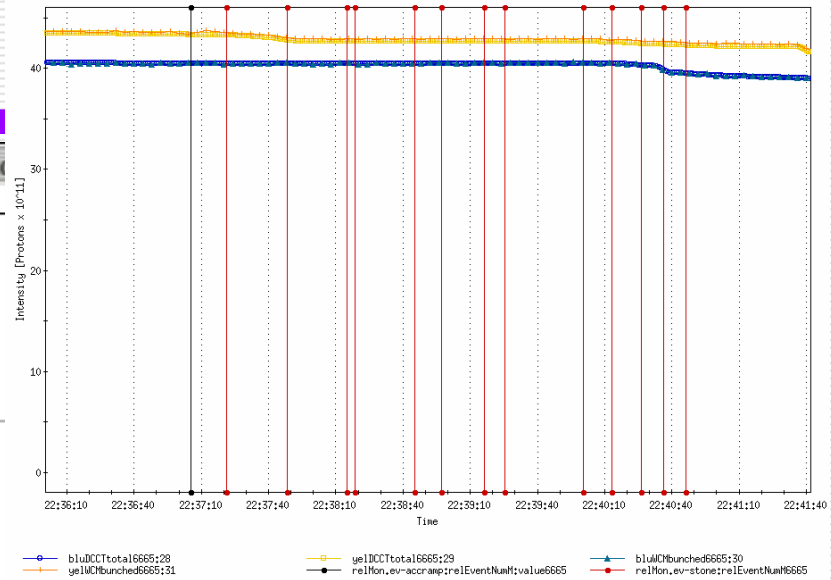


BLUE

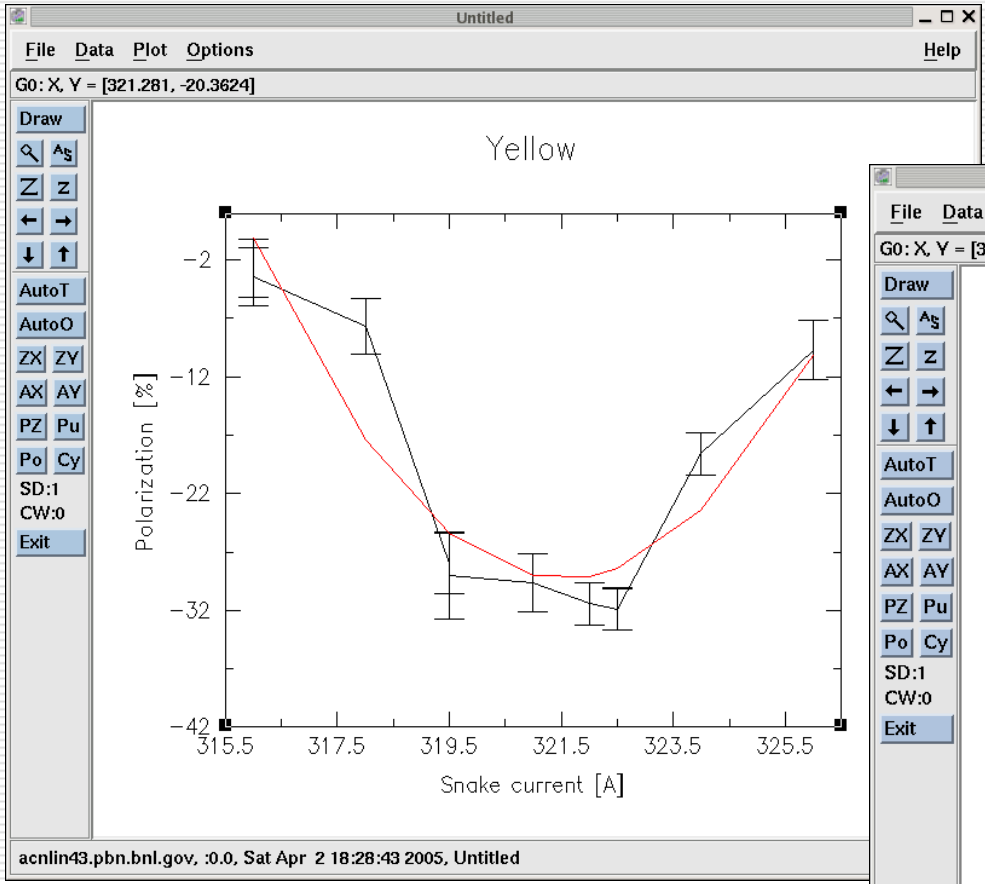


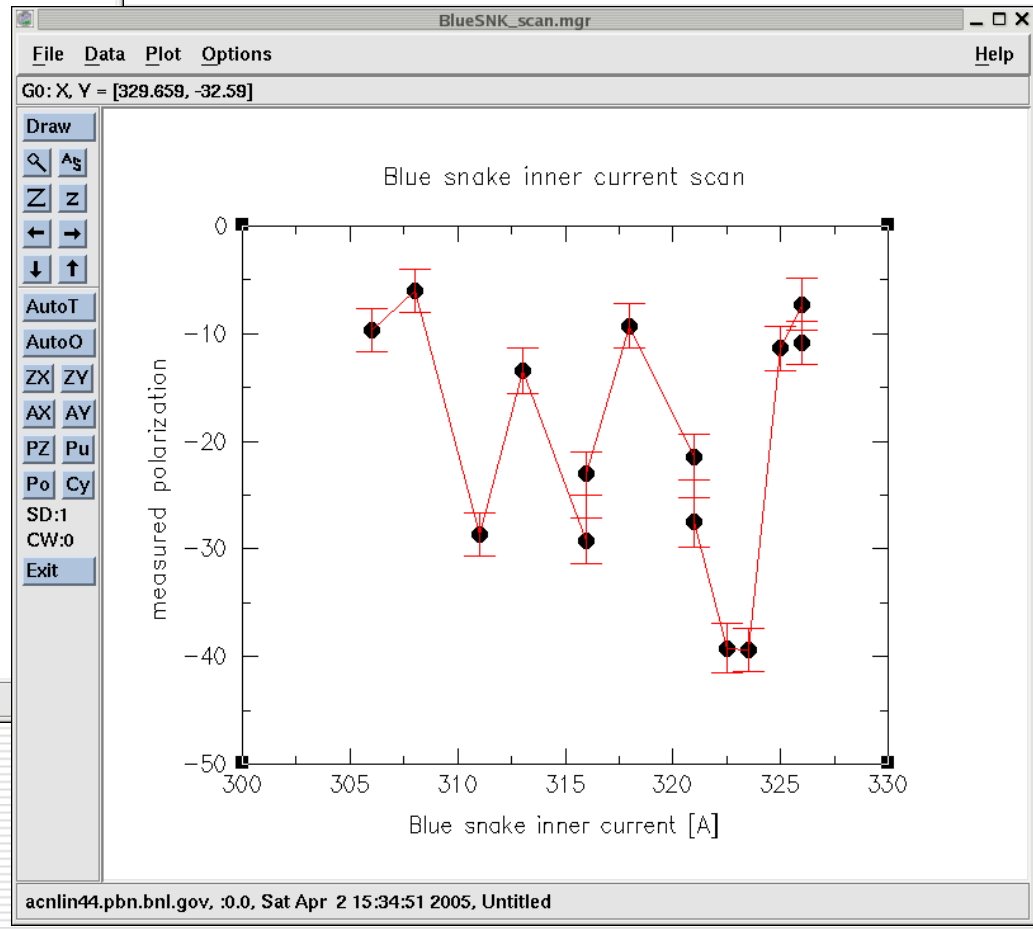
Firsts Collisions!





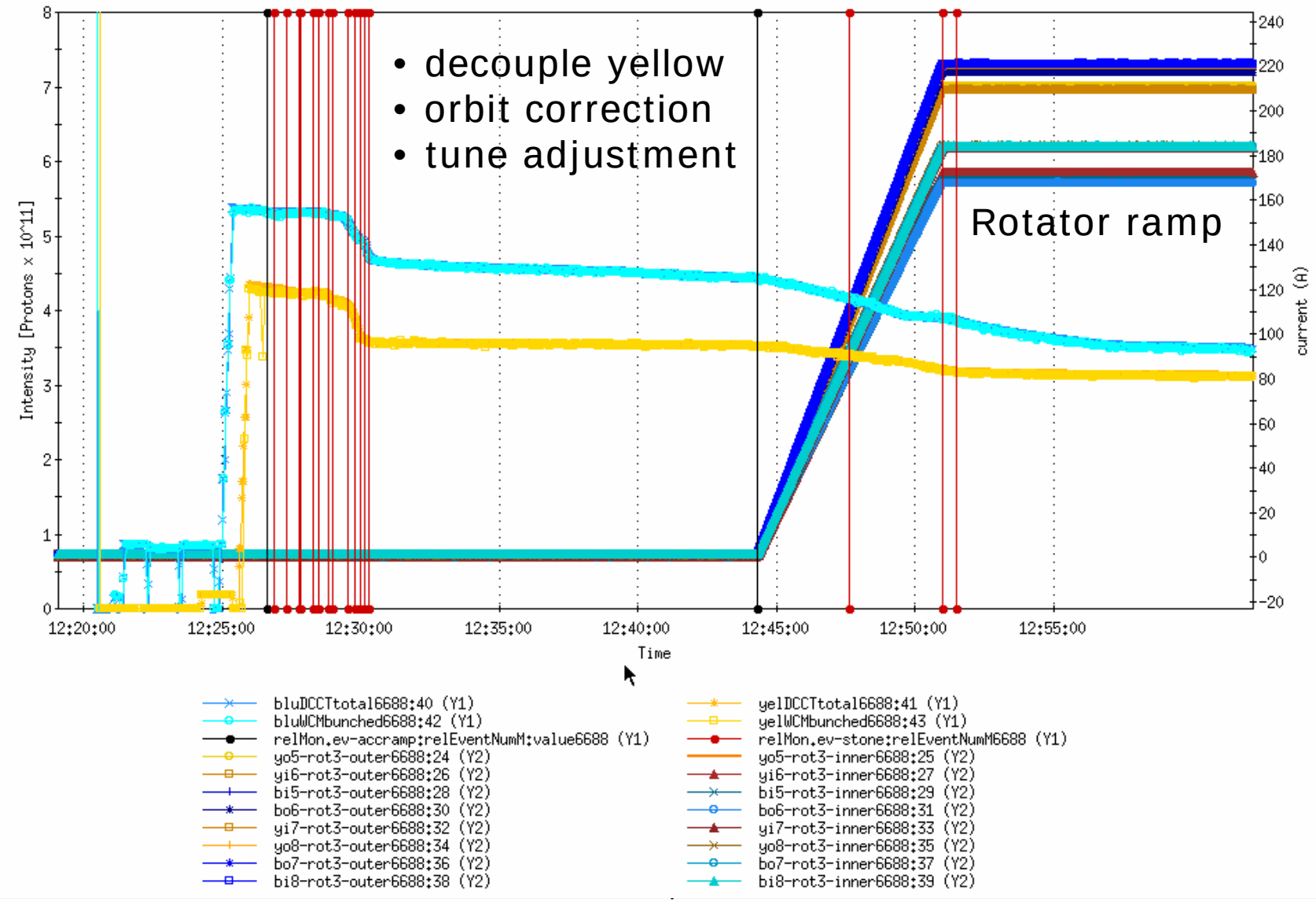
Snake scans at injection



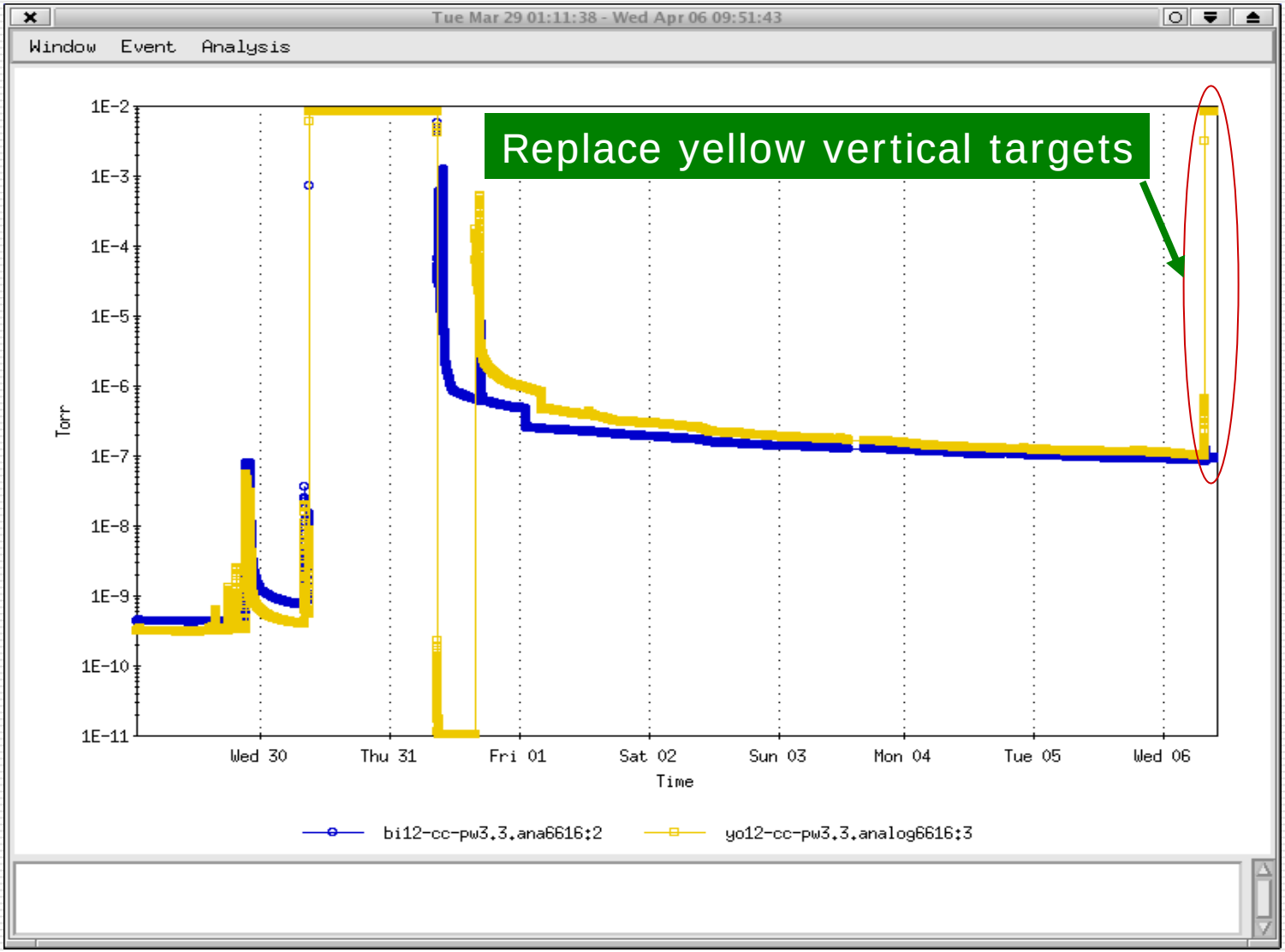


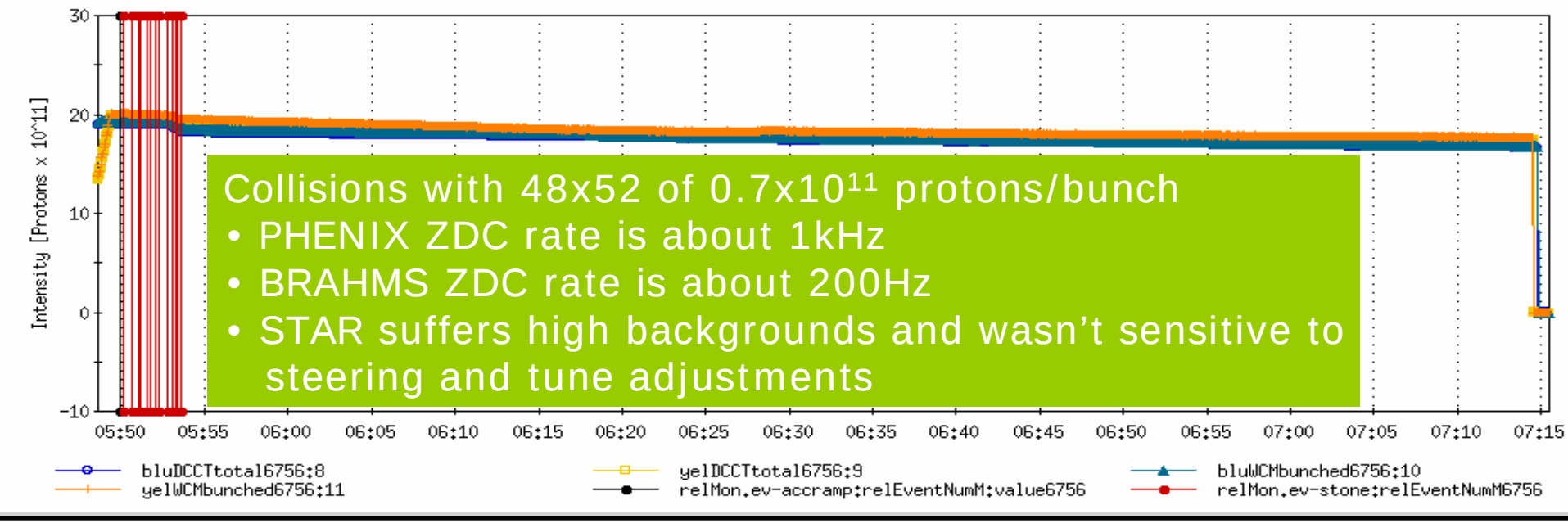
Rotator ramp!

- Beam survived rot3!



Pressure at CNI polarimeter





Collisions with 48x52 of 0.7×10^{11} protons/bunch

- PHENIX ZDC rate is about 1kHz
- BRAHMS ZDC rate is about 200Hz
- STAR suffers high backgrounds and wasn't sensitive to steering and tune adjustments