

# Nonlinear Chromaticity and beta-beat Correction

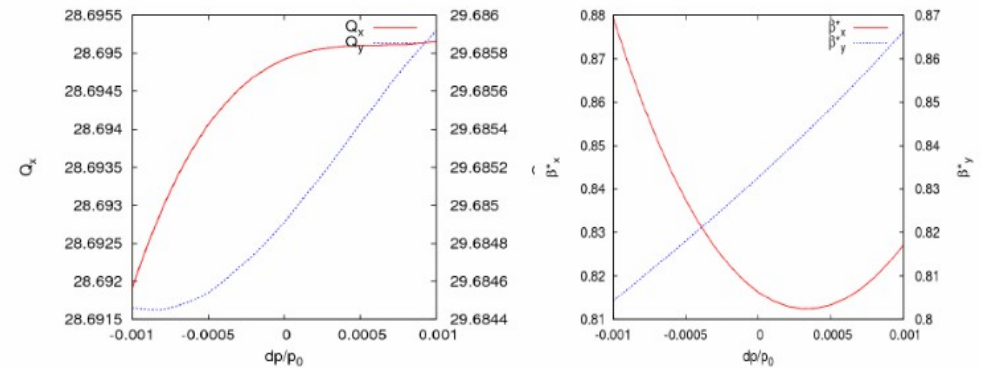
( Feb.22, 2012 APEX Session, Yun, Al, Mei, Simon )

## Blue beam parameters

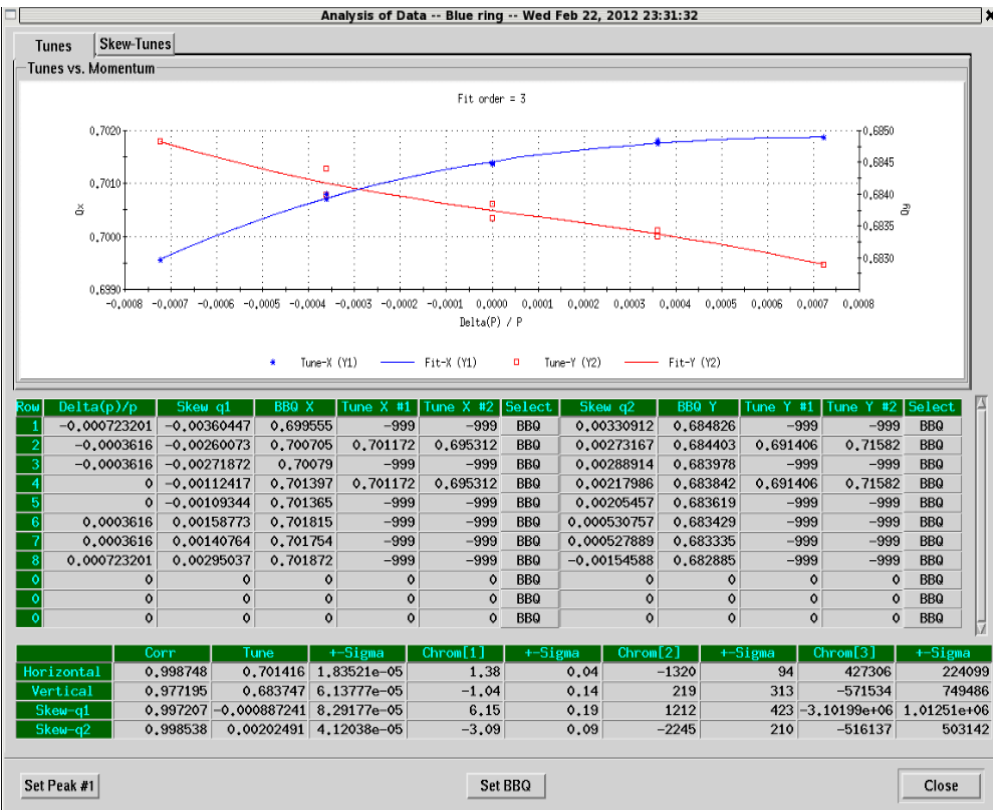
```
[yunluo@jaguar trace_longitudinal]$ ./Lattice_check
```

### Optics Summary:

```
Length: 3833.84518145941
Tunes : 28.6949190180268 29.6849122783525
Chrom1: 0.851394731919048 0.930217440788343
Chrom2: -1361.34186830111 295.714349131985
Chrom3: 767573.313946939 -200994.461899583
Beta* : 0.81624858862218 0.832695453146158
Alfa* : -0.00148957050719462 0.0188312522192645
Beta_max: 1628.18715340838 1597.84821455476
```



Measurement and model prediction agree well.

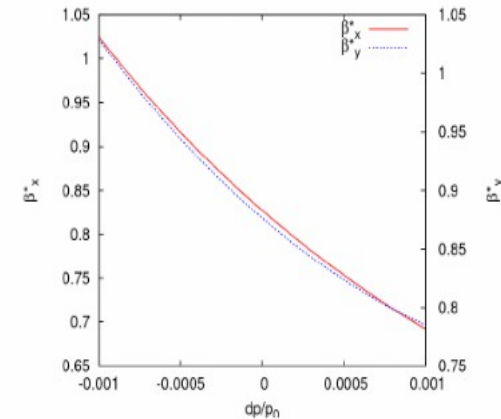
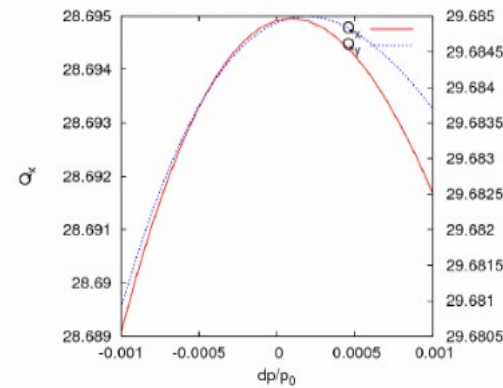


# Yellow beam parameters

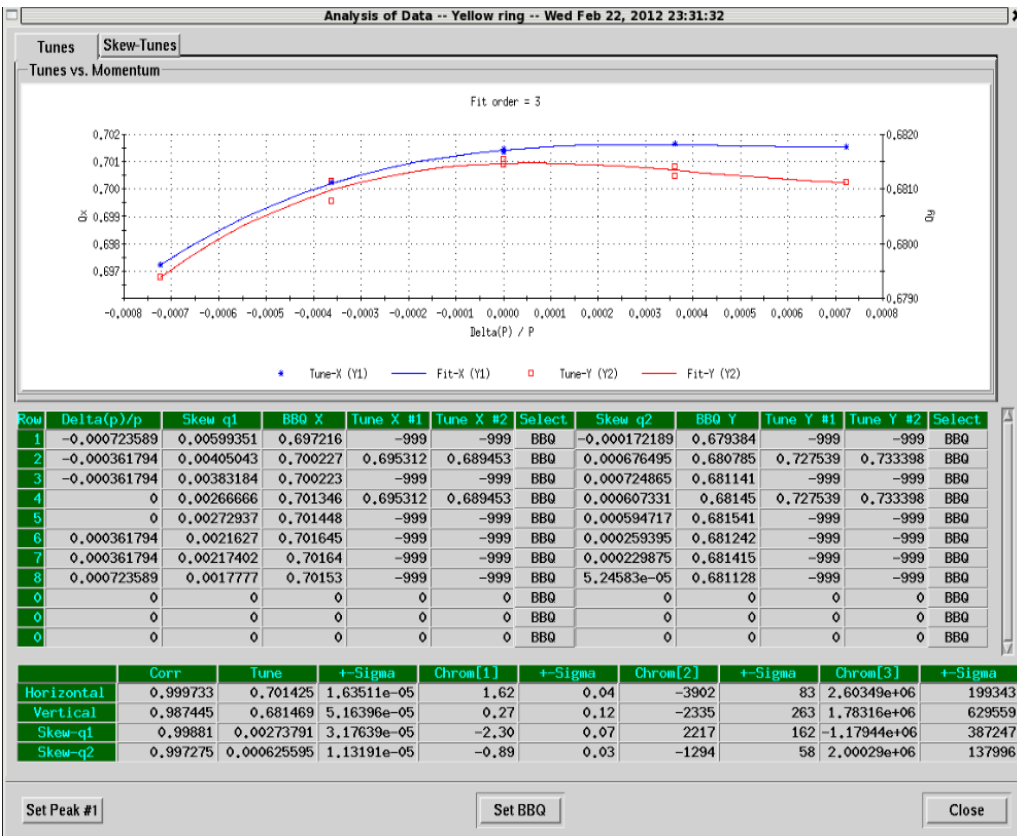
```
[yunluo@jaguar trace_longitudinal]$ ./Lattice_check
```

## Optics Summary:

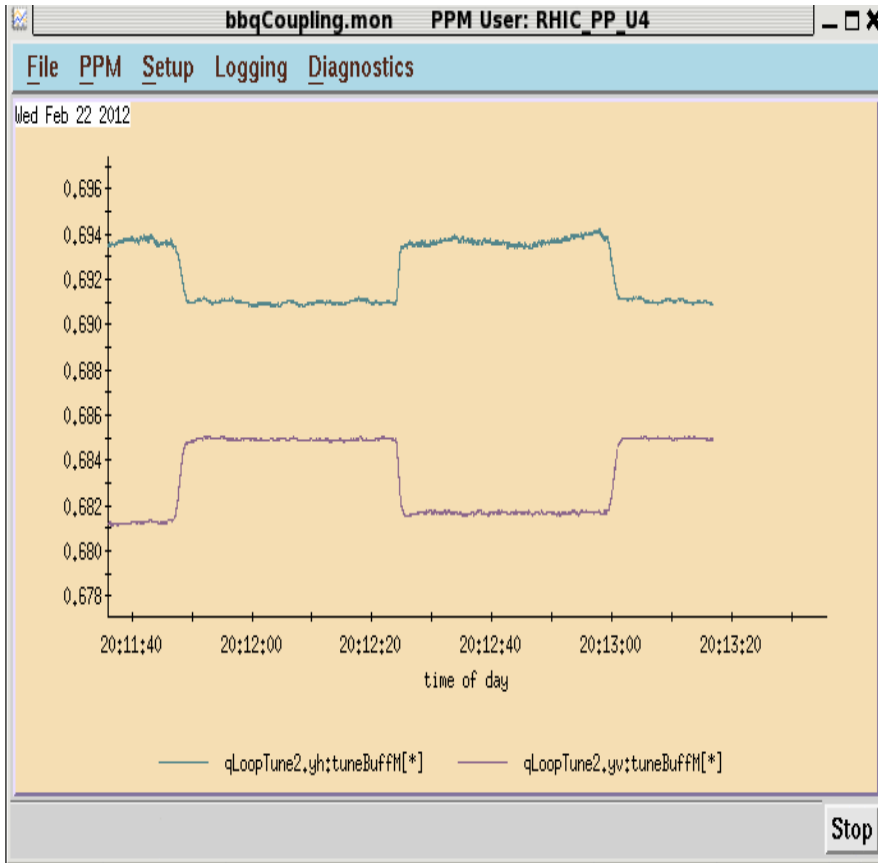
```
Length: 3833.84518145943
Tunes : 28.6949193047181 29.684913473937
Chrom1: 0.84807407325714 0.925277514557074
Chrom2: -4537.75834002772 -2615.76732588541
Chrom3: 463535.235436601 471614.963587171
Beta* : 0.827188004358902 0.876289650442343
Alfa* : -0.00741758974577747 0.00501444970430566
Beta_max: 1606.36357429641 1518.78134386693
```



Measurement and model prediction agree well.

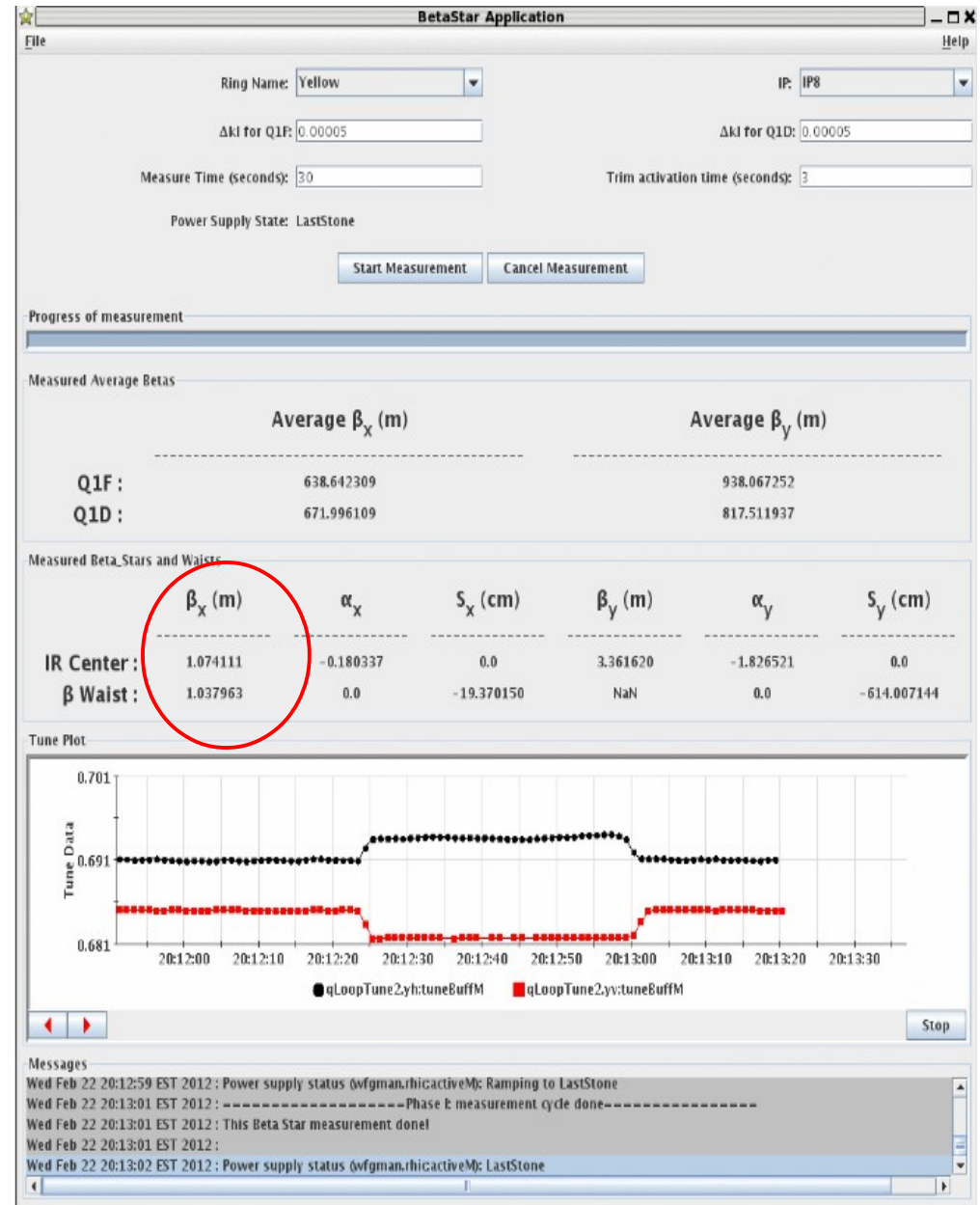


# Beta<sup>\*</sup> Measurement



Measured at Yellow IP8.

Measured horizontal beta\* is 1m.  
 Measured vertical should be smaller than 1 m ( the online code is being checked ).



# Plan for next APEX Session

- Beam time request: 2 hours ( 1 ramp )
- Activities:
  - apply  $Q''$  correction to yellow ring
  - measure off-momentum beta-beat
  - measure  $\beta^*$ -beat