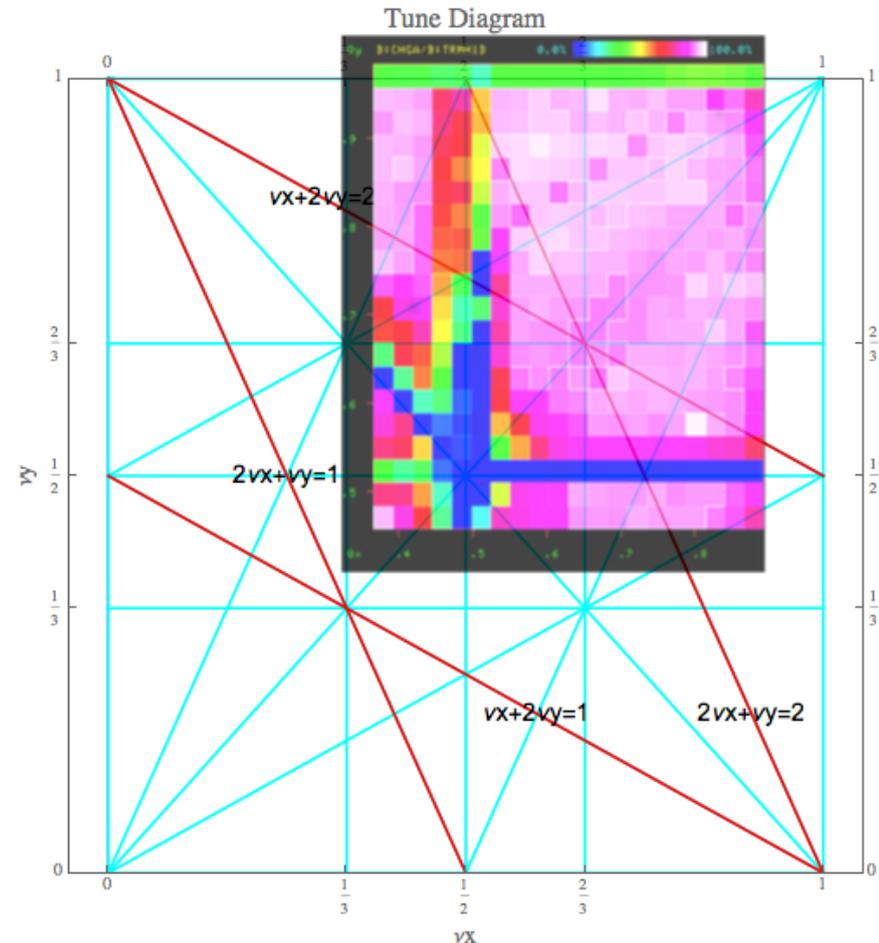
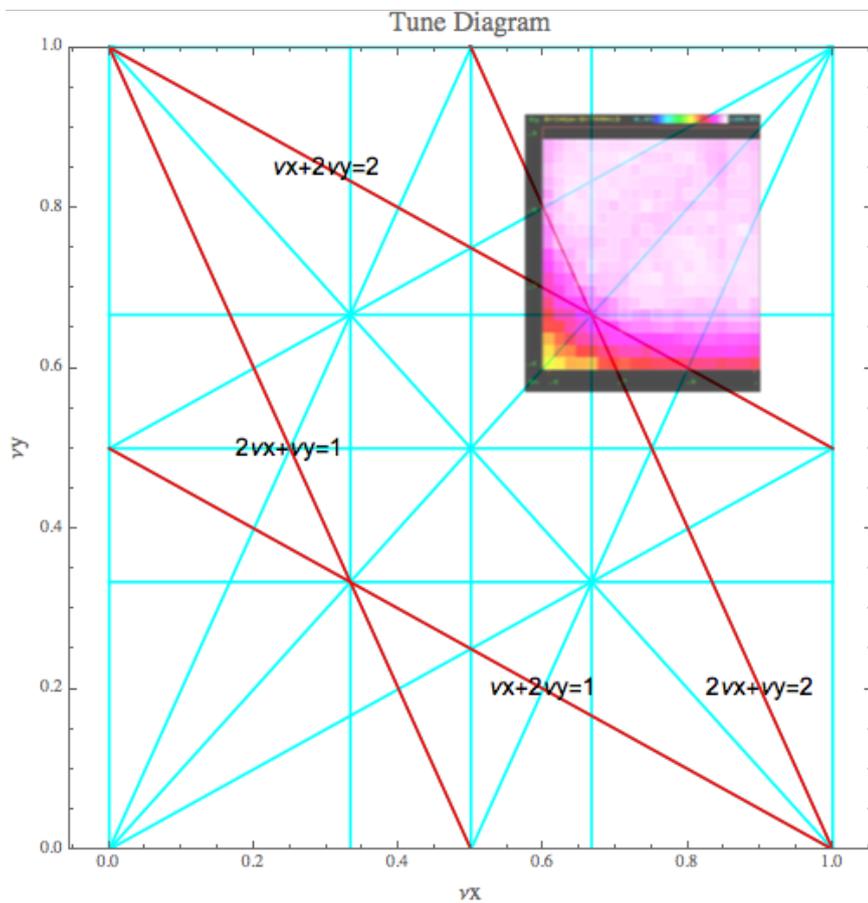


Booster measurements

C.Y. Tan, K. Seiya & C. Bhat
14 Jun 2017

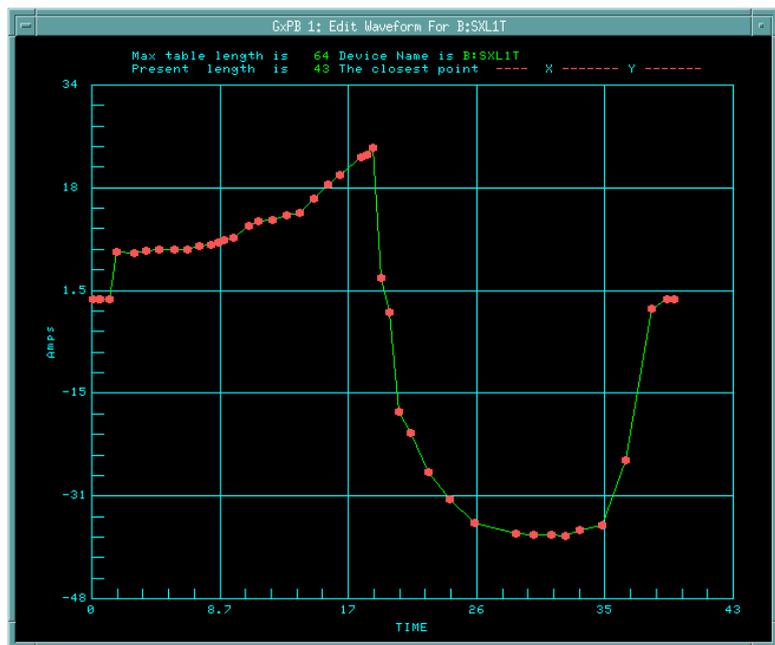
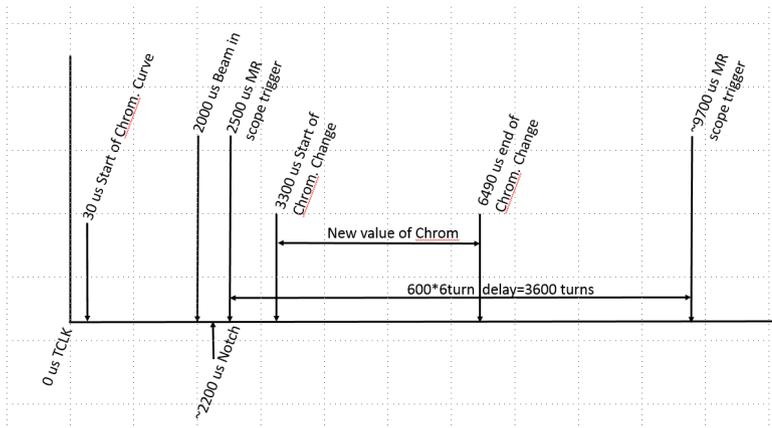
Tune scan with high intensity



Are the losses (left pic) from 3rd order resonance or from 1/2 integer resonances because they became thicker? Yellow region may be intersection of 1/2 integer lines.

Intensity: $4.6e12$, pseudo-flat lattice 2. Skew quad current is zero for first 5 ms.

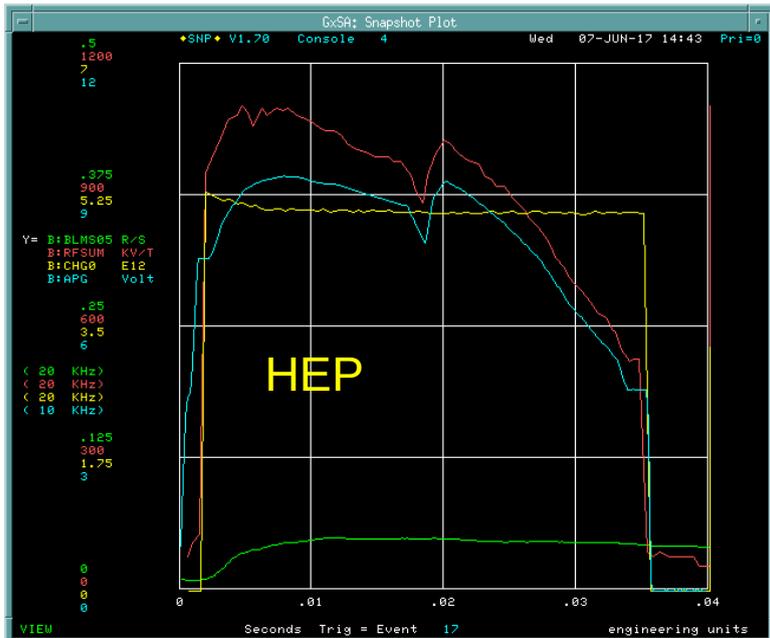
Lowering chrom (SXL=0) at injection



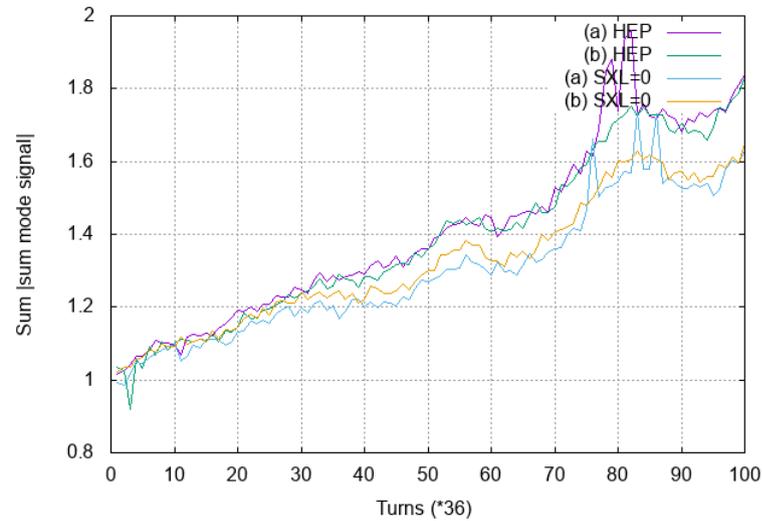
Vertical damper pickup used for measurements.

SXL=0 at injection

SXL=0, dampers ON

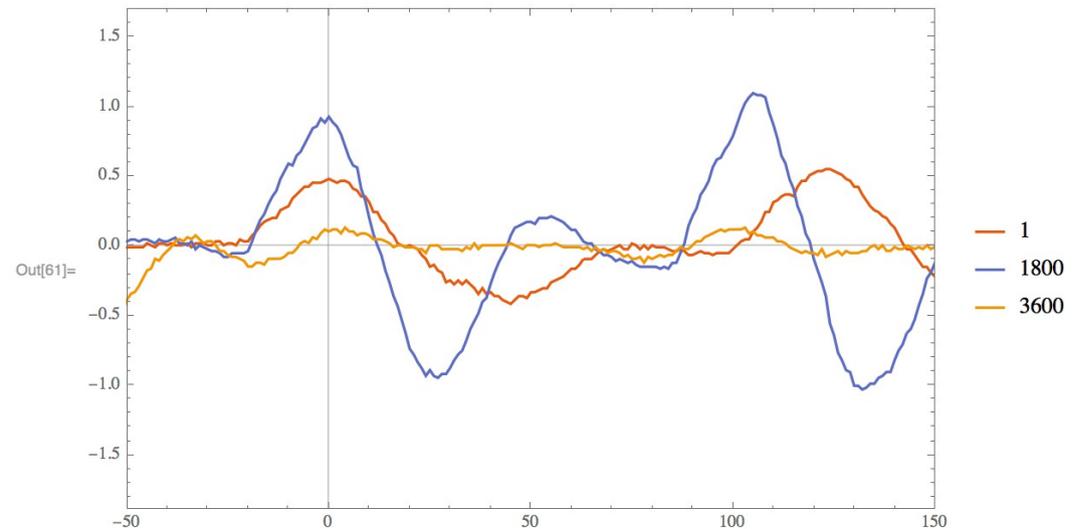


Comparison between HEP and SXL=0

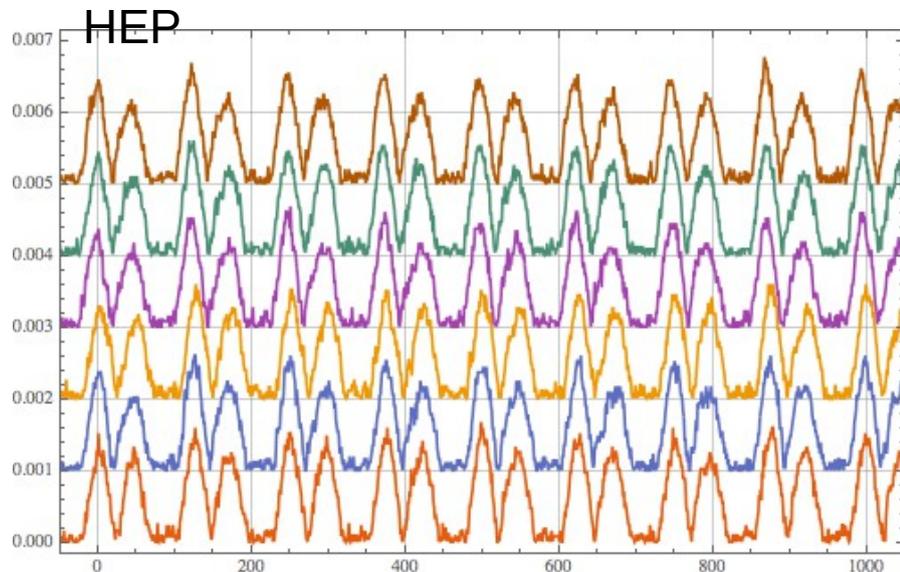
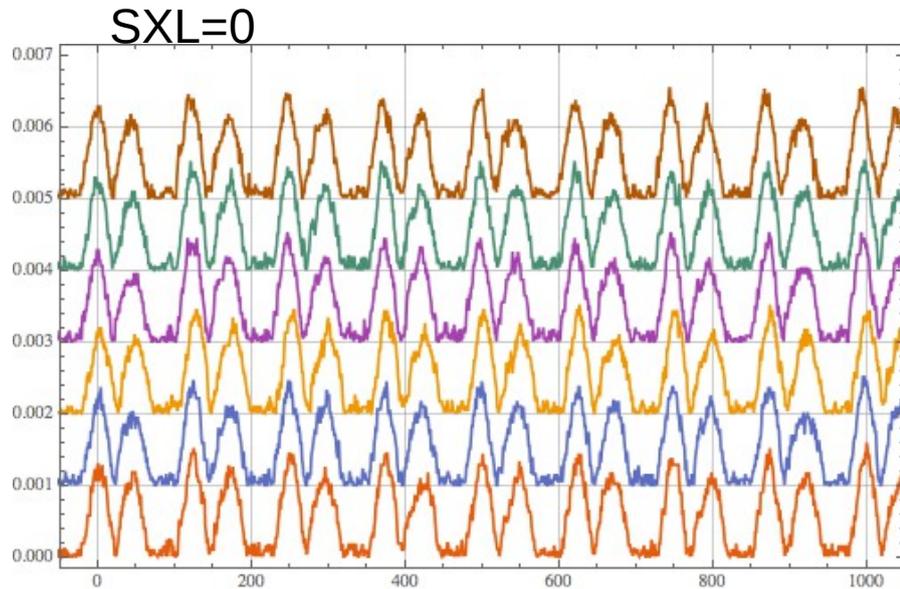


Sum increases because of shoulders in the |signal| at higher turn number.

Since beam loss is there with transverse dampers on, this means that instability is outside the bw of the dampers. Head-tail?



SXL=0, dampers on (cont'd)



Did a scan of the entire vertical data set.
Cannot see any head-tail.
Comparison between HEP and SXL=0
shows no difference in signal!

Every line is 6 turns which is approximately
1/4 to 1/3 of a synchrotron period.
(assuming 25 kHz synchrotron tune)

Only solution is that the problem is in the
horizontal.

Will take data again to verify.

Nothing is confirmed!

- 3rd order resonance from broken symmetry from CPL03 (not from doglegs) not conclusively proven experimentally.
- Transverse impedance causing head-tail
 - Certainly not in the vertical plane.
 - Will have to look at the horizontal plane.
- If the above two are confirmed this means that there are two causes for beam loss at injection.