

Off-momentum beta-beat correction

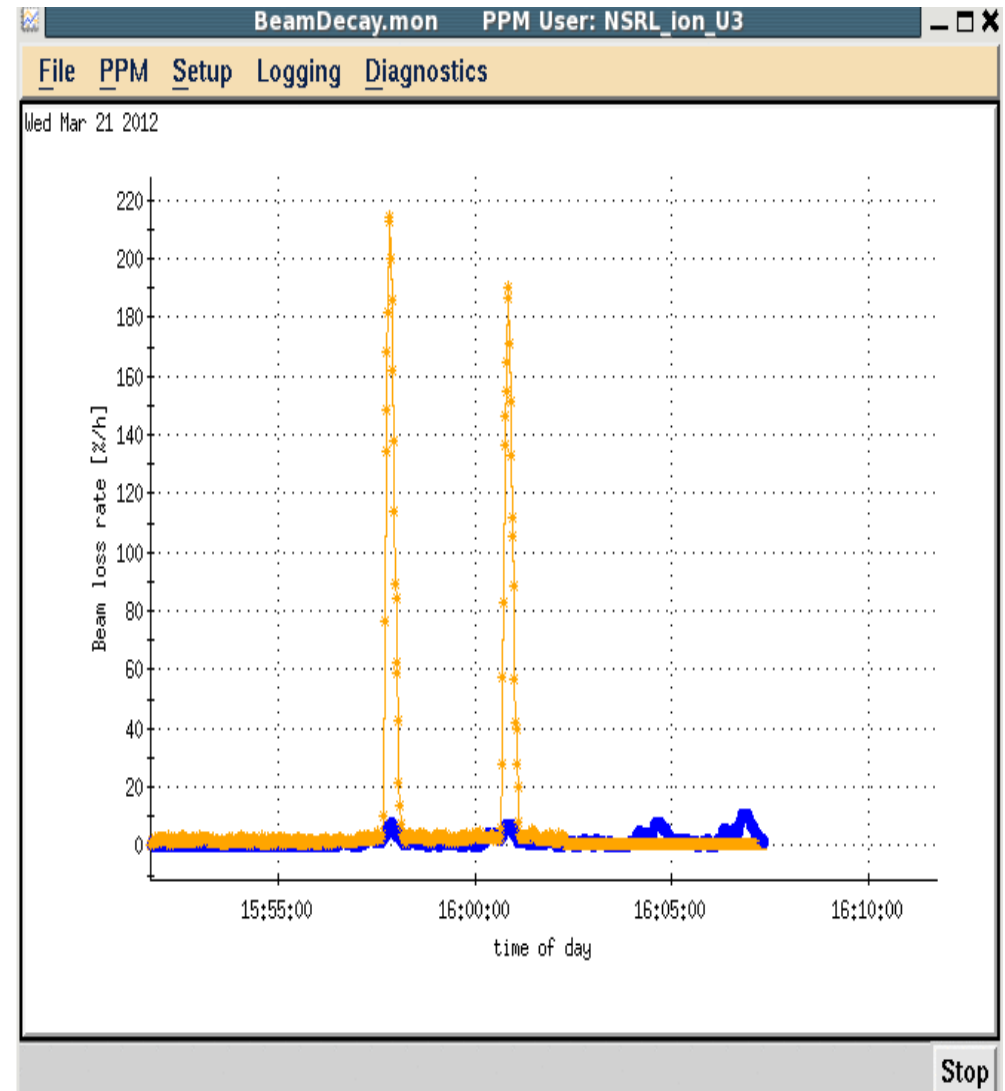
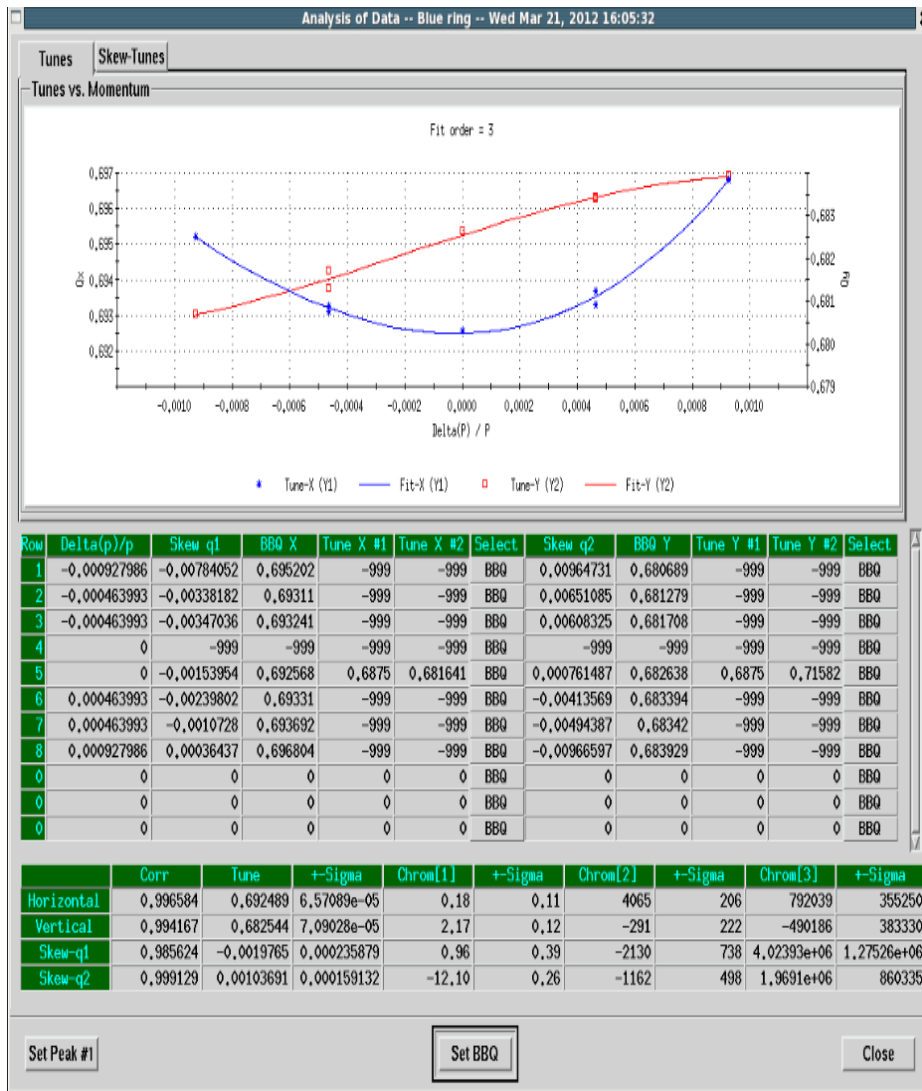
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(APEX, March 21, 2011)

General:

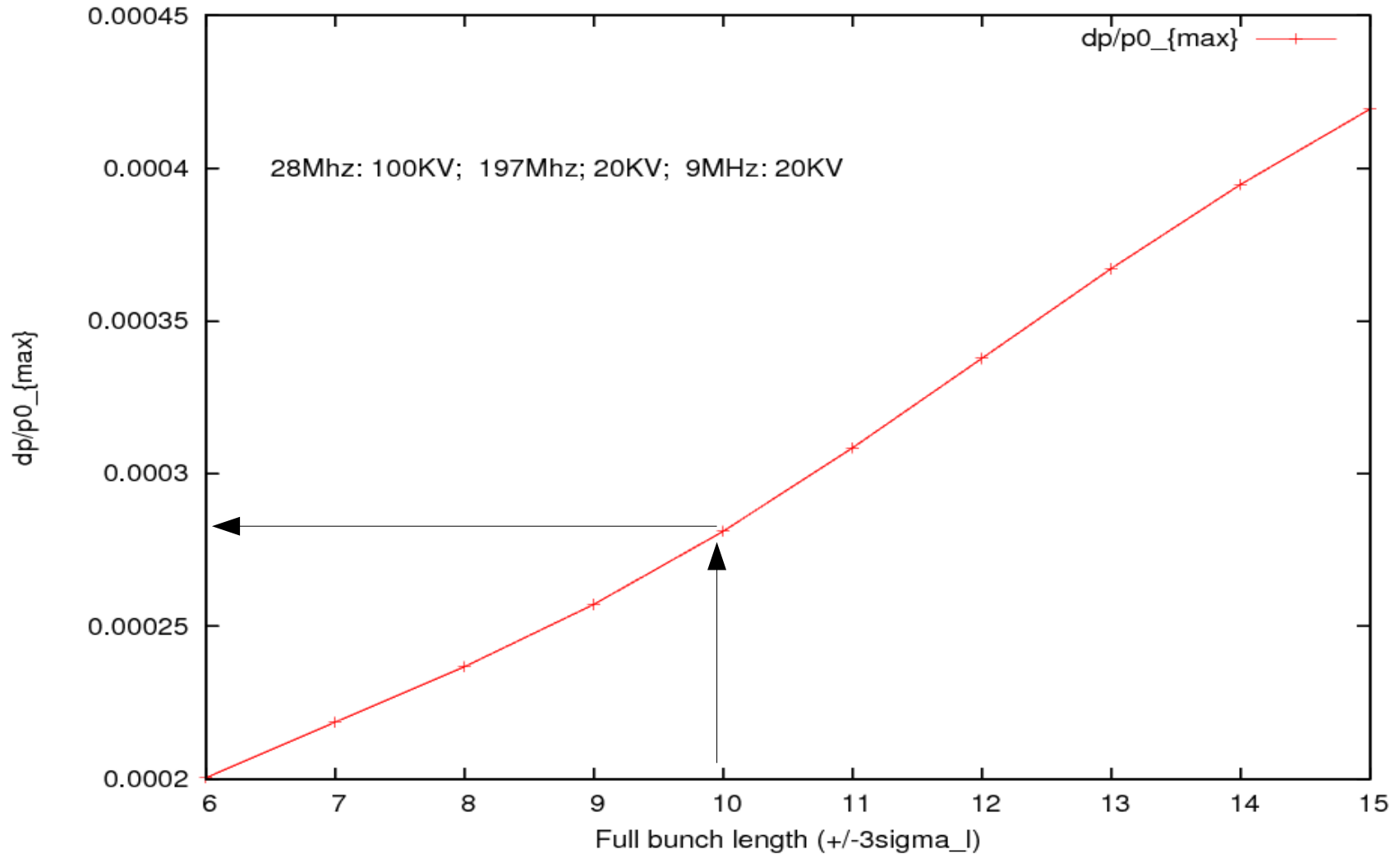
- 1) Asked for 2 hours, actually used 1.5 hour.
- 2) The beams are left from previous beam-beam experiment
Blue beam with operational tunes
Yellow beam with above 0.7 tunes and vertical emittance twice larger
- 3) We focused on Blue beam for this experiment, although our initial plan is fixing yellow.
- 4) BBQ worked very well during second order chromaticity measurement and correction. The measurements repeated very well.
- 5) Reduce Q_x'' from 4600 to 3000 with moderate correction.
- 6) Beam aborted during off-momentum beta-beat measurement.

Second order chromaticity measurement



Measured Blue $Q_x'' \sim 4600$ with 1mm radial shift ($dp/p_0 \sim 0.00093$).
 Blue beam loss was blew 20%/hour during the measurement.

Momentum Aperture for 250GeV p-p run



Momentum aperture is not an issue for Blue at least.
Blue Q_x is higher tune, far away from $Q_y=2/3$.

Summary and Plan

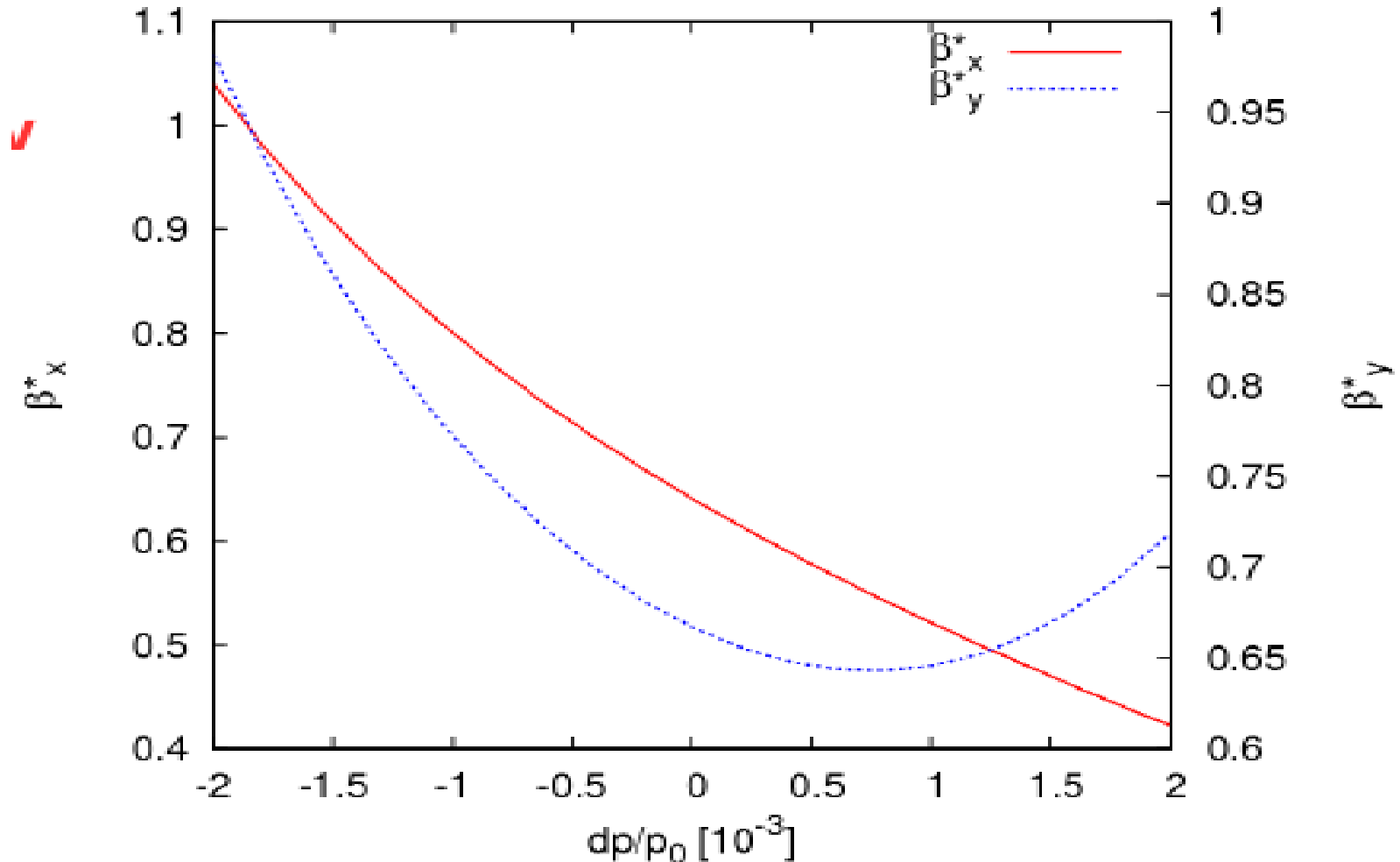
In this session:

Data taken and Q'' corrected in Blue. But failed to measure the off-momentum beta-beat to confirm its reduction.

- Next session (close session):

2 hours and focus on yellow and off-momentum beta-beat measurement.

Off-momentum beta-beat measurement



The goal of this experiment is to reduce the off-momentum beta-beat.

The key is to measure off-momentum beta-beat.

Unfortunately we couldn't complete this measurement.

Tevatron experiences shows off-momentum beta-beat reduction increase luminosity.