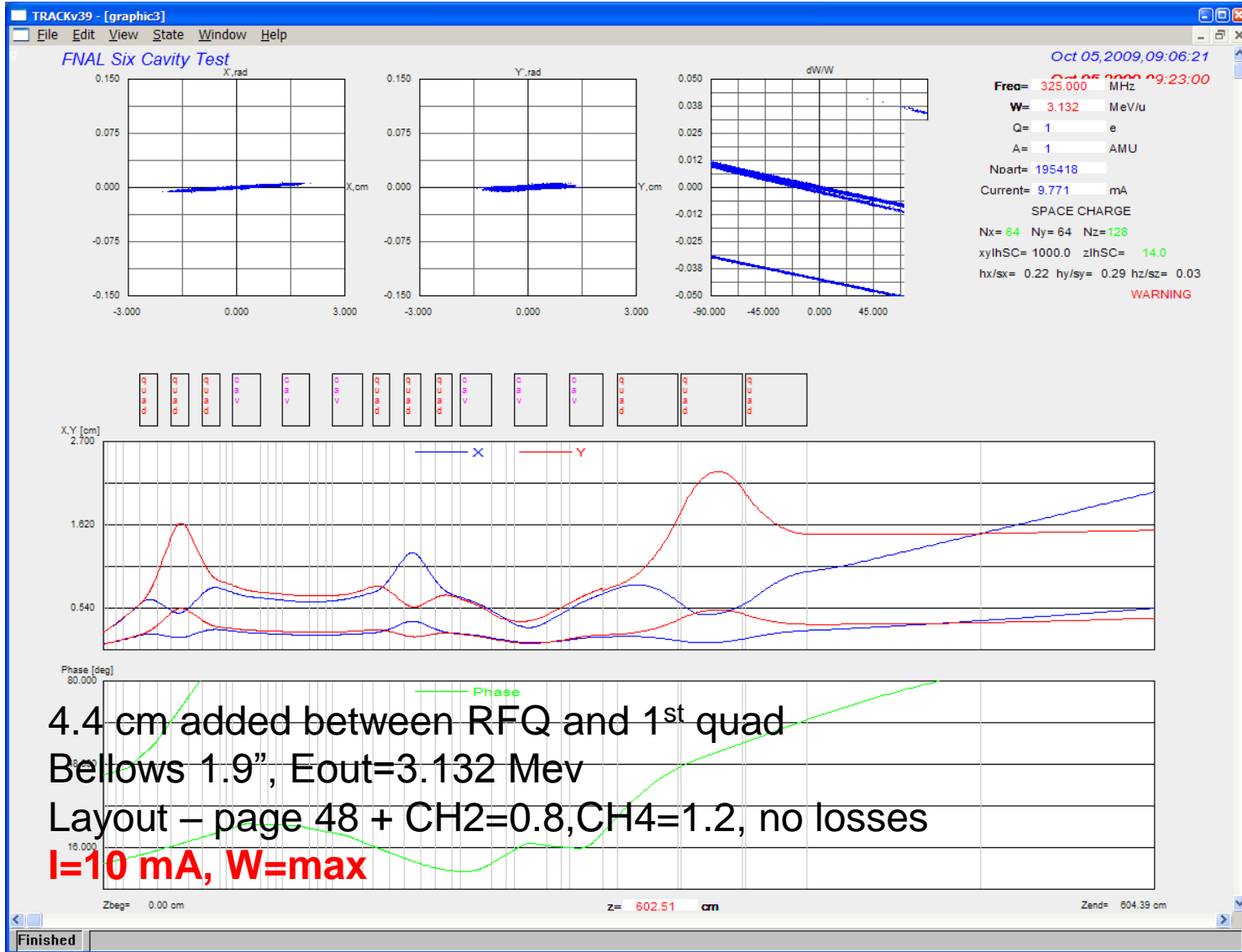


# Six Cavity Test 6.

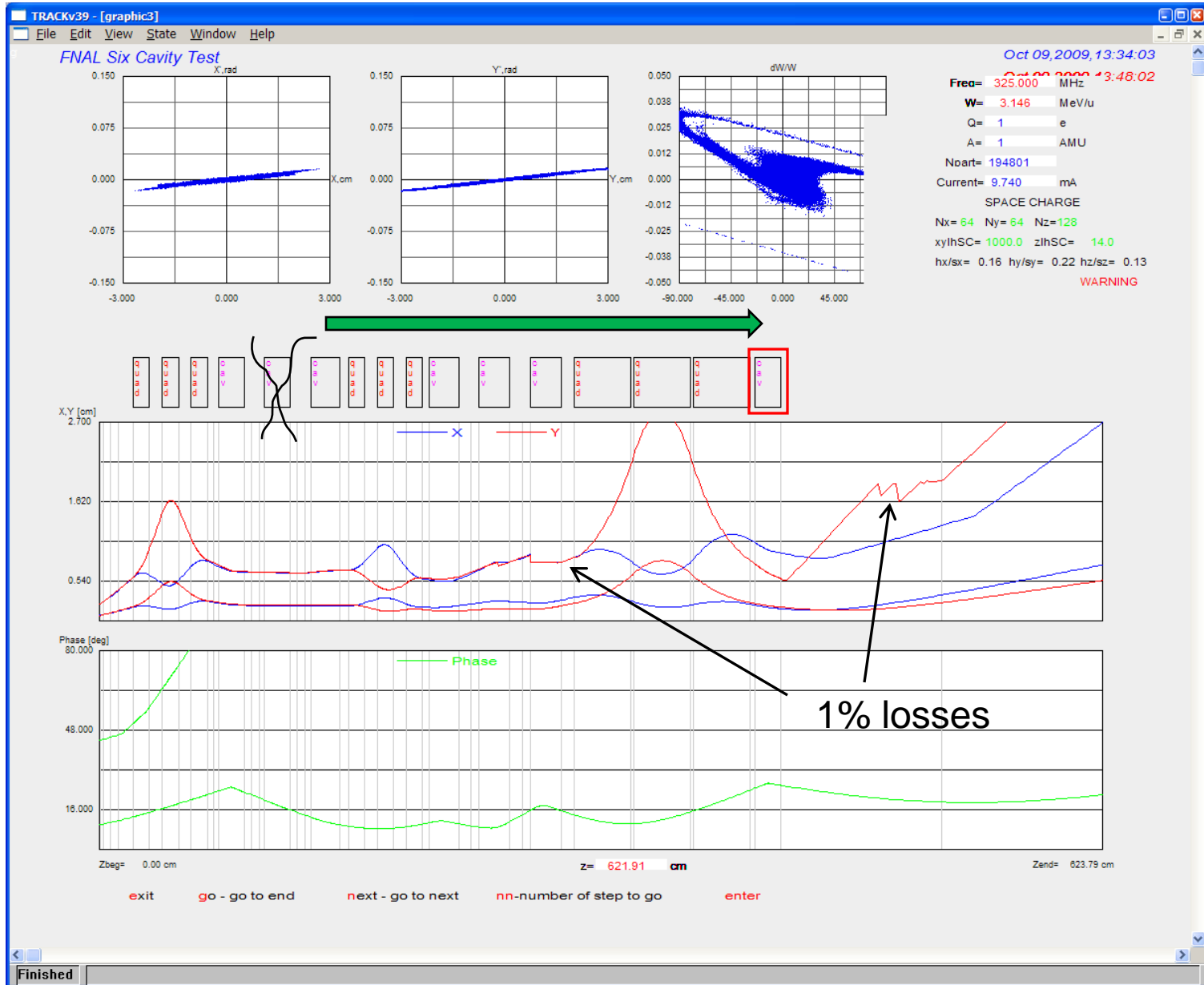
Gennady Romanov

October 14, 2009

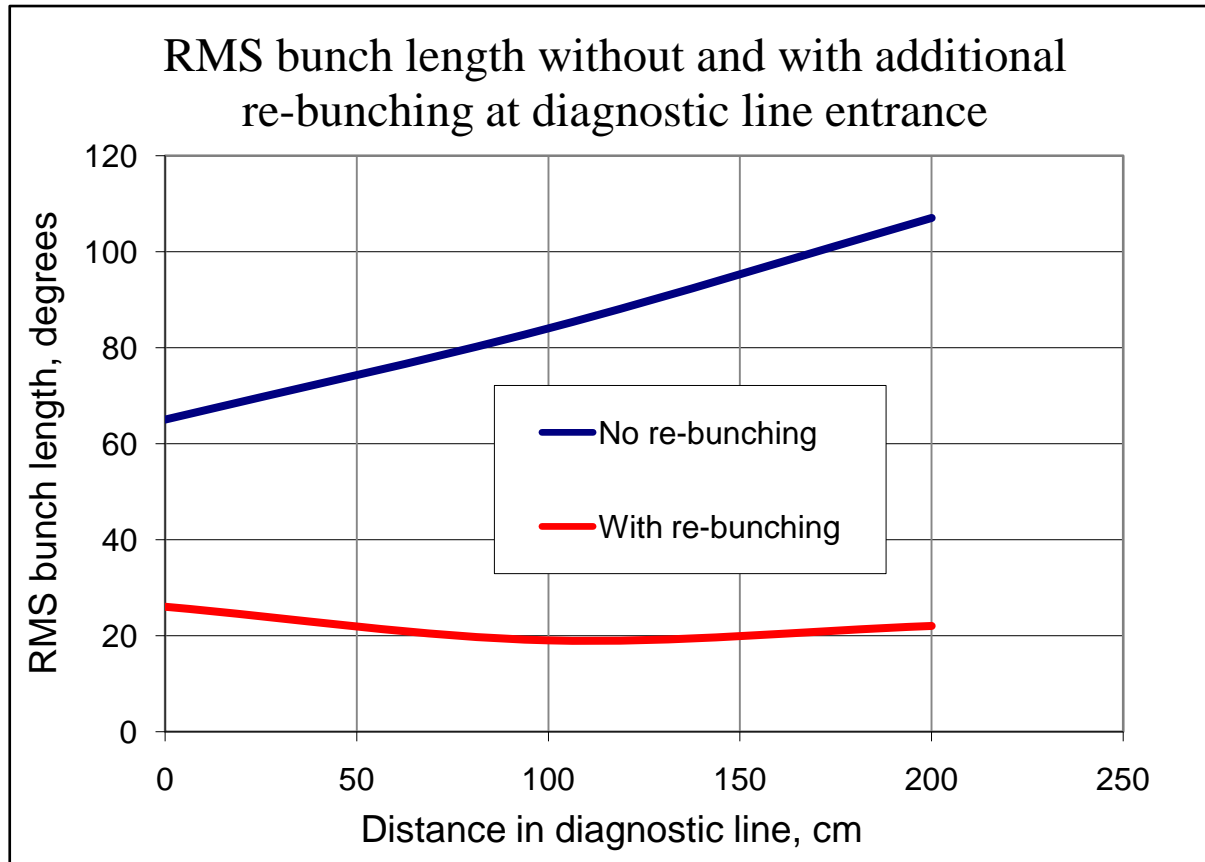
# Iteration 5. October 5, 2009



# Iteration 6. Buncher #2 moved in between last quad and diagnostic line



## Re-bunching at the diagnostic line entrance



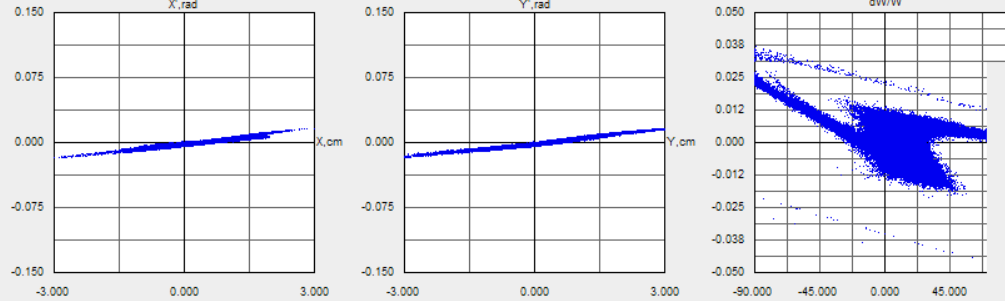
The tails exceed 180 degrees in both cases. It's impossible to see the exact lengths of 100% bunch, since this is a limit in the code output.

# Misalignments

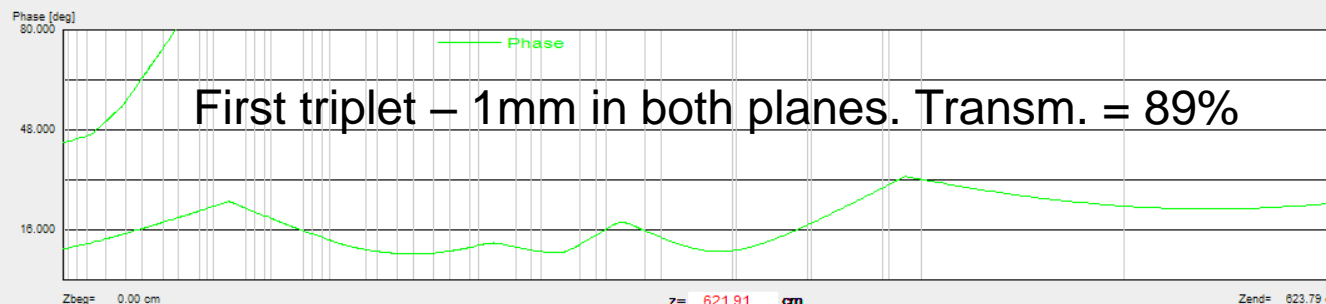
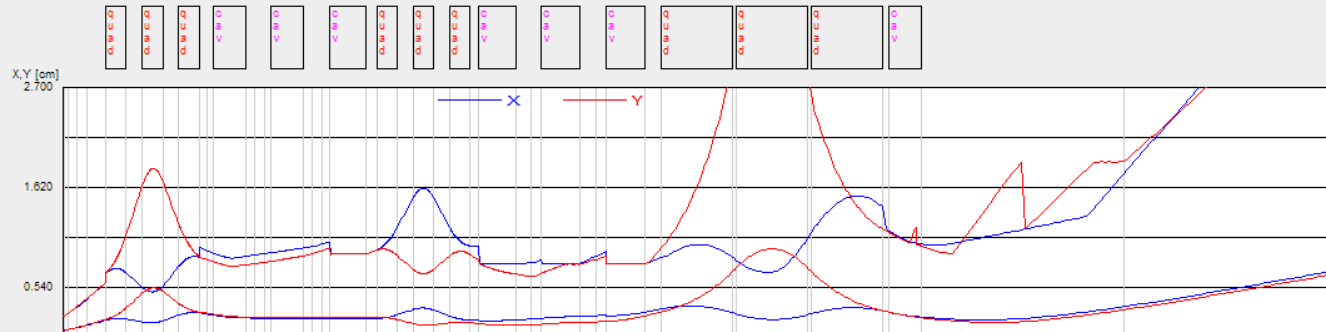
- 1) Simultaneous push in one direction is the most danger.
- 2) The losses (transmission) is a criteria.

FNAL Six Cavity Test

Oct 14, 2009, 08:40:30

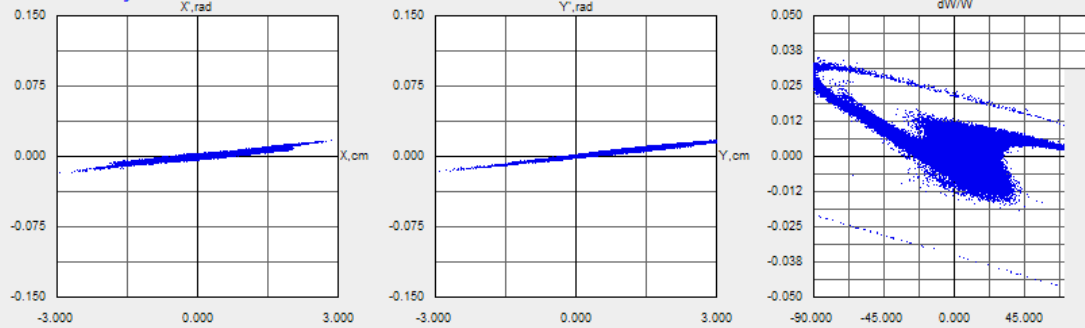


Frequency: 325.000 MHz  
W= 3.144 MeV/u  
Q= 1 e  
A= 1 AMU  
Npart= 174916  
Current= 8.746 mA  
SPACE CHARGE  
Nx= 64 Ny= 64 Nz= 128  
xylhSC= 1000.0 zlhSC= 14.0  
hx/sx= 0.17 hy/sy= 0.18 hz/sz= 0.12  
**WARNING**

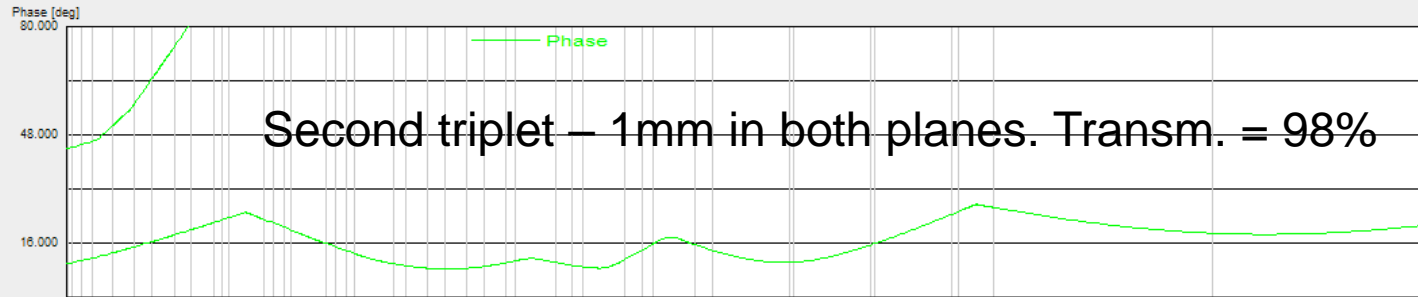
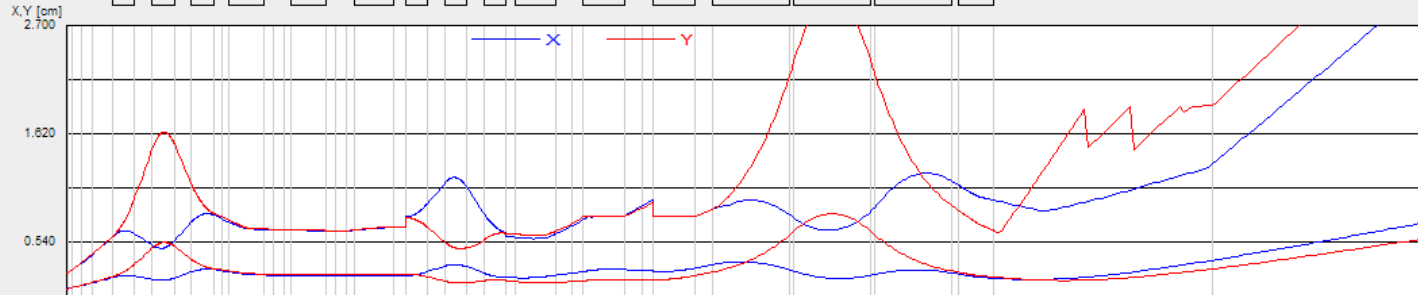
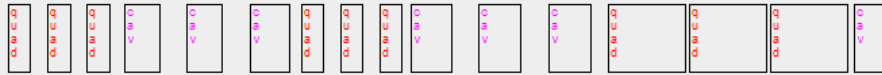


First triplet – 1mm in both planes. Transm. = 89%

### FNAL Six Cavity Test



**Freq=** 325.000 MHz  
**W=** 3.145 MeV/u  
**Q=** 1 e  
**A=** 1 AMU  
**Noart=** 191959  
**Current=** 9.598 mA  
**SPACE CHARGE**  
**Nx=** 64 **Ny=** 64 **Nz=** 128  
**xylhSC=** 1000.0 **zlhSC=** 14.0  
**hx/sx=** 0.16 **hy/sy=** 0.21 **hz/sz=** 0.13  
**WARNING**



Zbeg= 0.00 cm

Z= 621.91 cm

Zend= 623.79 cm

- It is possible to move re-buncher #2 to make bunch length significantly shorter in the diagnostic line.
- What would be a mechanical layout then?
- Misalignment of the first triplet is the most dangerous. Misalignment of all its three quadrupoles by 1 mm brings transmission from 100% down to 90%. Misalignment of the second triplet brings transmission to 98%.
- Rotation of the lenses is still to be studied
- Trimming of the halo just after RFQ doesn't help much.