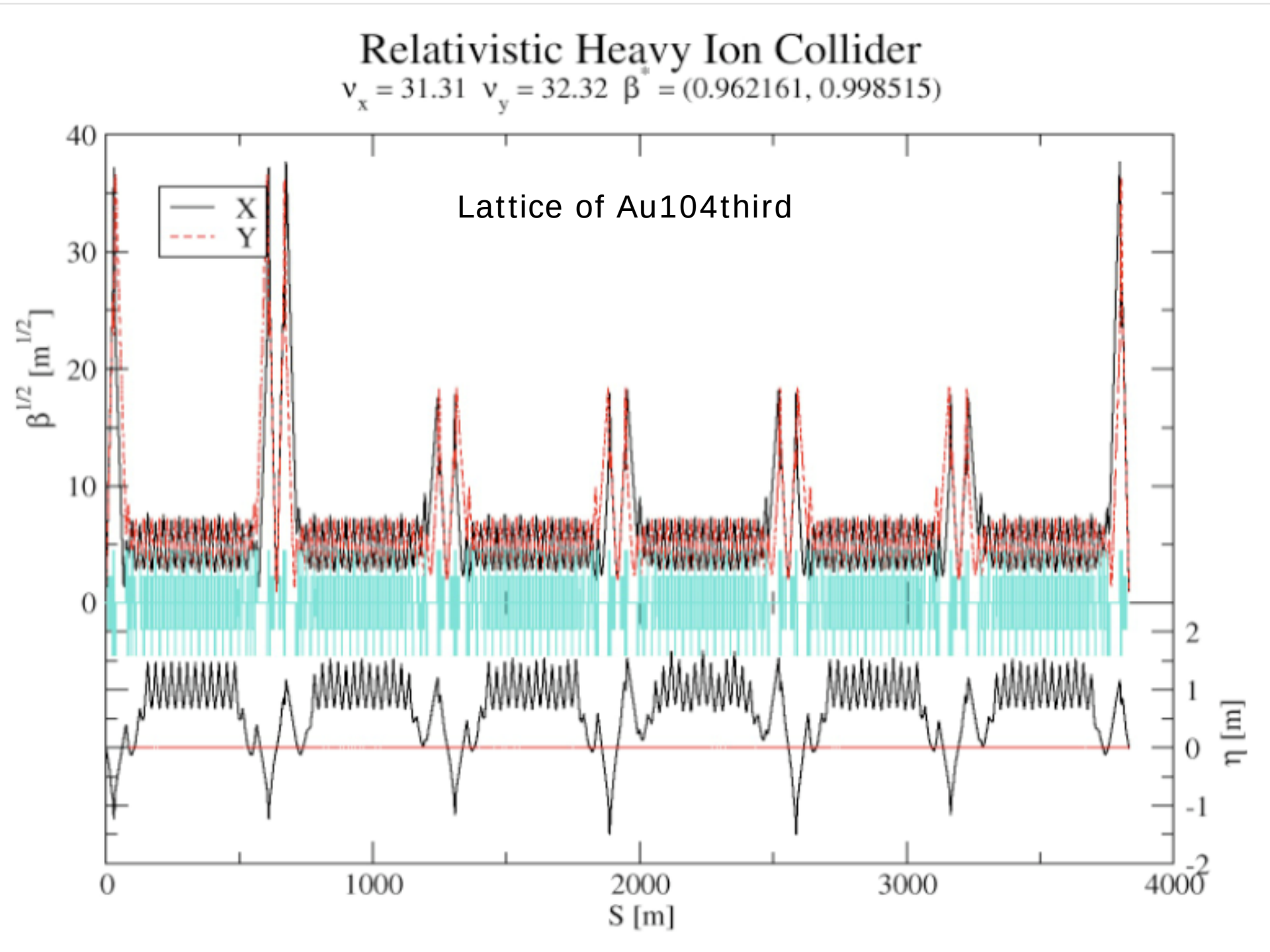
# Acceleration near 3rd order res. WP

- Goal:
  - Accelerate full intensity beams(>1.0x10^9 bunch intensity, 111x111) to store energy with vertical betatron tune at ~0.005 distance from 1/3
  - reproducibility of the ramp

- Team:

Vincent, Al, Michiko, Steve, Don, Yun, Guillaume, Mei, Todd, Wolfram, Fulvia, Vadim, Greg, Dejan, …


Relativistic Heavy Ion Collider
$\nu_x = 31.31$ $\nu_y = 32.32$ $\beta^* = (0.962161, 0.998515)$
Lattice of Au104third
X
Y
$\beta^{1/2}$ [m$^{1/2}$]
$\eta$ [m]
S [m]
0
1000
2000
3000
4000
40
30
20
10
0
2
1
0
-1
-2

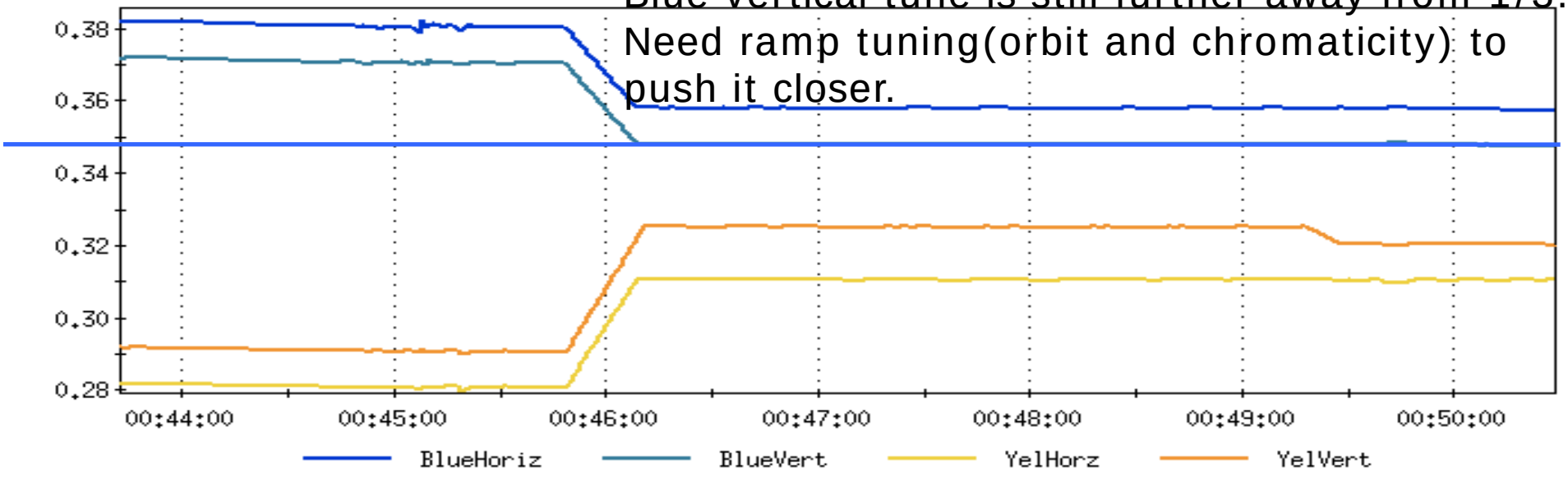
# Status of Au104third development

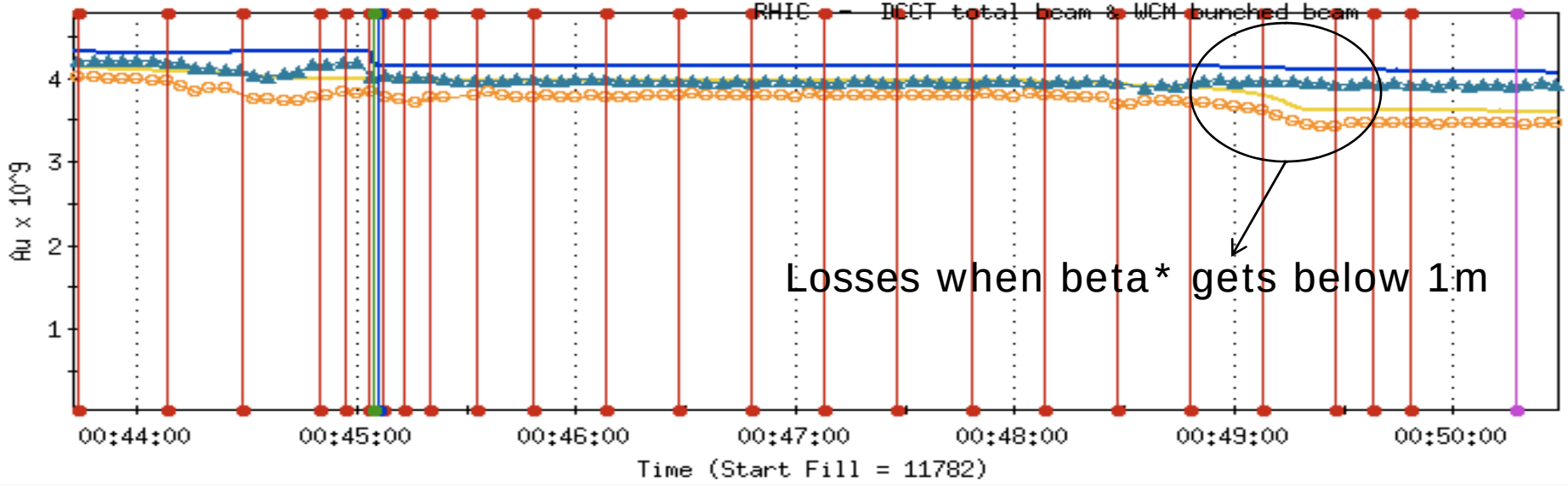
- Au104third: clone production ramp of Au104 except the workpoint to minimize ps tuning
  - Similar beta*
  - Beta squeeze to 0.7m continuously during acceleration

- Both low intensity Blue and Yellow beams made to store energy with
  - Blue working pt: 0.358, 0.348
  - Yellow working pt: 0.31, 0.325

# Status of Au104third development

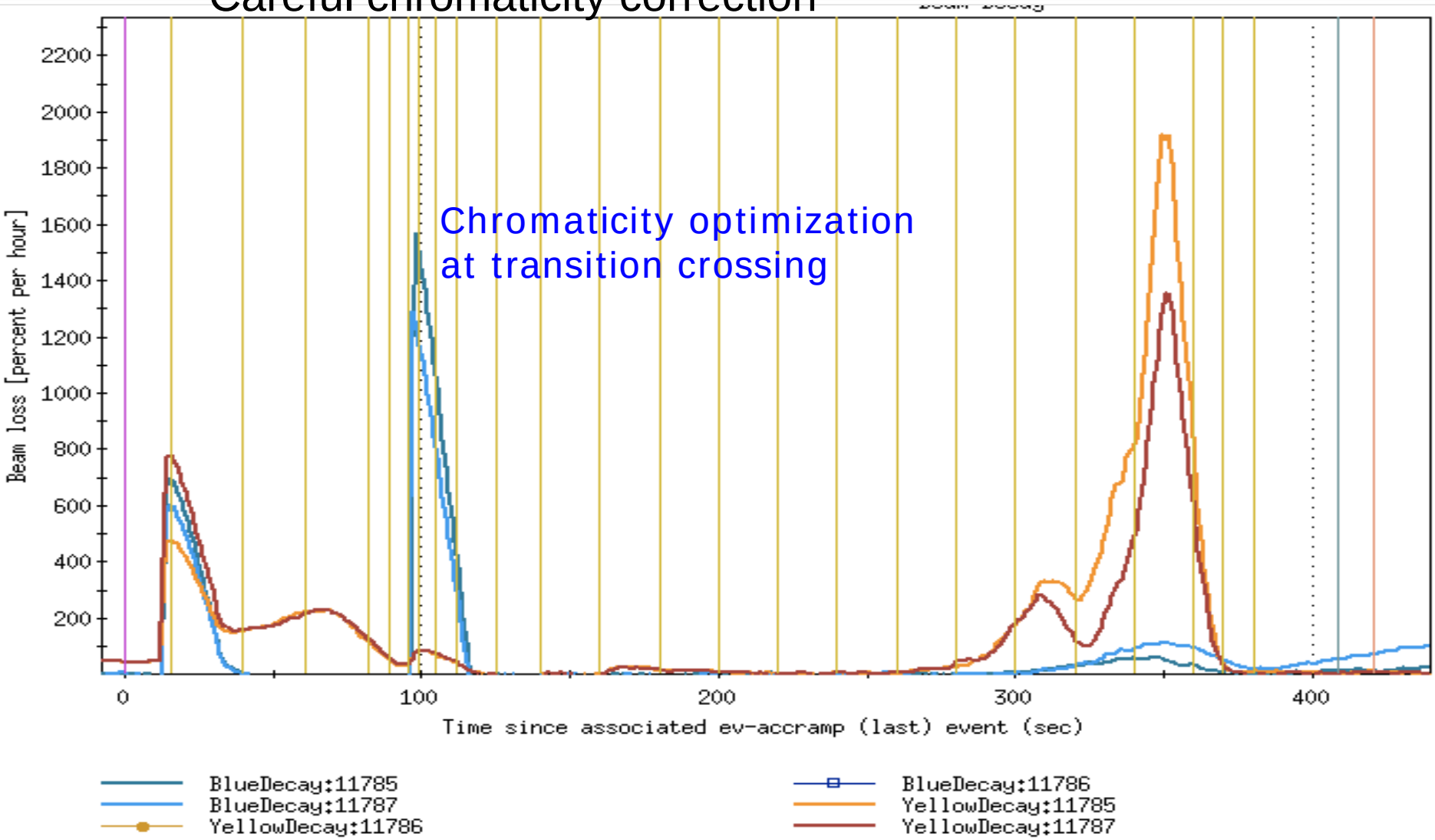
Blue vertical tune is still further away from 1/3. Need ramp tuning(orbit and chromaticity) to push it closer.



# Remaining Issues

- In Yellow: Slow losses close to the end of the ramp
  - Careful chromaticity correction



# Plans

- Coming session on 3/3:
  - Ramp tuning to reduce the Yellow later loss and push Blue Qy closer to 1/3
  - Find out how much beam intensity we can put in

- Backup solution: relax beta squeeze during the energy ramp. And beta squeeze to final beta* at store energy with Qy further away from 1/3.
  - Need Don to check the ramp w.o. beam. Re-tuning is very likely needed

- Estimate of time to complete the study:
  - 12-24 hours of beam time

# Issues of reaching goal

- In Yellow: Slow losses close to the end of the ramp
  - Careful chromaticity correction
  - Backup solution: relax beta squeeze during the energy ramp. And beta squeeze to final beta* at store energy with Qy further away from 1/3.
    - Need Don to check the ramp w.o. beam. Re-tuning is very likely needed.
- In Blue: tune up ramp(orbit and chromaticity) to push Qy closer to 1/3
- Estimate: 12-24 hours beam time