

E-lens related beam studies

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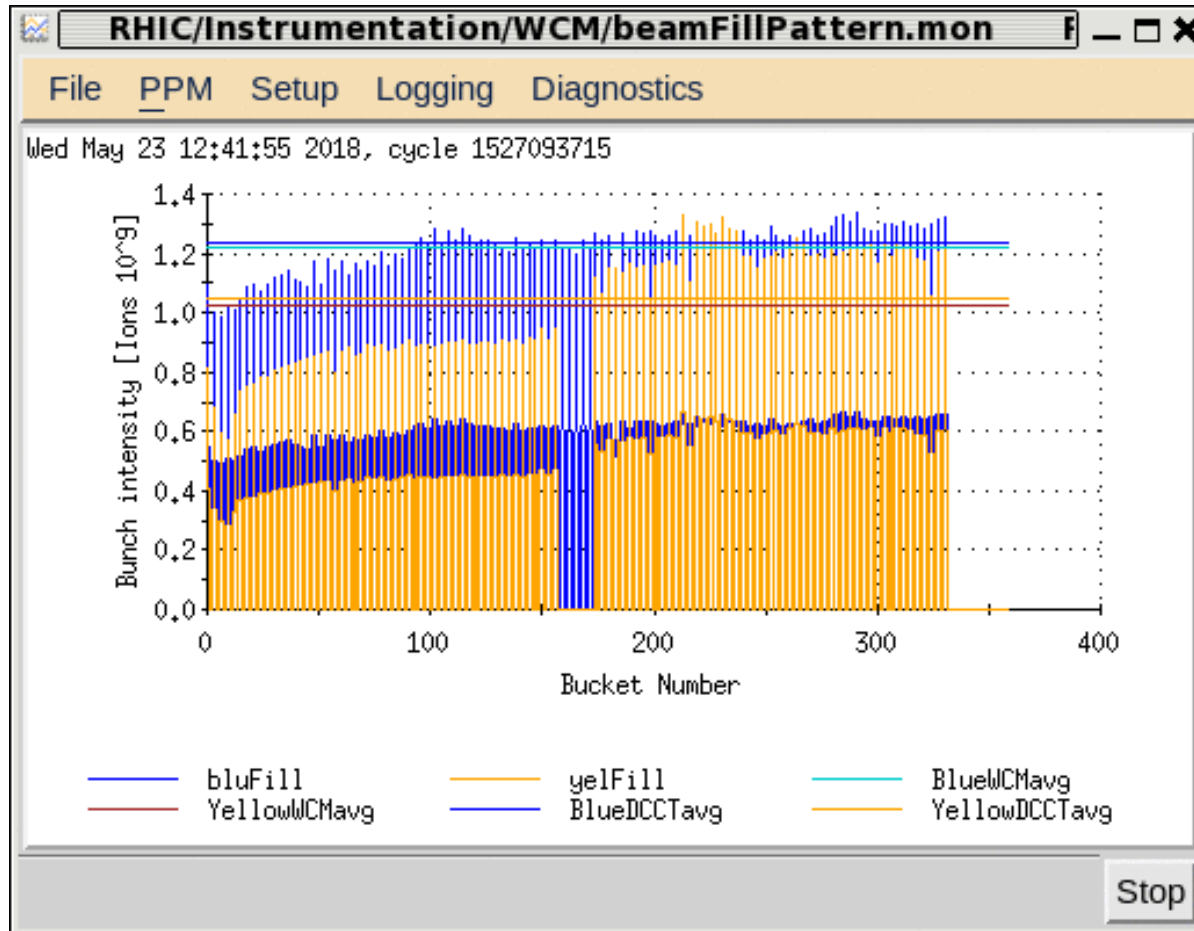
APEX Summary

1. 13.5GeV Au and 1T main solenoid field.
2. New pattern was used and aligned with e-beam longitudinally.
3. The first store was used for alignment, current scan and Octupole Scan
4. The second store was used for Chromaticity scan, current scan (with two different collimator position), radius scan (from ~ 3 sigma to 2.5 sigma) and collimator scan from 3.9 sigma to 2 sigma.
5. One of the goal of this e-lens APEX is use e-lens to reduce beam loss around the ring (less hardware upset) via increasing beam loss on the collimator.
6. Tried to use LReC X-ray detector and re-combination detector as beam loss signal, but they have no response to yellow collimator and e-elens.
7. More data analysis will be don in the future, such as collimator diffusion ration scan (the second store, last scan).

New pattern and two Bunch Trains

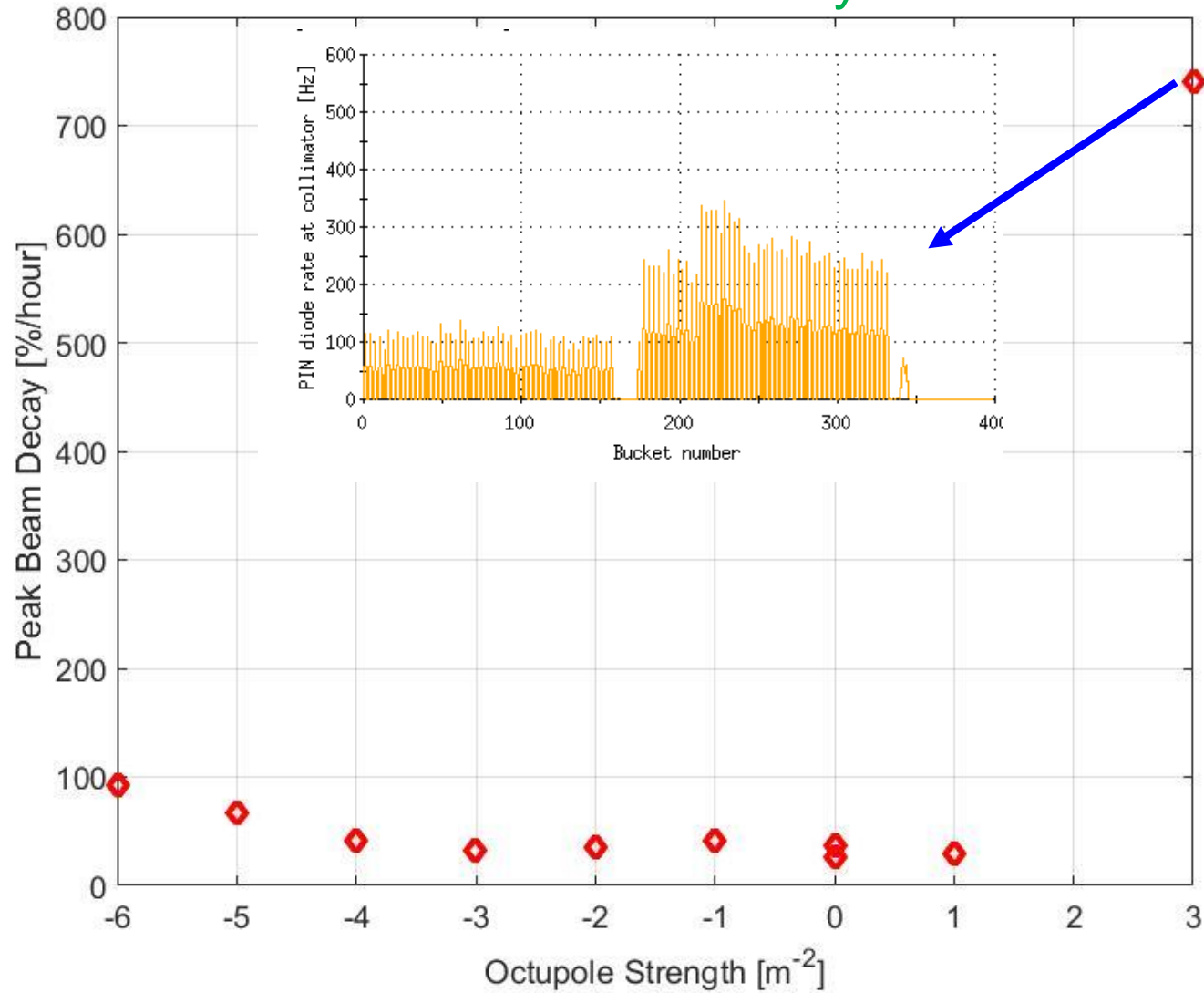
e-beam only interacts with yellow train 1

13.5GeV Au beam, new pattern



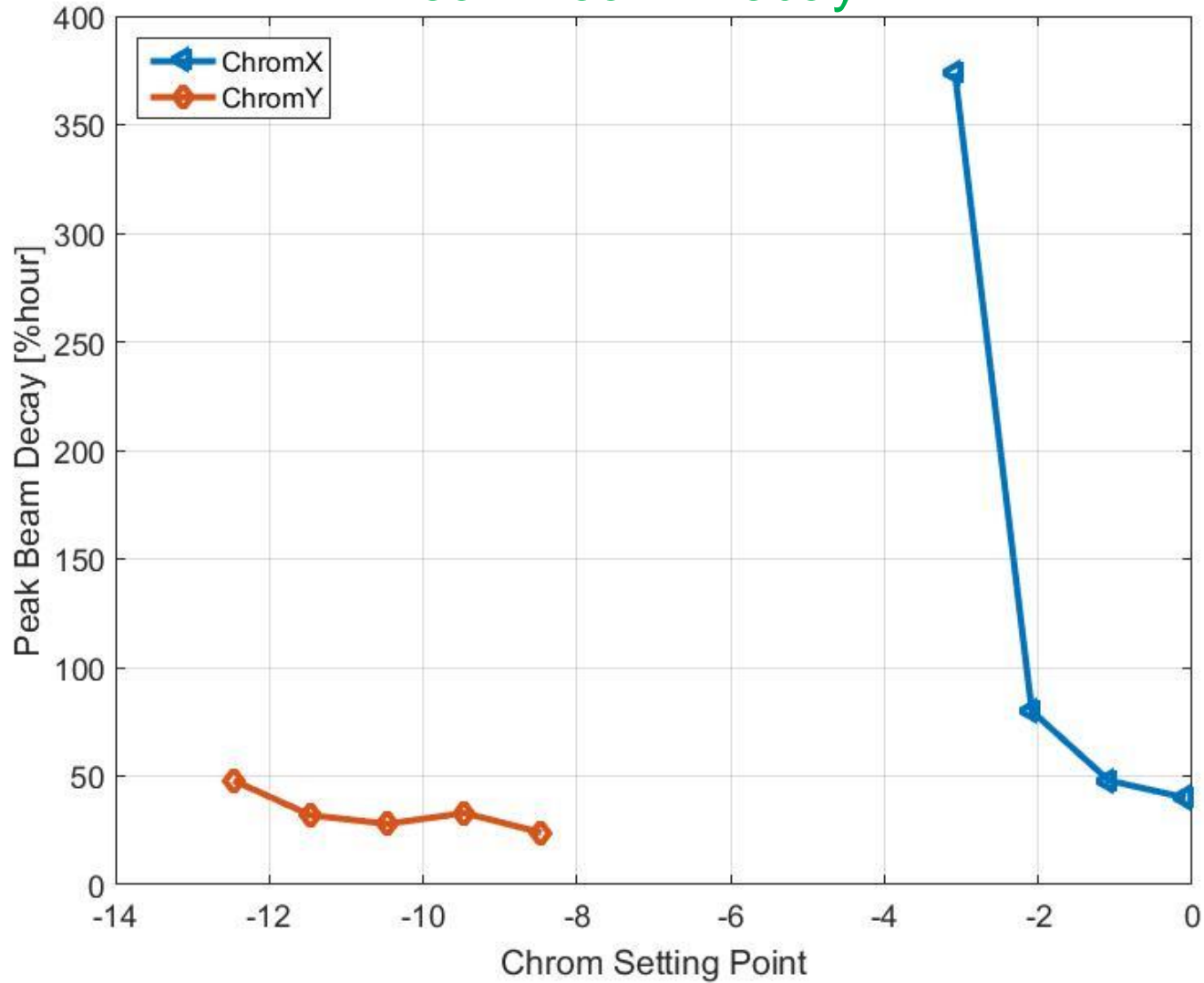
Octupole Scan 300mA

Peak Beam Decay



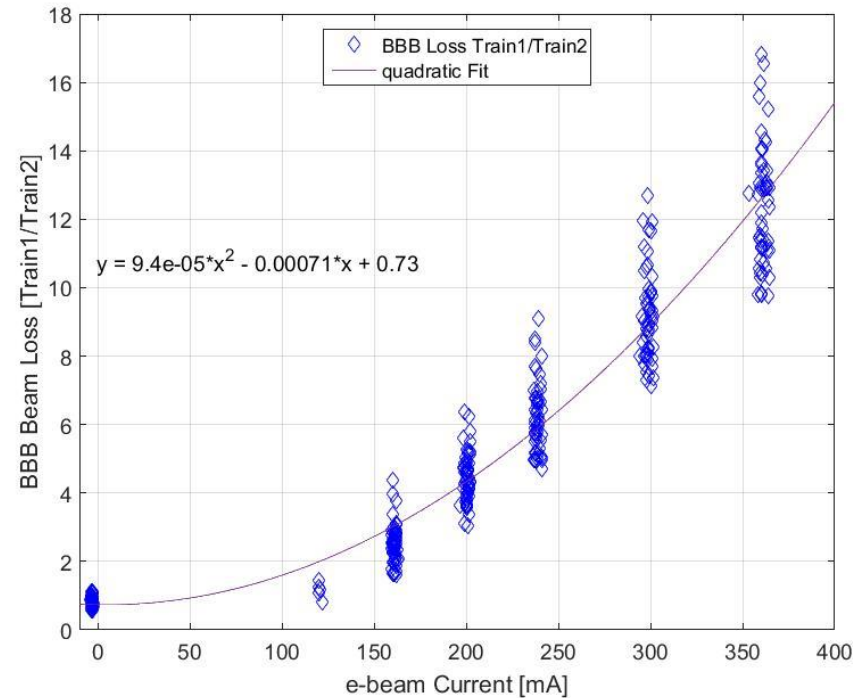
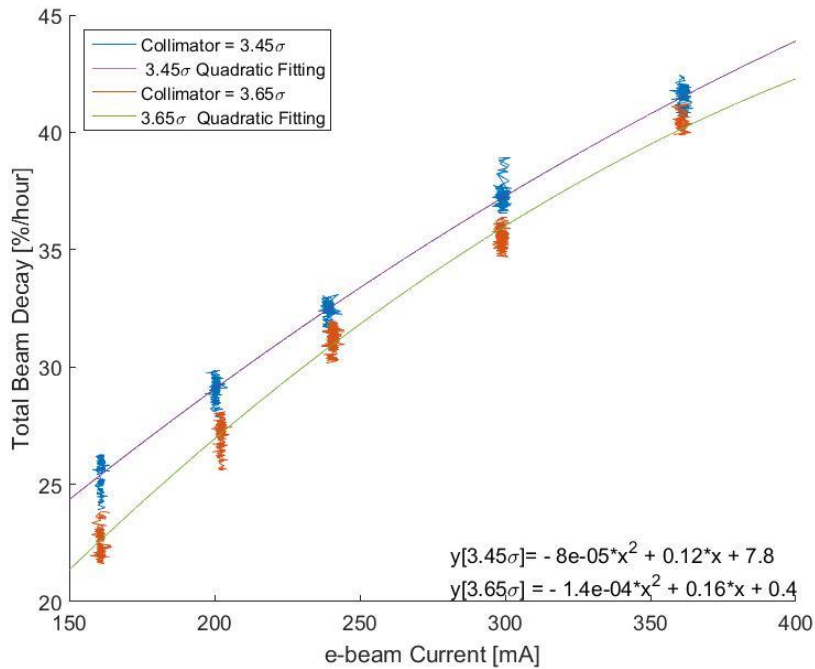
Chrom Scan with 300 mA

Peak Beam Decay



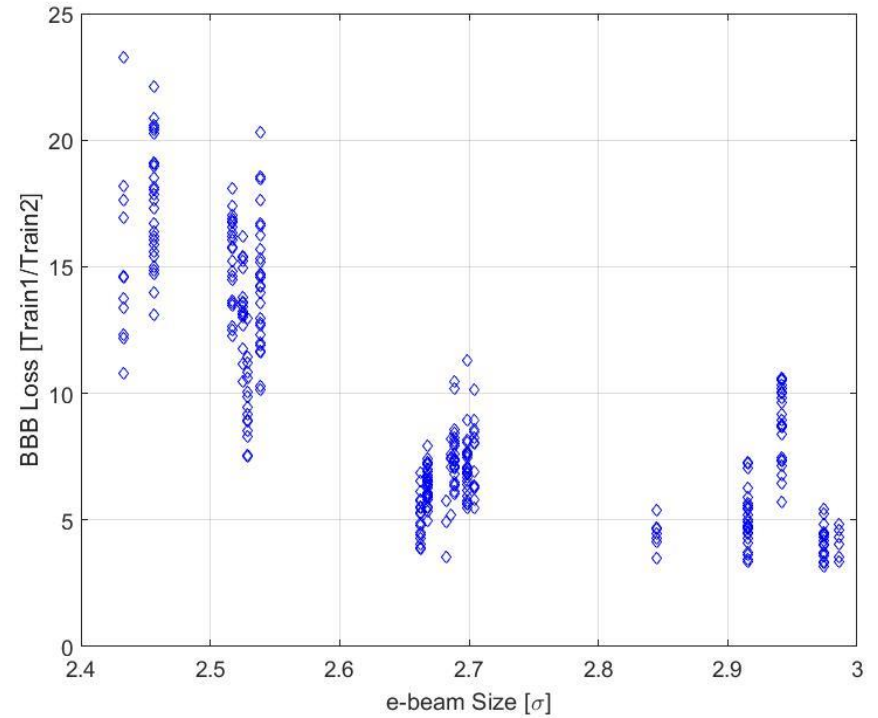
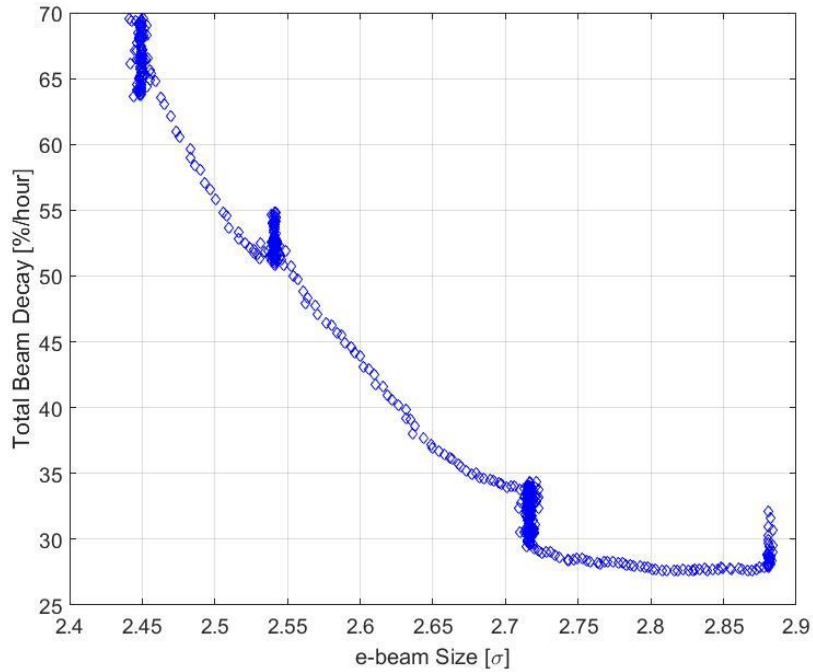
Current Scan with different Collimator Position

BBB with collimator = 3.45sigma

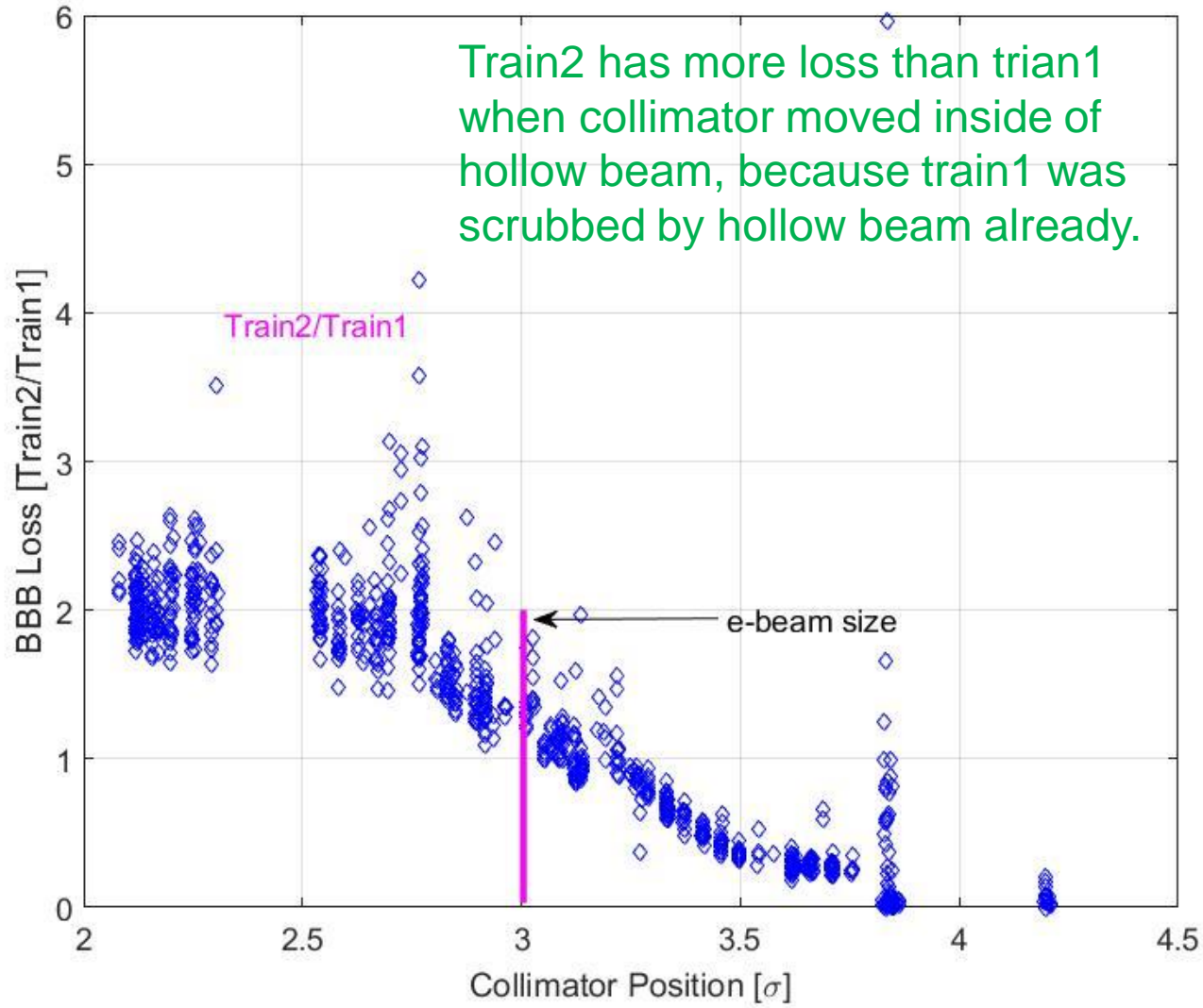


Radius Scan with collimator 3.45 sigma

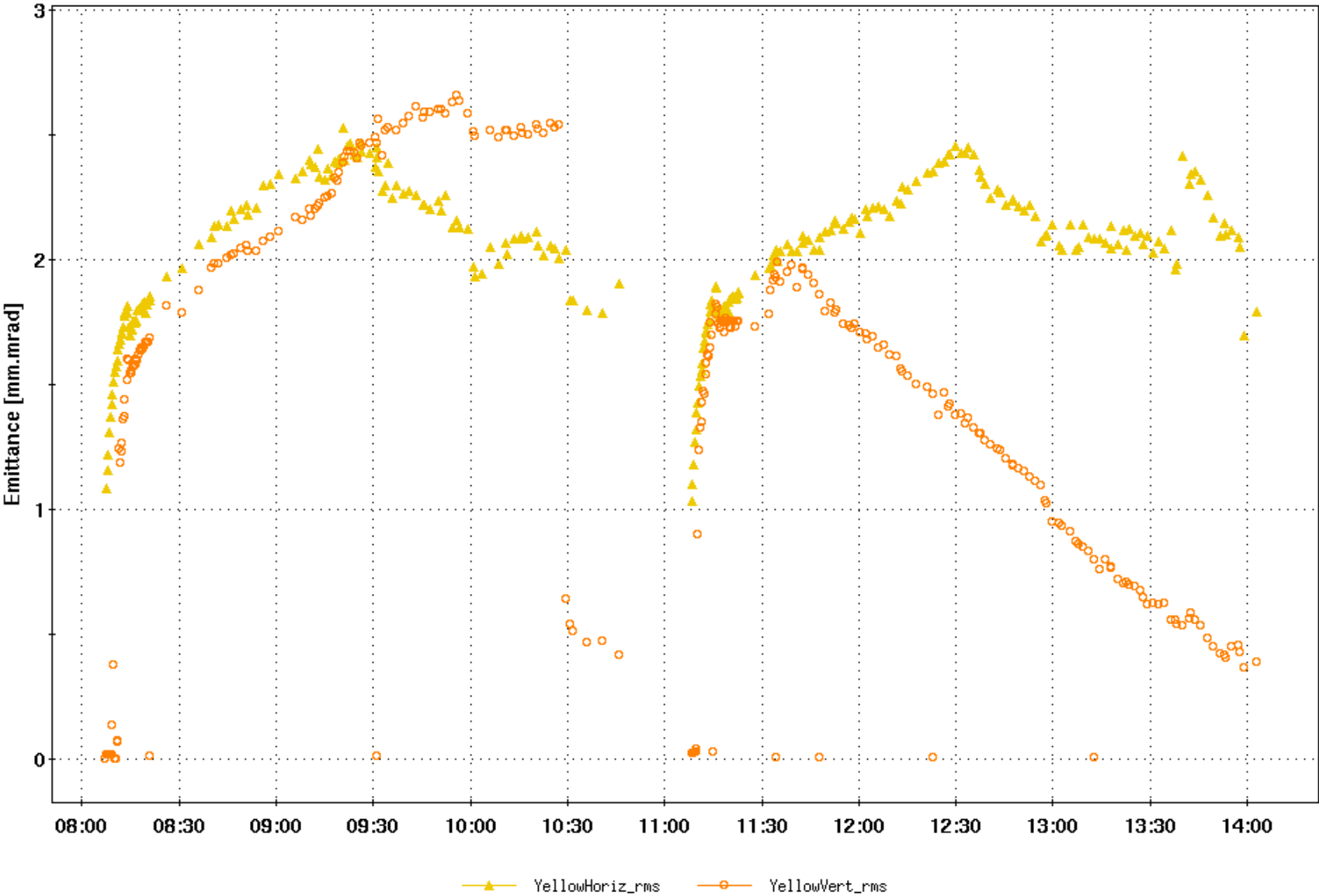
BBB with current= 200 mA



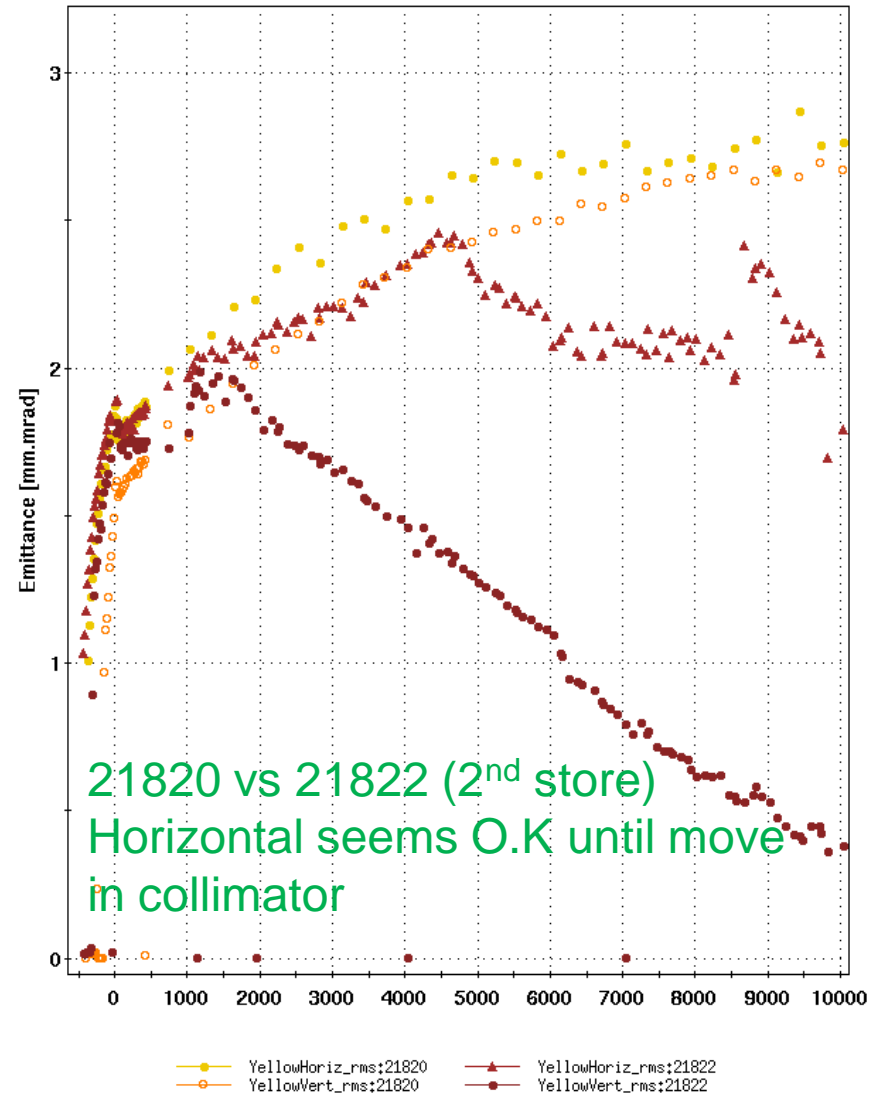
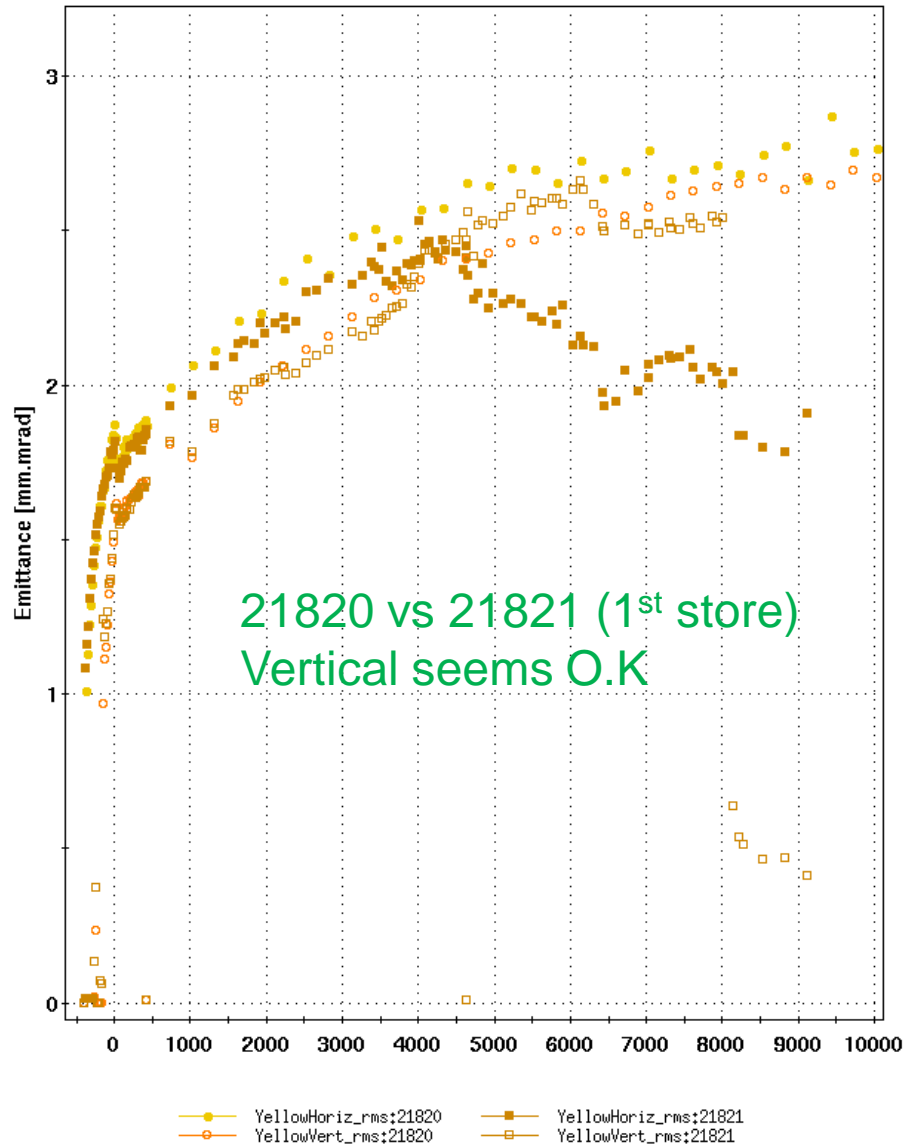
Collimator Scan



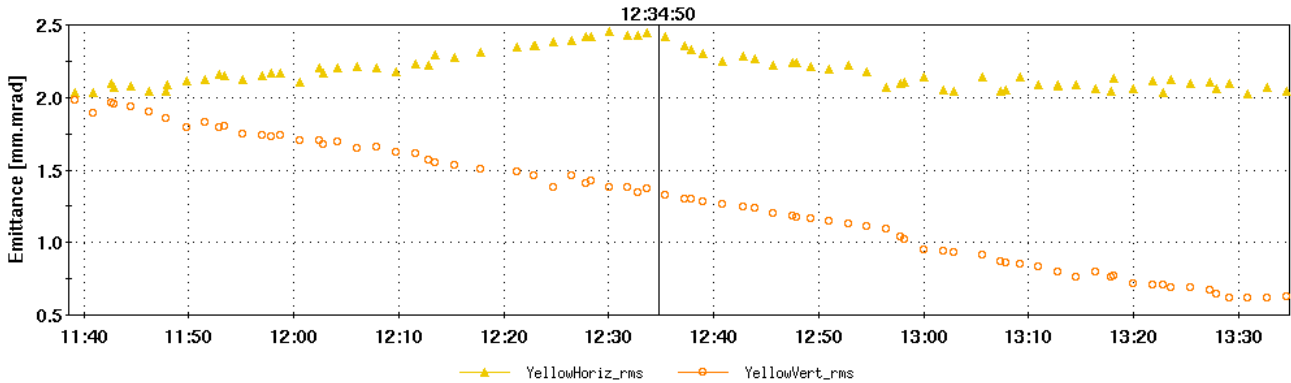
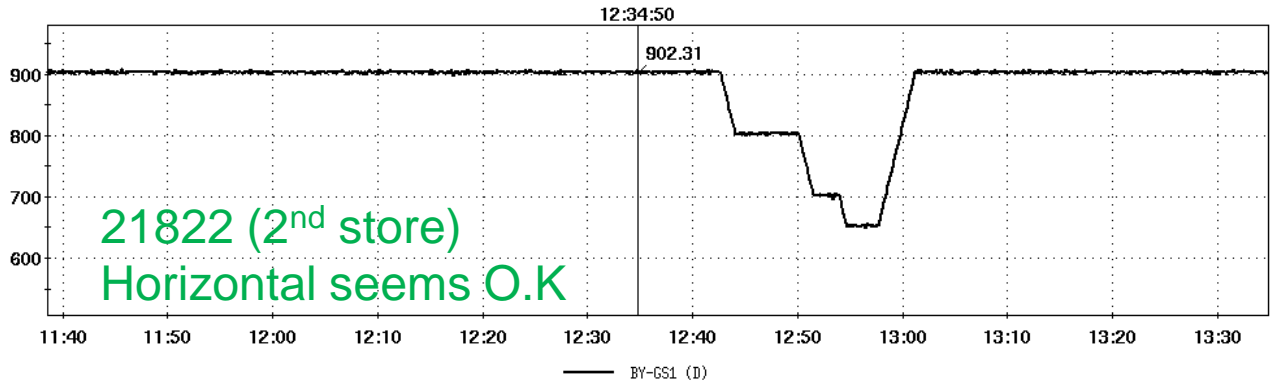
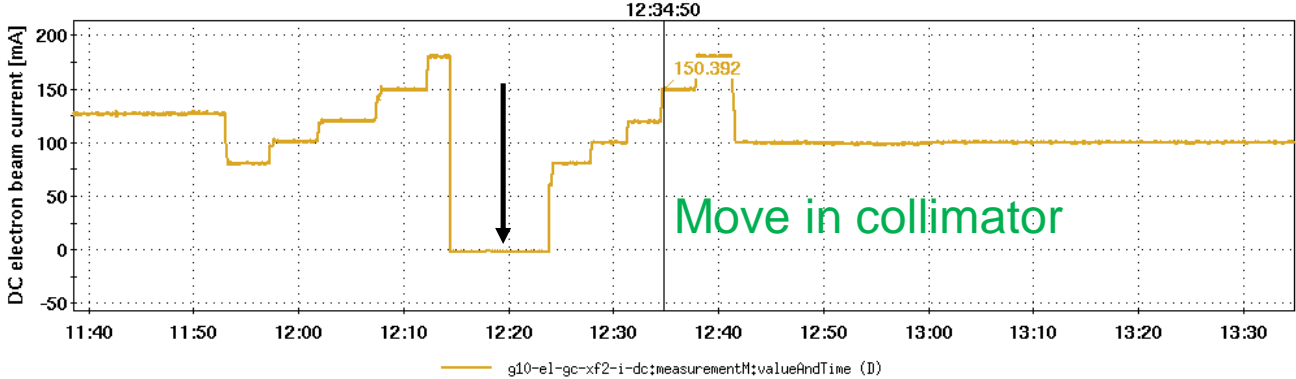
emittance (too close to beam?)



emittance (compared with nominal store 21820)



emittance (too close to beam?)



Luminosity Ratio

