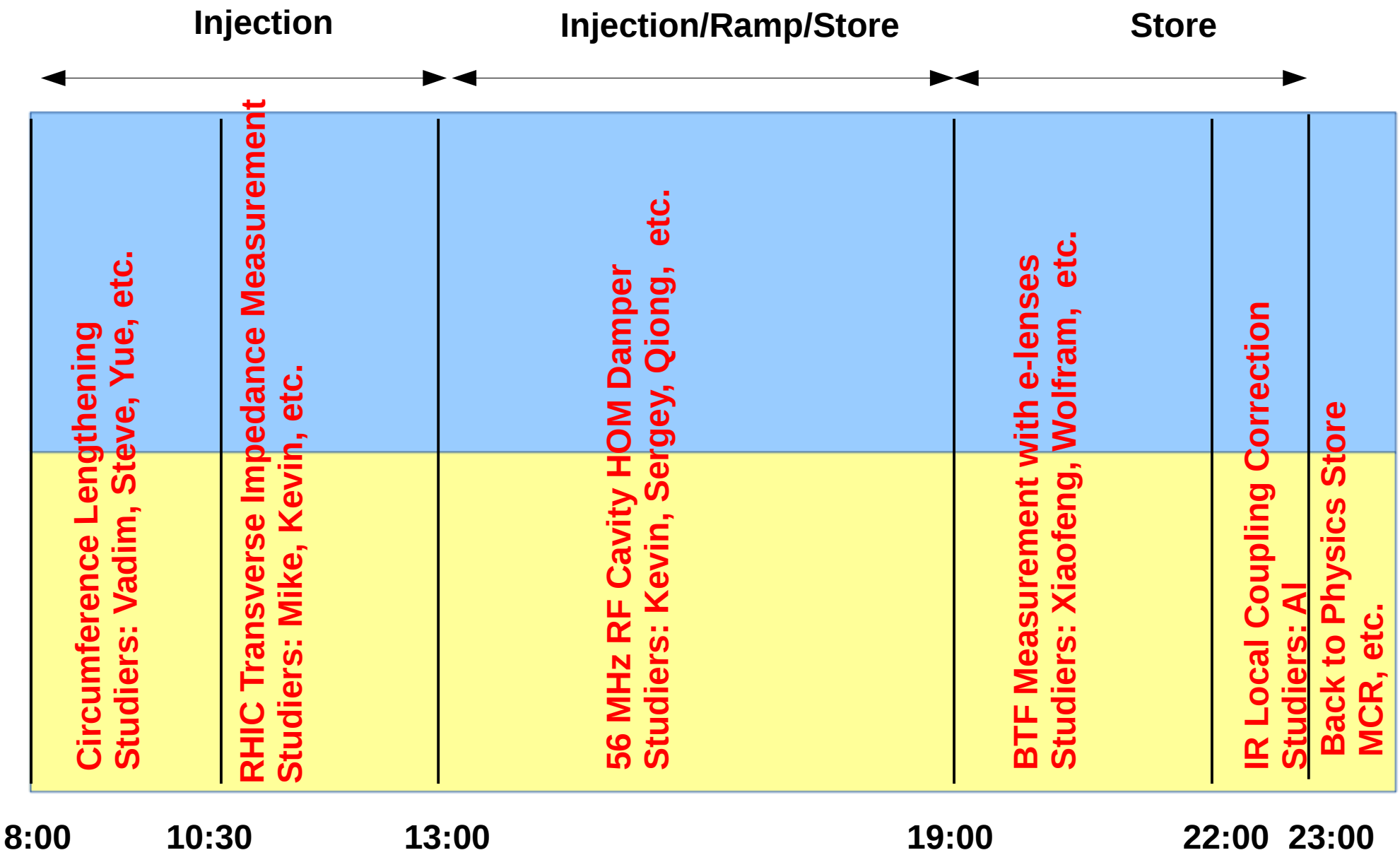
APEX Schedule for March 11, 2015



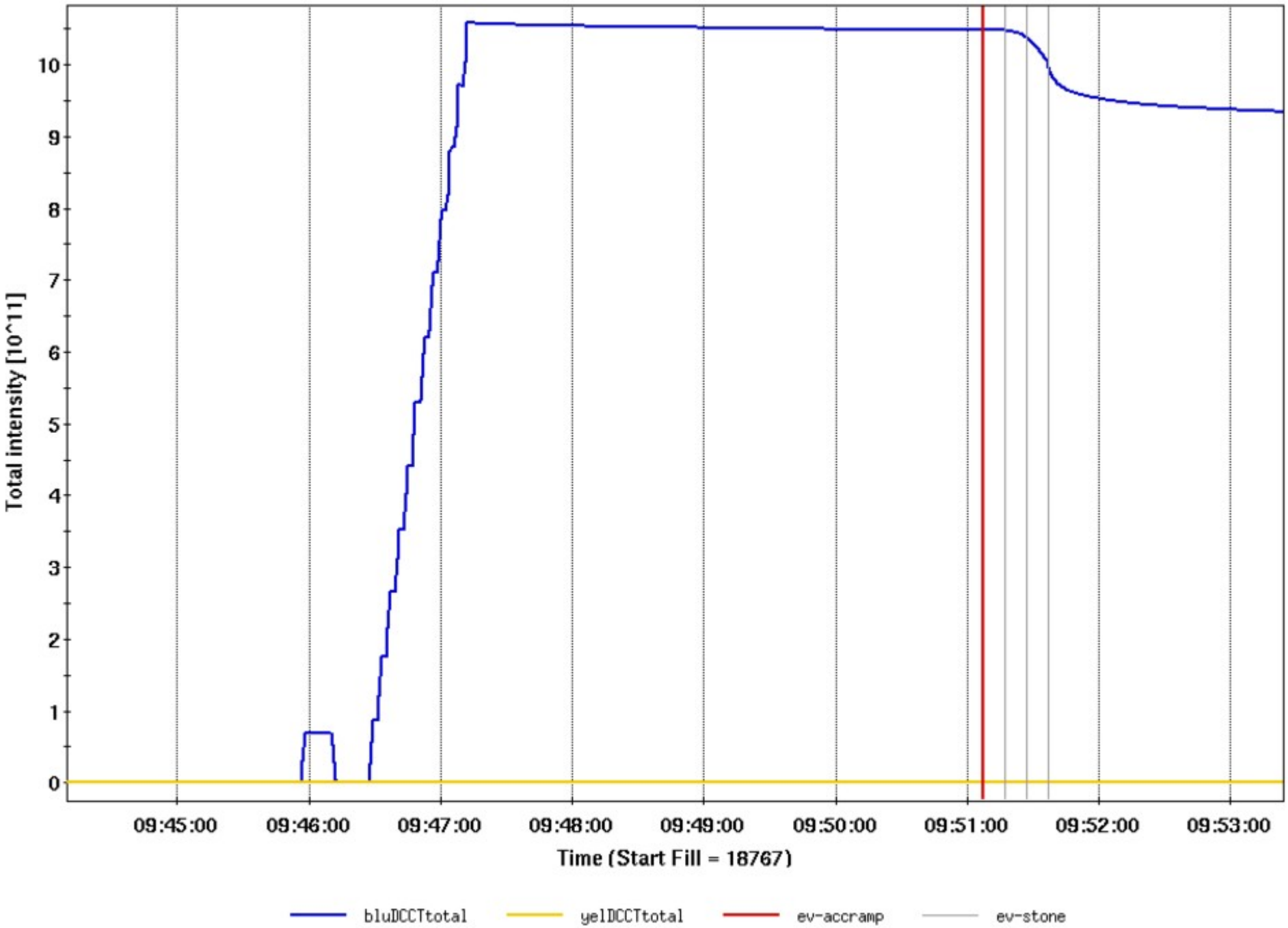
Circumference Lengthening

03/11/15 measurements

V. Ptitsyn, S. Brooks, Y. Hao,
A. Marusic, G. Robert-Demolaize,
D. Trbojevic

03/11/15 study

- Started ~20min later, but then got additional half hour. ~2h for whole study.
- Measurements were done at the injection
- Dedicated ramp was prepared by Guillaume and Al to change all quadrupole strength proportionally to momentum change.
- The goal was to verify the ramp operation.
- Used momentum change dp/p up to 0.005 (radial shift ~ 6mm in arc)


Total intensity [10^11]
0
1
2
3
4
5
6
7
8
9
10
09:45:00
09:46:00
09:47:00
09:48:00
09:49:00
09:50:00
09:51:00
09:52:00
09:53:00
Time (Start Fill = 18767)
bluDCCTtotal
yelDCCTtotal
ev-accramp
ev-stone

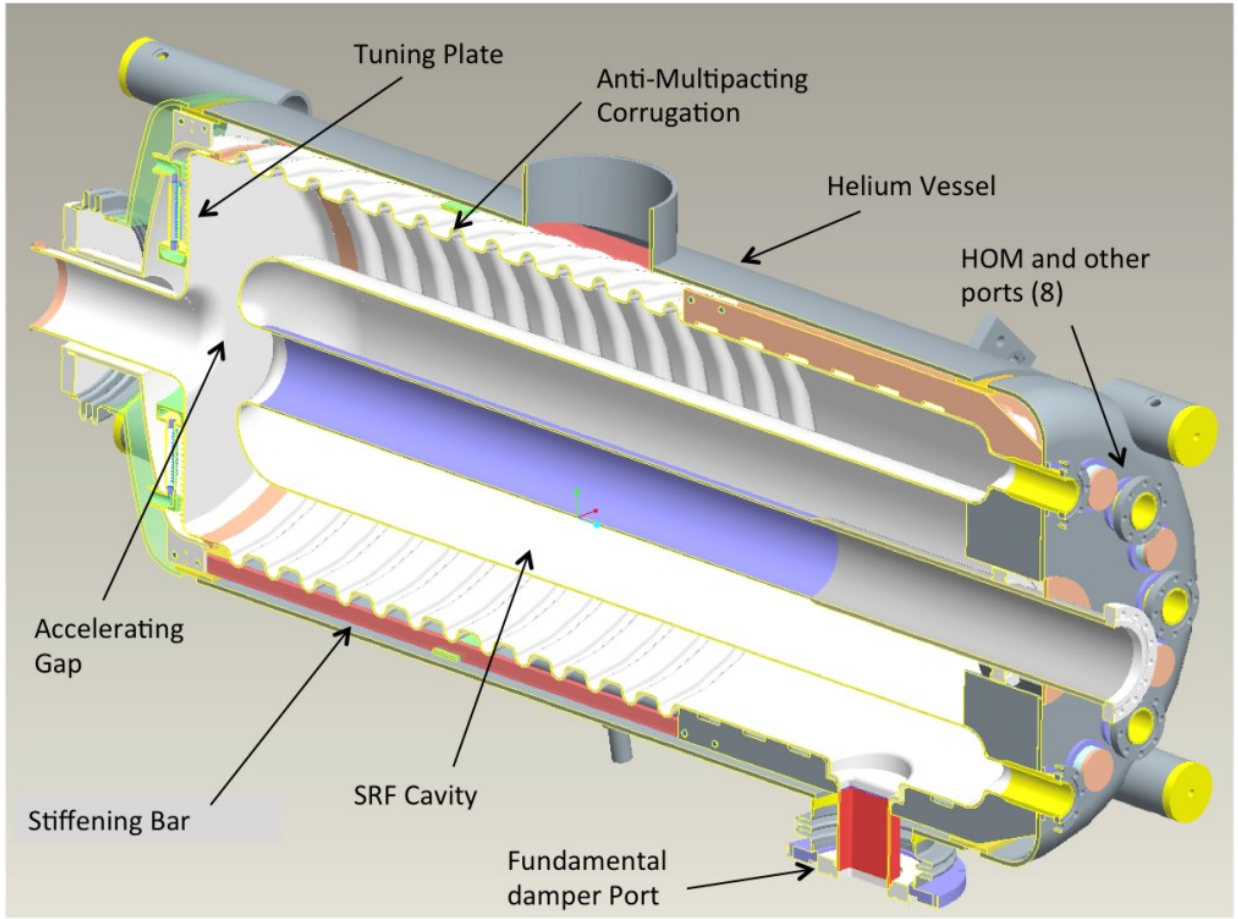
Further plan

- Having the ramp machinery tested at last studies, go to full ramp with momentum change up to 1%. (Prepare also the ramp for -1% momentum change)
- Include dipole magnet contribution to sextupole field to calculate more accurate QF,QD, SF,SD settings for the ramp.

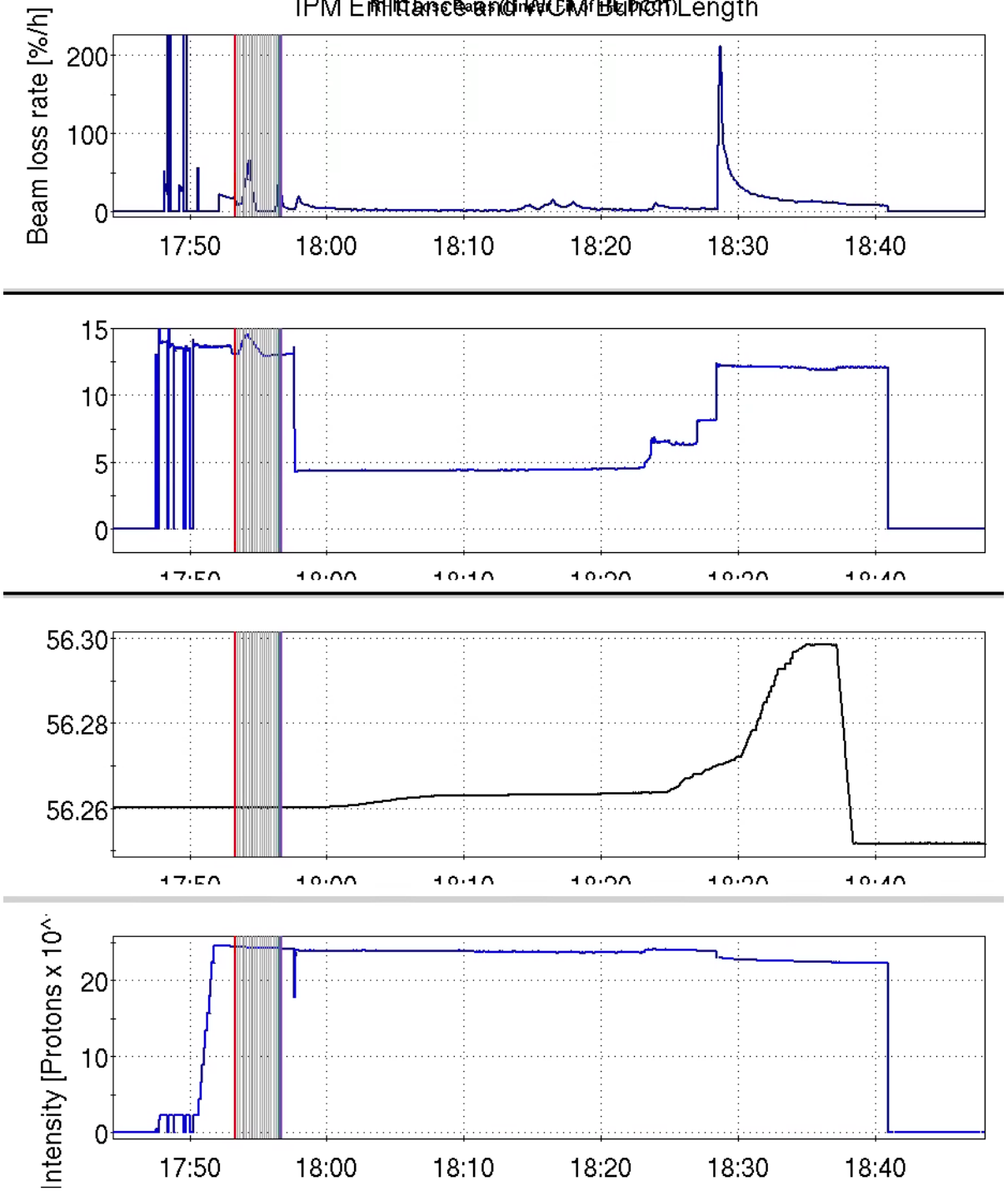
56 MHz SRF Cavity HOM Study

Sergey Belomestnykh, Mike Blaskiewicz, Thomas Hayes, Kevin Mernick, Freddy Severino, Kevin Smith, Qiong Wu

Mar 12, 2015



Mode #	Freq [MHz]	Total Tuning [kHz]
1	56.3126	46.5
2	166.233	848.4
3	273.7679	299.2
4	376.7558	447.0
5	474.2038	420.5

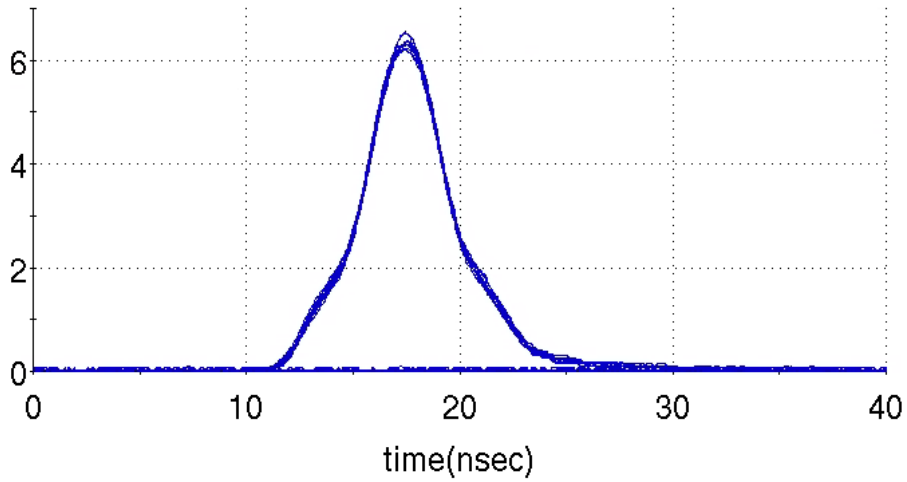


Beam loss rate [%/h]

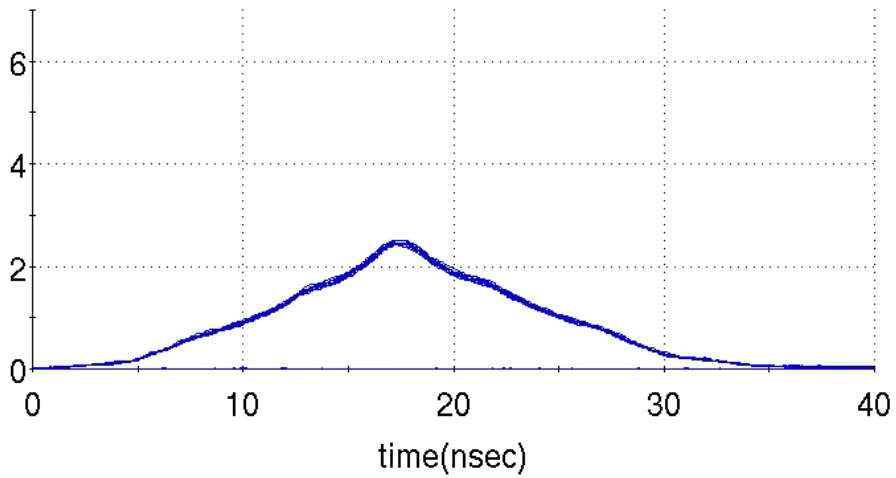
Bunch Length [ns]

Cavity Freq [MHz]

Proton Intensity [x10^11]



Beam profile before we swept through multiple (5) HOM resonance lines



Beam profile after we swept through multiple HOM resonance lines

Summary

- The effect from Fundamental damper extraction to the proton beam is negligible, with feedback loop turned on.
- The cavity frequency sweeps through first four monopole HOM resonance lines within the full tuning range.
- No observation of excited dipole/quadrupole HOMs.
- Beam is affected greatly by the excited HOMs in the cavity.
- We need HOM damper(s).

E-lens Related Beam-beam Experiment: X. Gu

1 IP10 -- e-beam collision with proton only (up to
2 800mA e-beam with 100 mA / step)

3 IP10 + IP6 + IP8

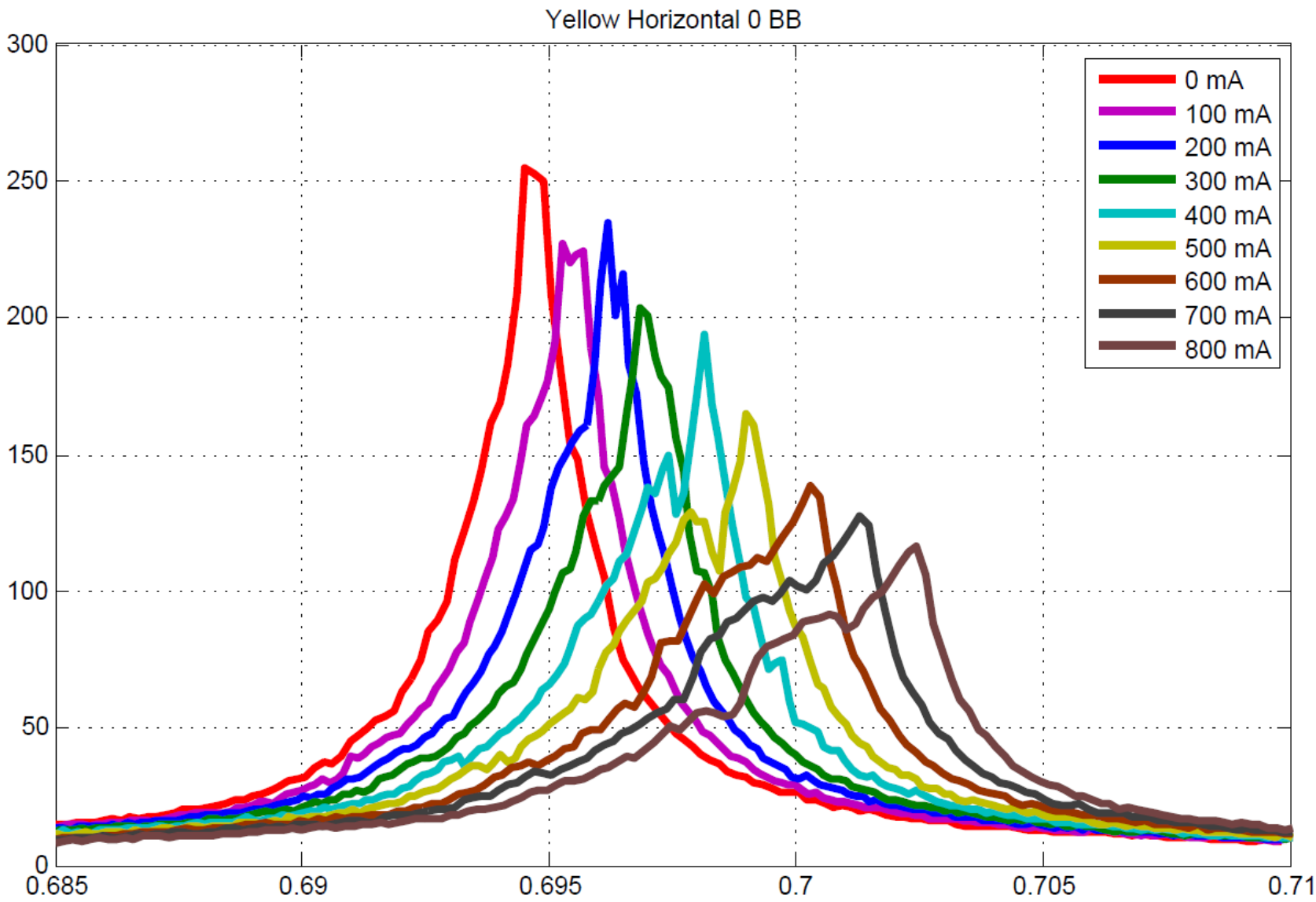
4 IP10 + IP8

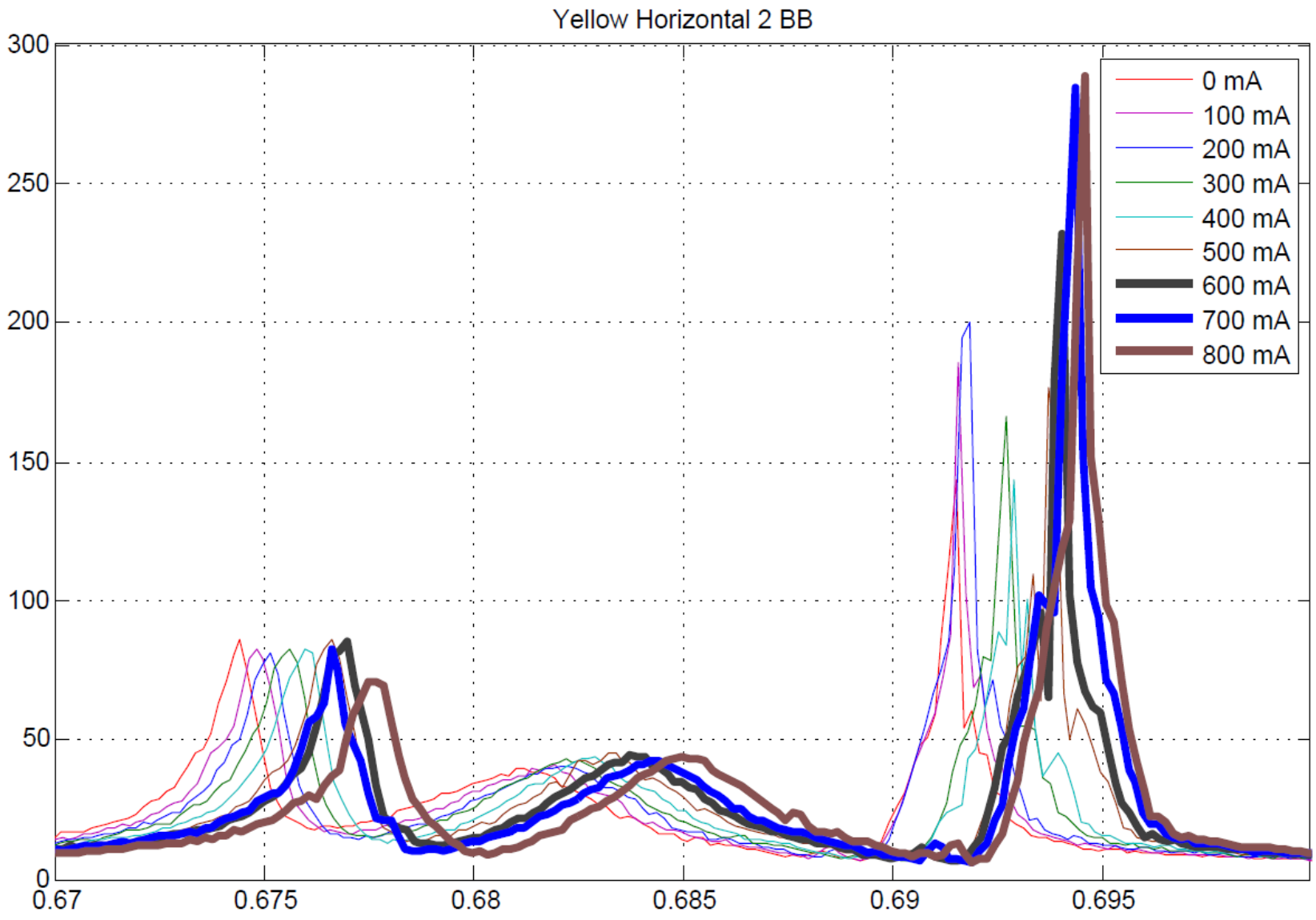
IP10 -- 1D horizontal separation scan with 700 mA beam from 2mm to -4.5 mm (0.5 mm/step)

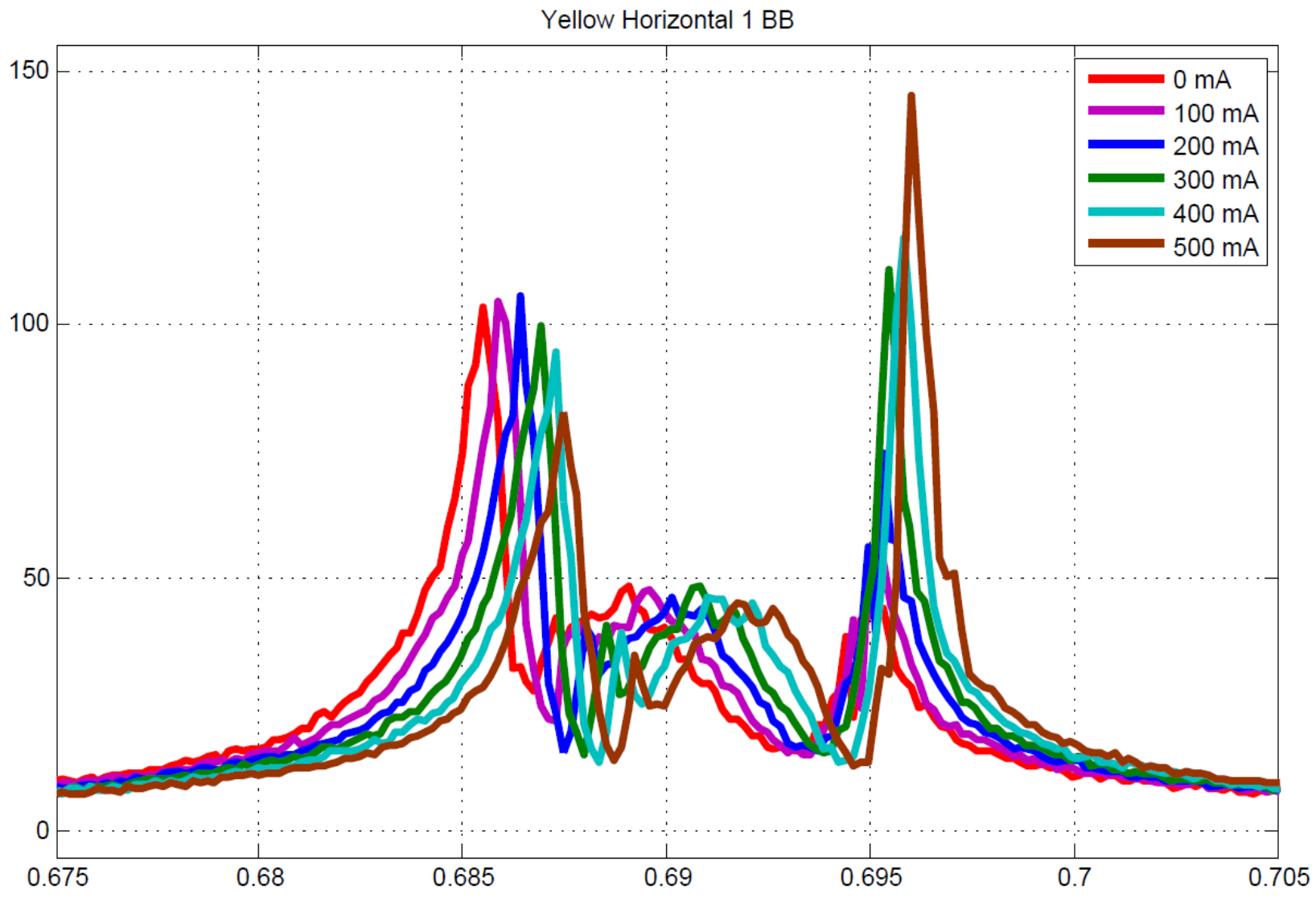
5 Current vs Emittance

6 Yun, Michiko, Al, Wolfram, MCR, Xiaofeng Gu

courtesy of V.Shiltsev


Yellow Horizontal 0 BB
300
250
200
150
100
50
0
0.685
0.69
0.695
0.7
0.705
0.71
0 mA
100 mA
200 mA
300 mA
400 mA
500 mA
600 mA
700 mA
800 mA


Yellow Horizontal 2 BB
300
250
200
150
100
50
0
0.67
0.675
0.68
0.685
0.69
0.695
0 mA
100 mA
200 mA
300 mA
400 mA
500 mA
600 mA
700 mA
800 mA


Yellow Horizontal 1 BB
150
100
50
0
0.675
0.68
0.685
0.69
0.695
0.7
0.705
0 mA
100 mA
200 mA
300 mA
400 mA
500 mA

Notices

- The 3rd APEX Session:

  March 25, 16 hours, 8:00 – 24:00

- Beam time request:

  APEX weekly meeting,

  March 20, LCR, 10am

- Future Plan:

  the 4th APEX Session: April 8, 2015