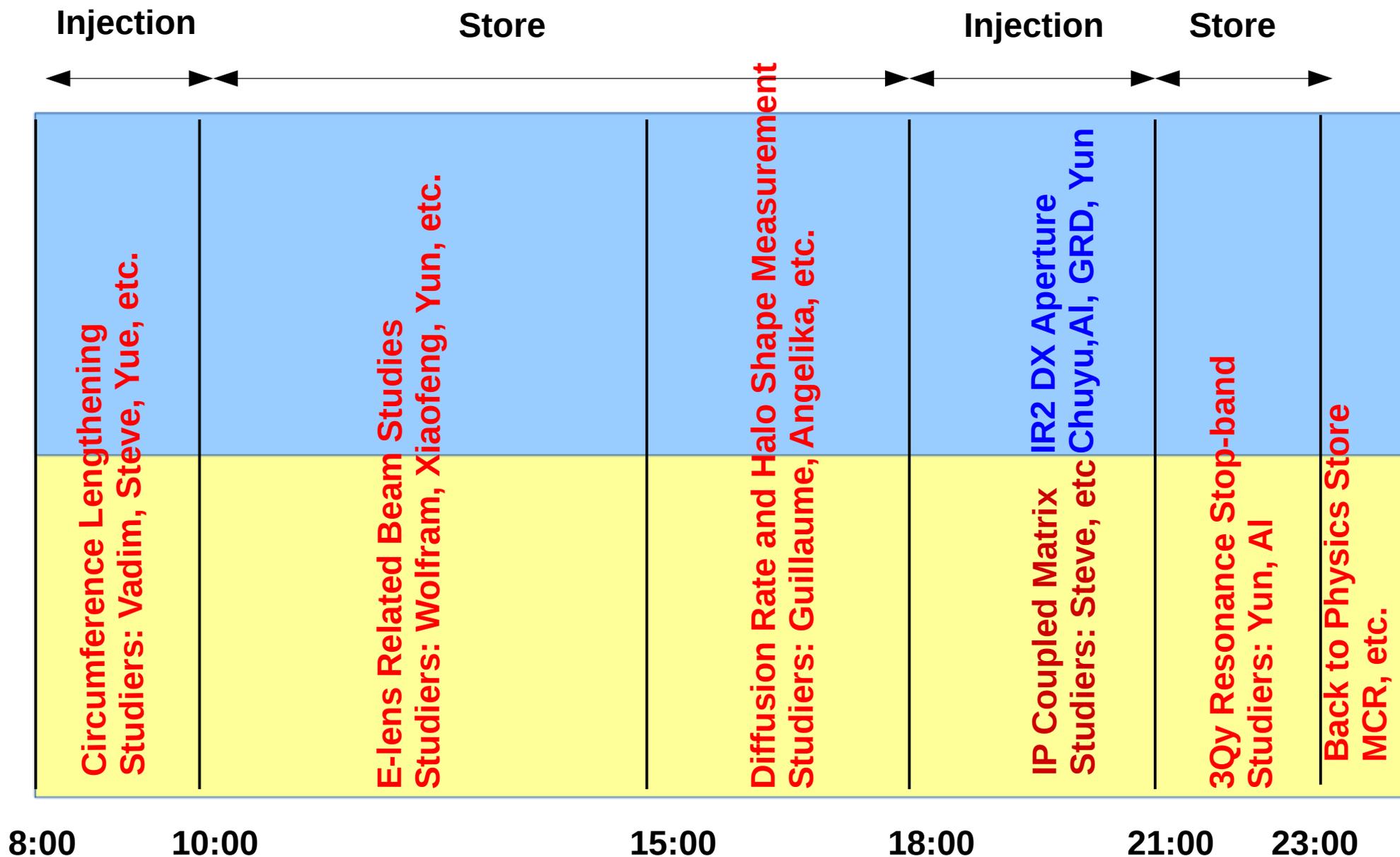


APEX Schedule for April 08, 2015

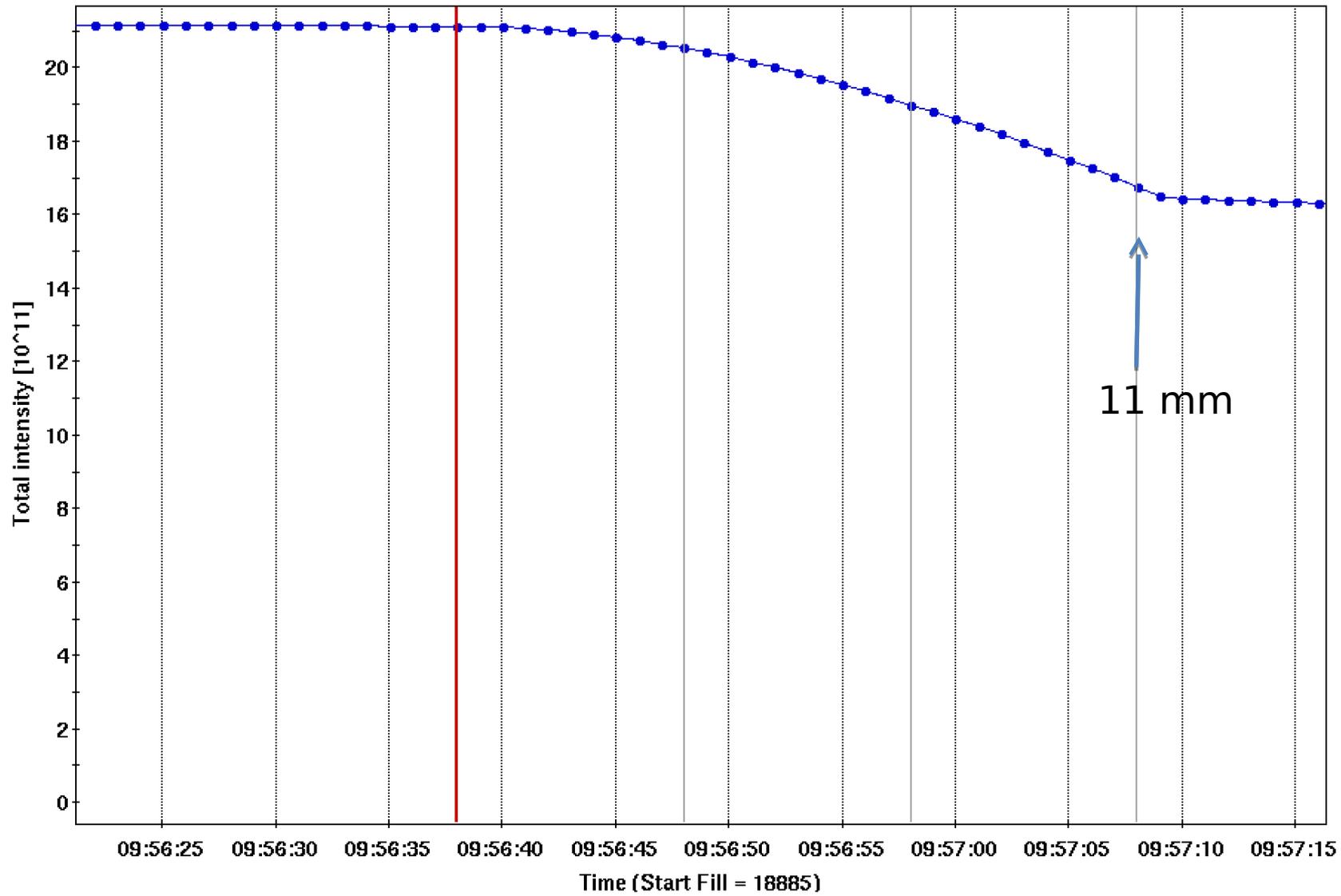


Circumference Lengthening

Vadim, Steve Brooks, Yue, Dejan, Al, Guillaume, Nick Kling

- Measurements were done at the injection
- Used momentum change dp/p up to 0.067 (**radial shift ~11 mm in arcs**)
- Tune feedback and chromaticity measurements and correction
- Working point improvement at store stone ($r=11\text{mm}$): $Q_x=0.701$, $Q_y=0.685$
- Optics measurements at the store: optics looks good.
- Ramps with different goal tune pattern on the ramp. **Max beam survival ~20%.**
- Max loss in Q8-Q9 area in sector 4

Best achieved



● bluDCCTtotal — relMon_ev-accramp;relEventNumM:value — relMon_ev-stone;relEventNumM

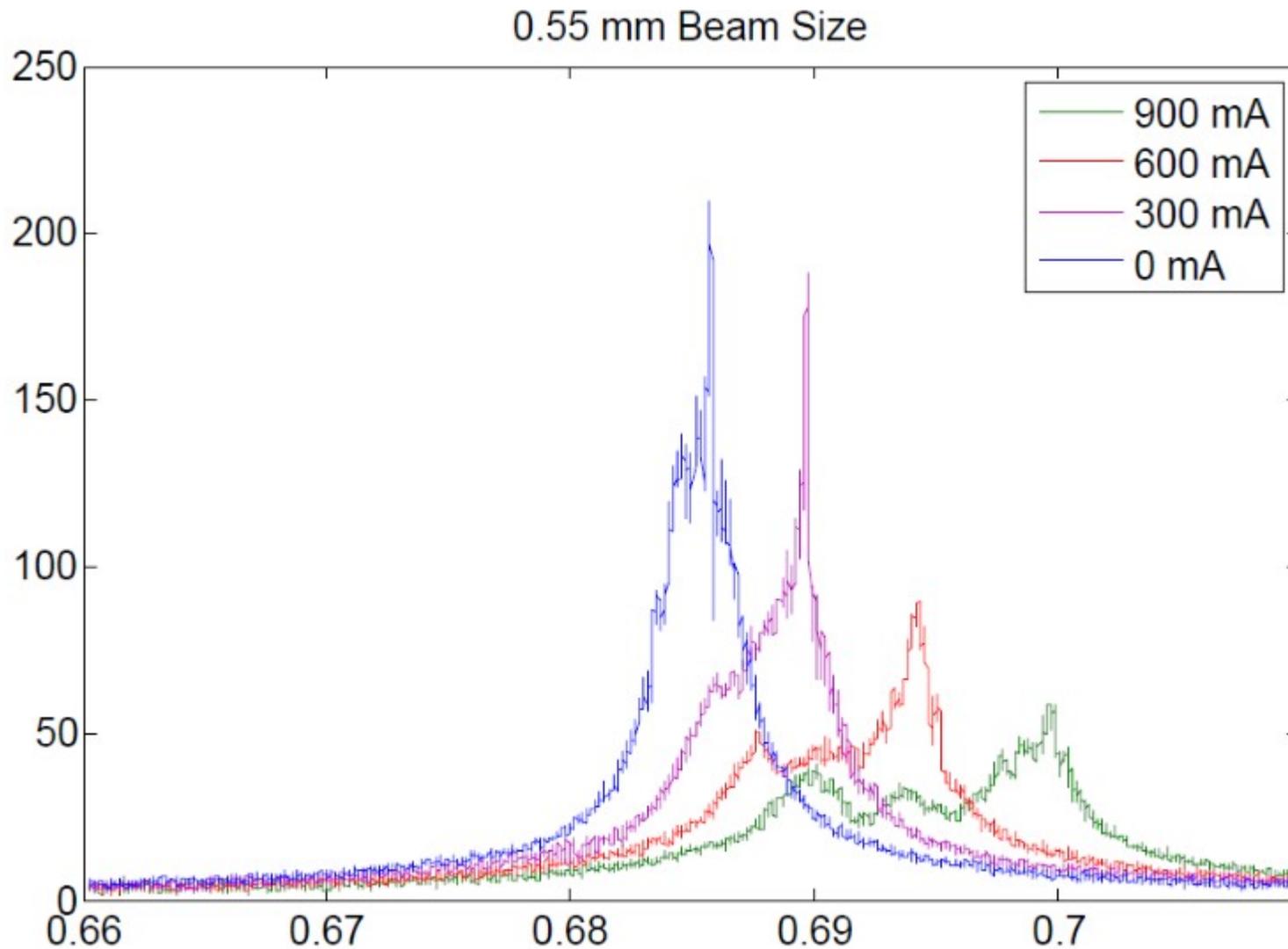
E-lens Related Beam Studies

Xiaofeng, Wolfram, Yun

1. BTF: different beam size and different beam current
2. BTF: Octupole
3. BTF: Different e-beam energy
4. BTF: 1D separation
5. Three 111x111 ramps

BTFs with single p-e collision:

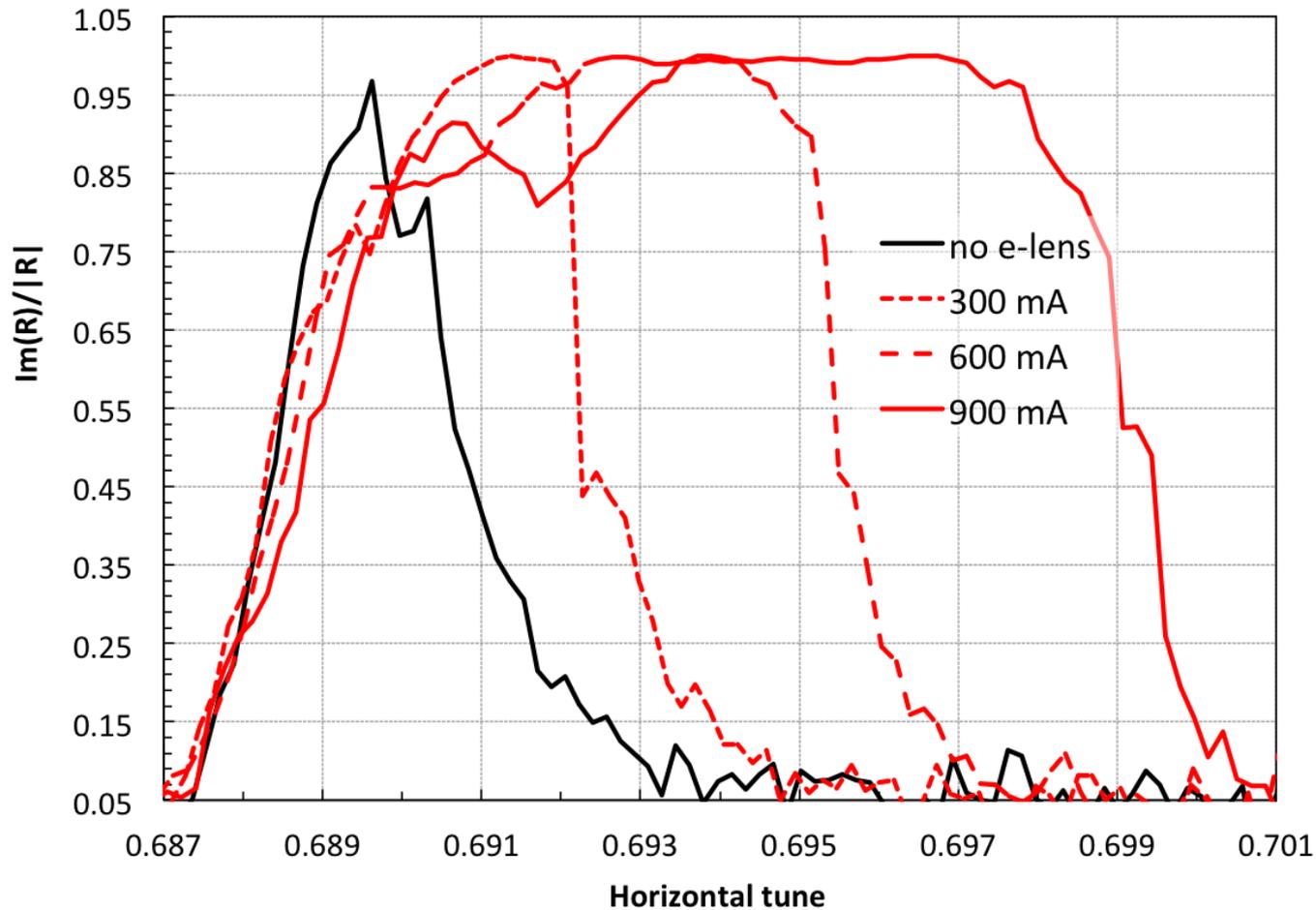
electron beams from e-lens: 0.55mm, 0.60mm, 0.66mm



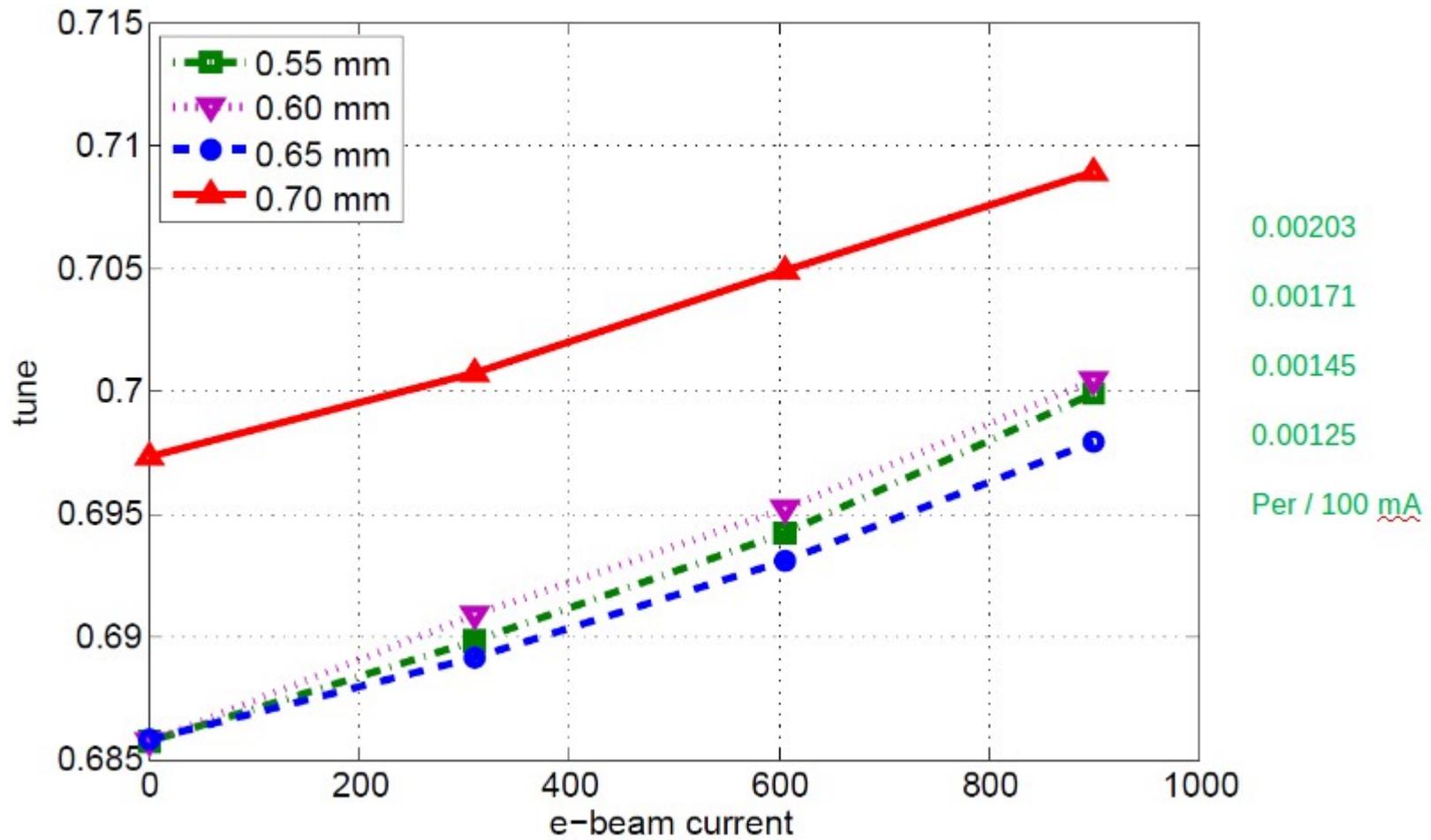
Incoherent tune distribution (Wolfram):

- 1) same e-beam size 0.55mm sigma
- 2) larger e-beam current, larger tune spread observed

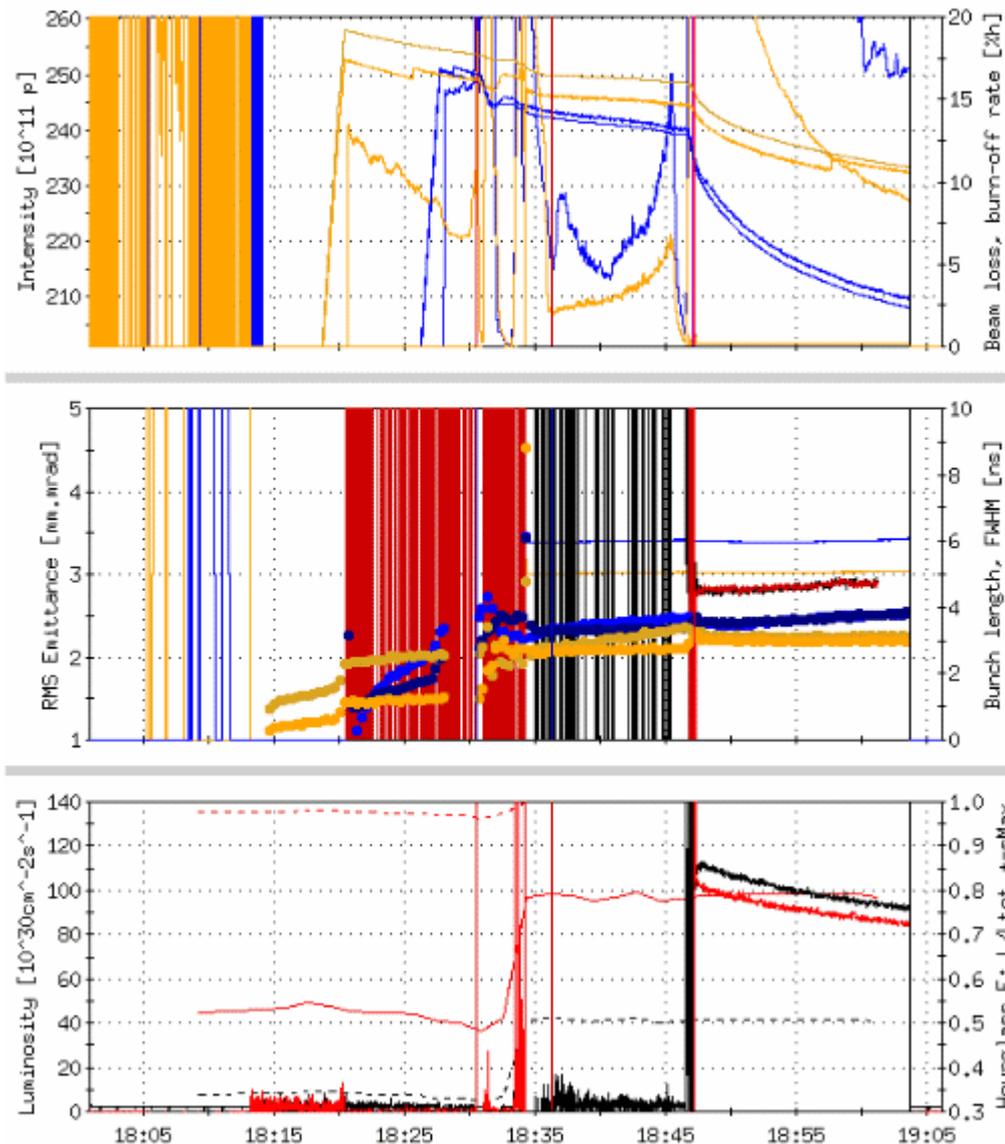
**Incoherent tune distribution due to e-lens current
(at 0.55 mm e-beam size)**



Tune vs Current



Collisions with larger electron currents (larger compensation):



In operation we used 400 mA current in the e-lenses.

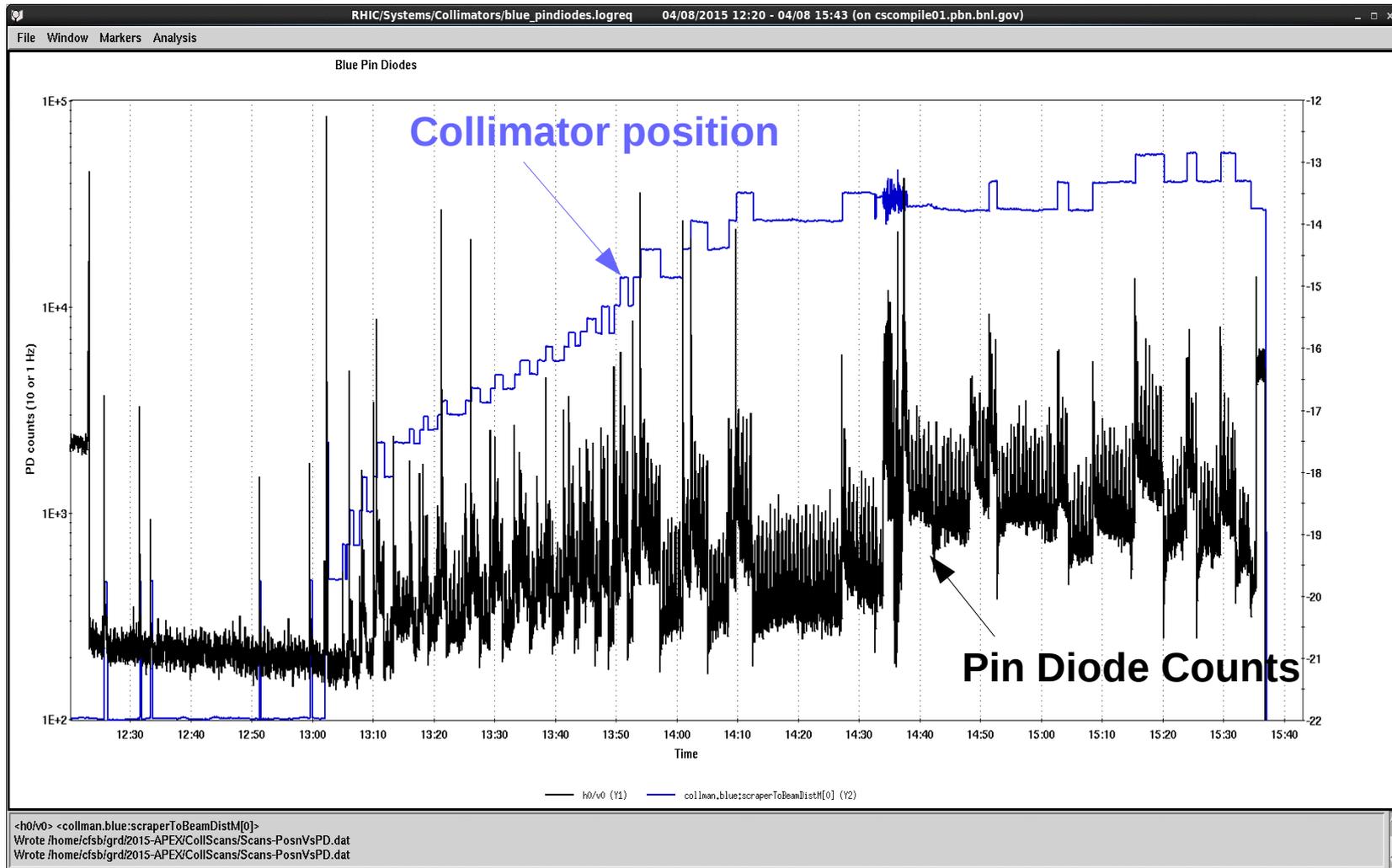
The 1st ramp (lost) had 600 mA, and no changes to the tune set points. It also had an angle change in one of the the Yellow snake.

The 2nd ramp (lost) had 600 mA, and a reduction of all store tunes by 0.001. The Yellow orbit change was taken out.

The 3rd ramp (successful) had 500 mA, and a reduction of all store tunes by 0.001. The Yellow orbit change was still out. No emittance blow-up when going into collision. Initial luminosity was 110×10^{30} cm $^{-2}$ s $^{-1}$ (good but not higher than the best stores).

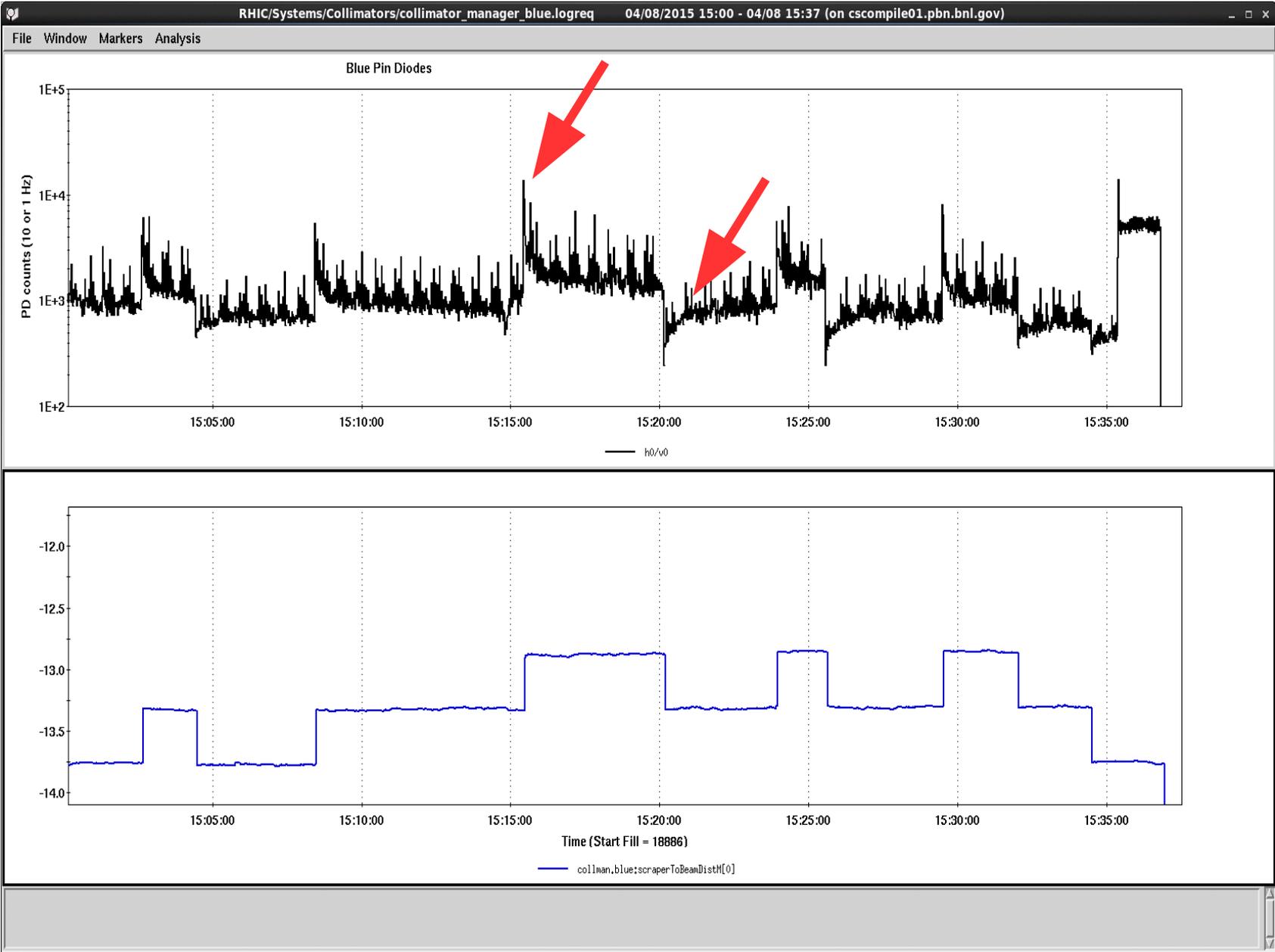
Diffusion Rate and Beam Halo Measurement

Guillaume, Giulio (visitor from Fermi)



- In-Out-In scan to get data on re-population rate and beam halo shape simultaneously.

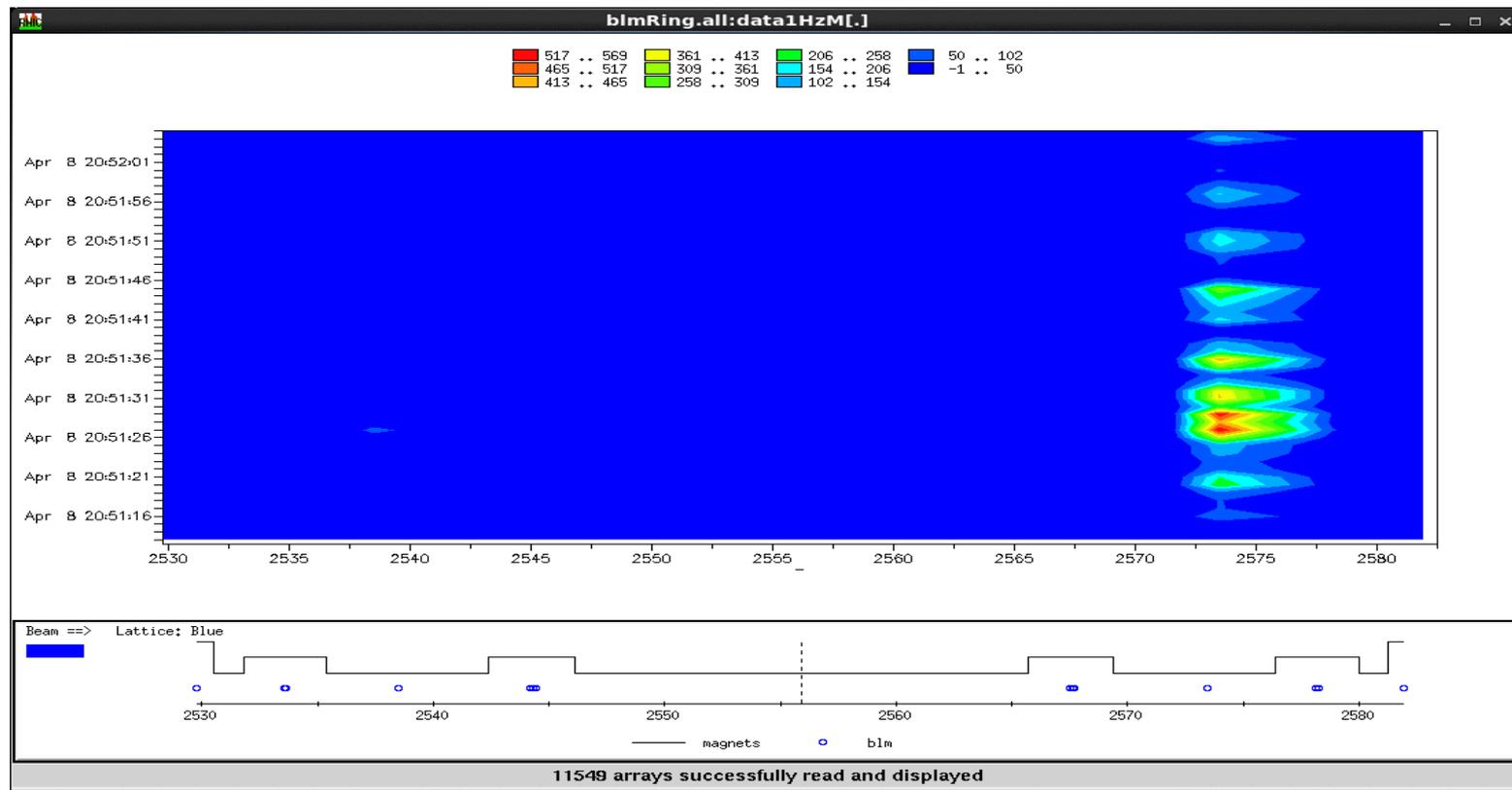
Zoom in:



IR2 aperture scan between DX-D0

Chuyu, Al, Guillaume, Wolfram, Yun

- Newly installed BLMs at sector 1, 2 were very helpful. New BLM at sector 7 will be very useful. Thanks to instrumentation and controls.
- We found the DX-D0 aperture kink is a tighter aperture limit for blue beam than the (moved) DX magnet.

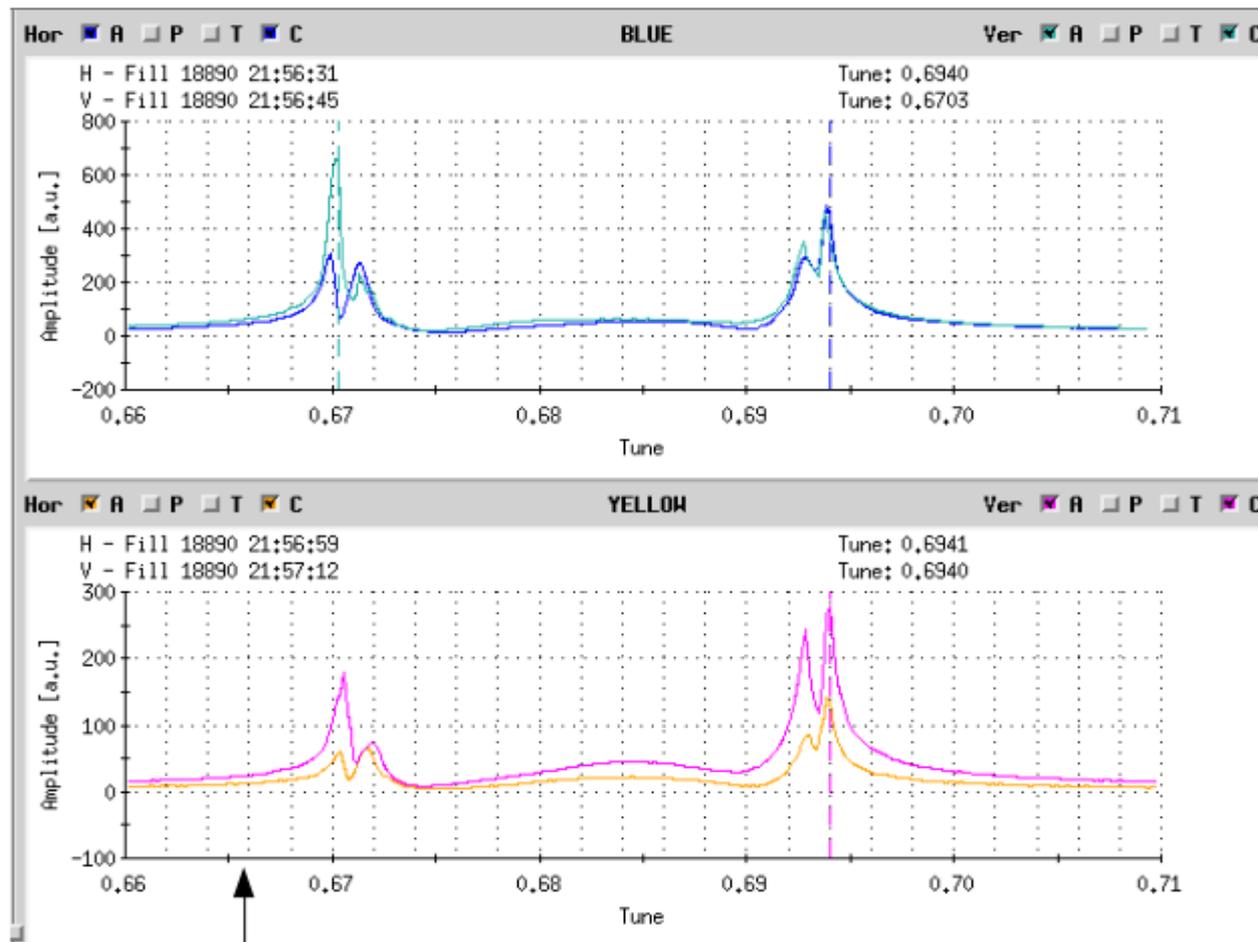


3Qy resonance stop-band

Al, Caitlin, Wolfram, Yun

BTF right after collision:

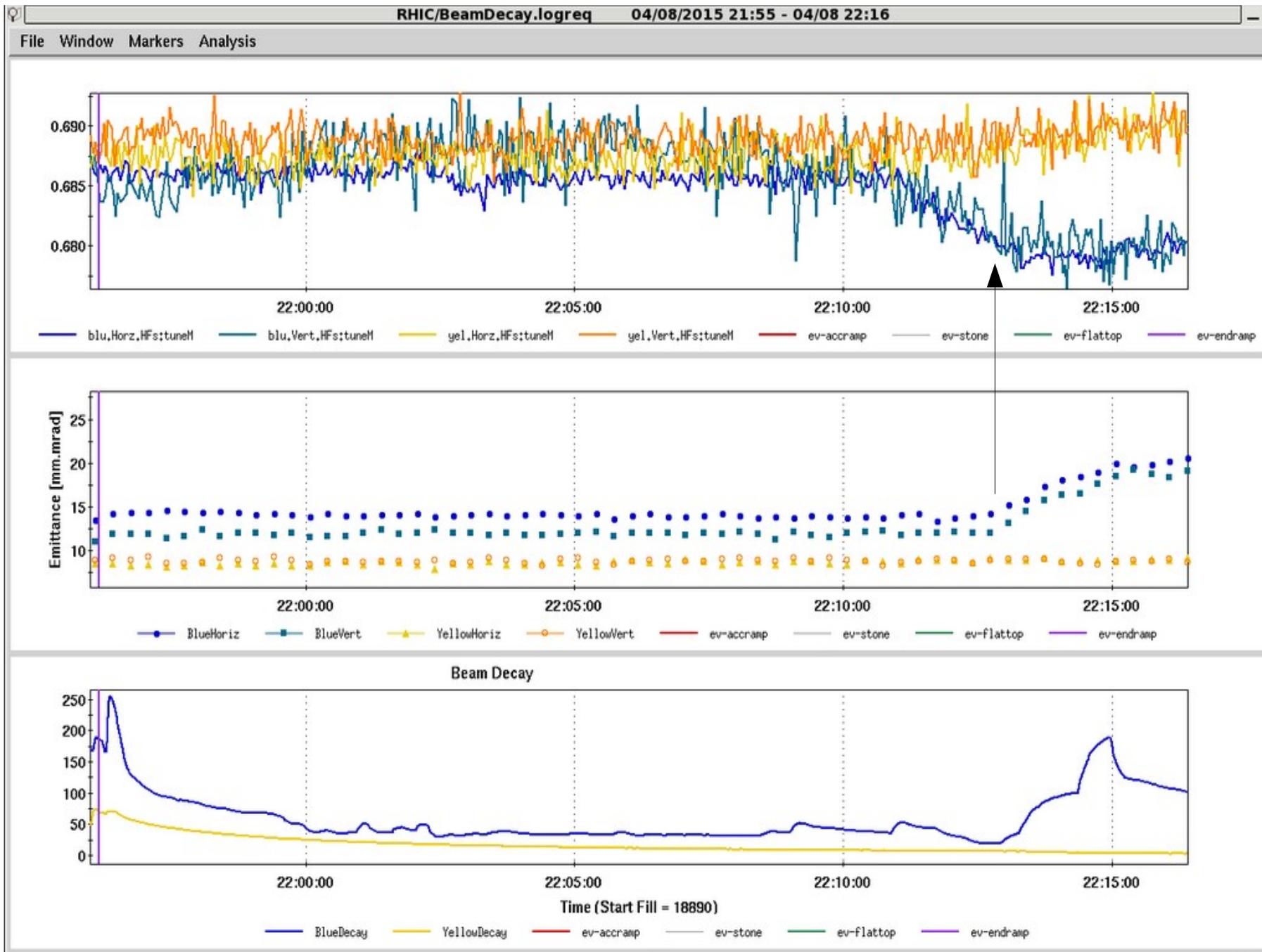
BB parameters from BTF with 1.2 Yokoya factor: **0.0183**



First Ramp:
30*30 bunches,
N_p=1.9e11
I_e=0mA

Pushing Blue working point towards 2/3:

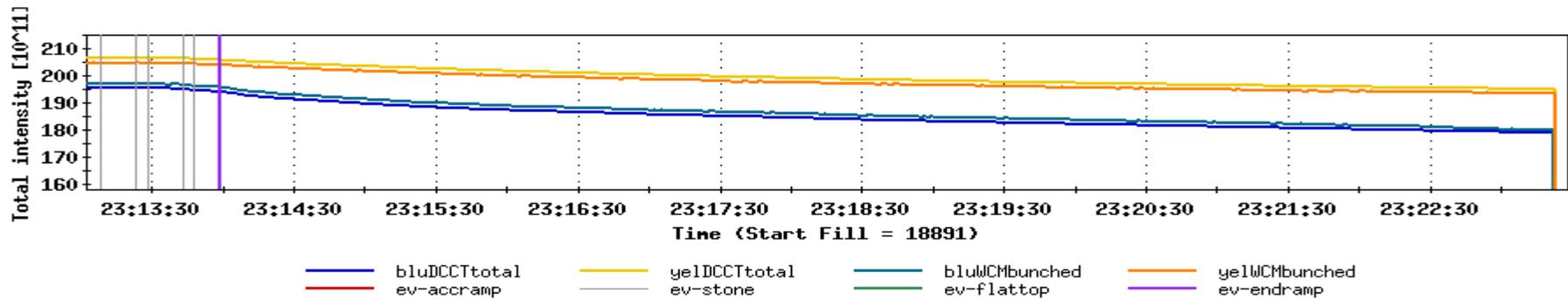
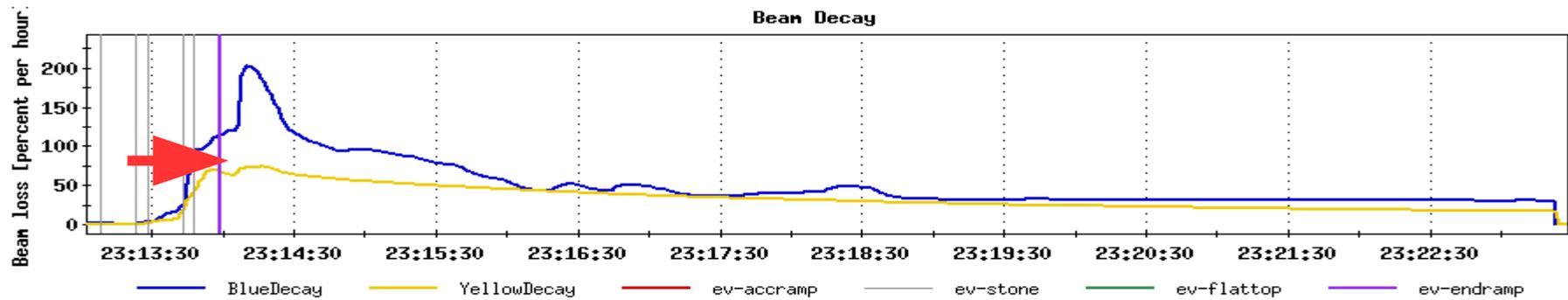
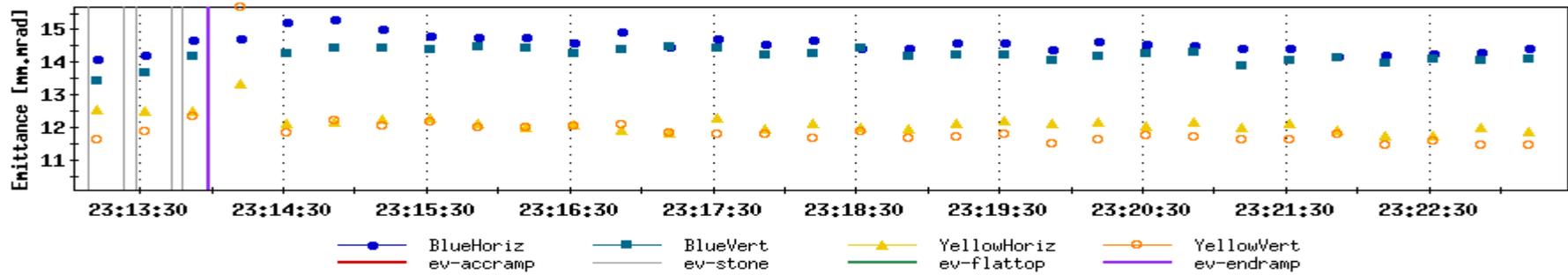
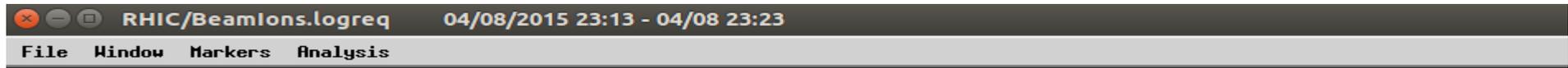
Blue beam lifetime and emittances suffered, couldn't push Pi mode to 2/3



Second Ramp:

111*111 bunches, electron current 0 mA

Bunch intensity $1.9e11$



Notices

- The 5rd APEX Session: last session in p-p run
April 22, 16 hours, 8:00 – 24:00
- Beam time request:
APEX weekly meeting,
April 17, LCR, 10am
- Future Plan:
Please get ready for experiments in p-Au run