

GAMMAJUMP IN THE PS

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Sensitivity response study

Orbit measurements

Tune in the PS

Sensitivity response study (in progress)

Second half PS machine

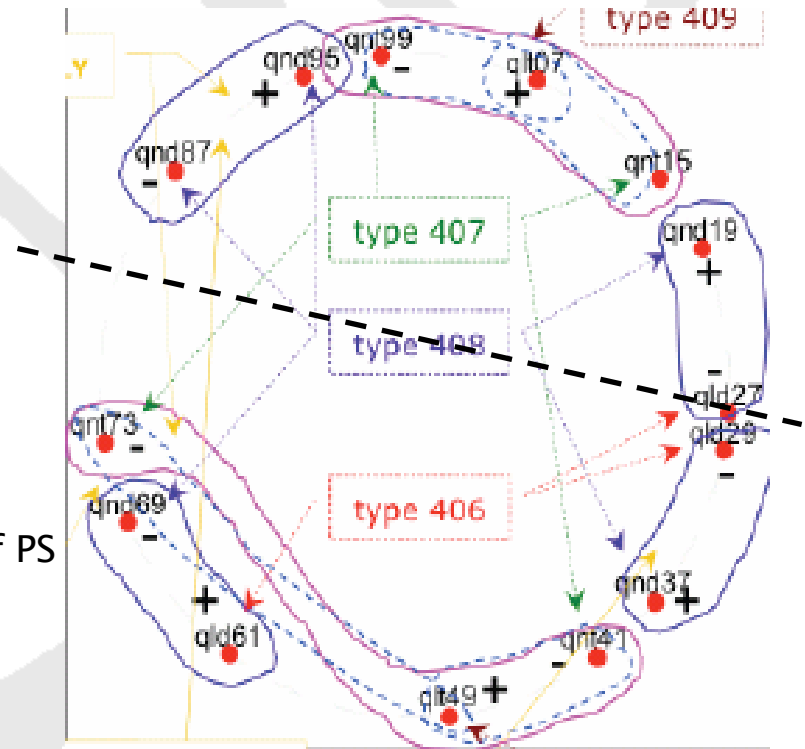
AIM:

- ✓To controle GammaJump Quadripole currents by four power supplies (GFA)
- ✓Reduce losses in PS or at least to balance them in order to decrease radiation dose in some section

1. PS Segmentation in the simulation program in order to do a sensitivity response study

2. Increase in the first part of the Ps machine and decrease of the same quantity in the second part (section 63)

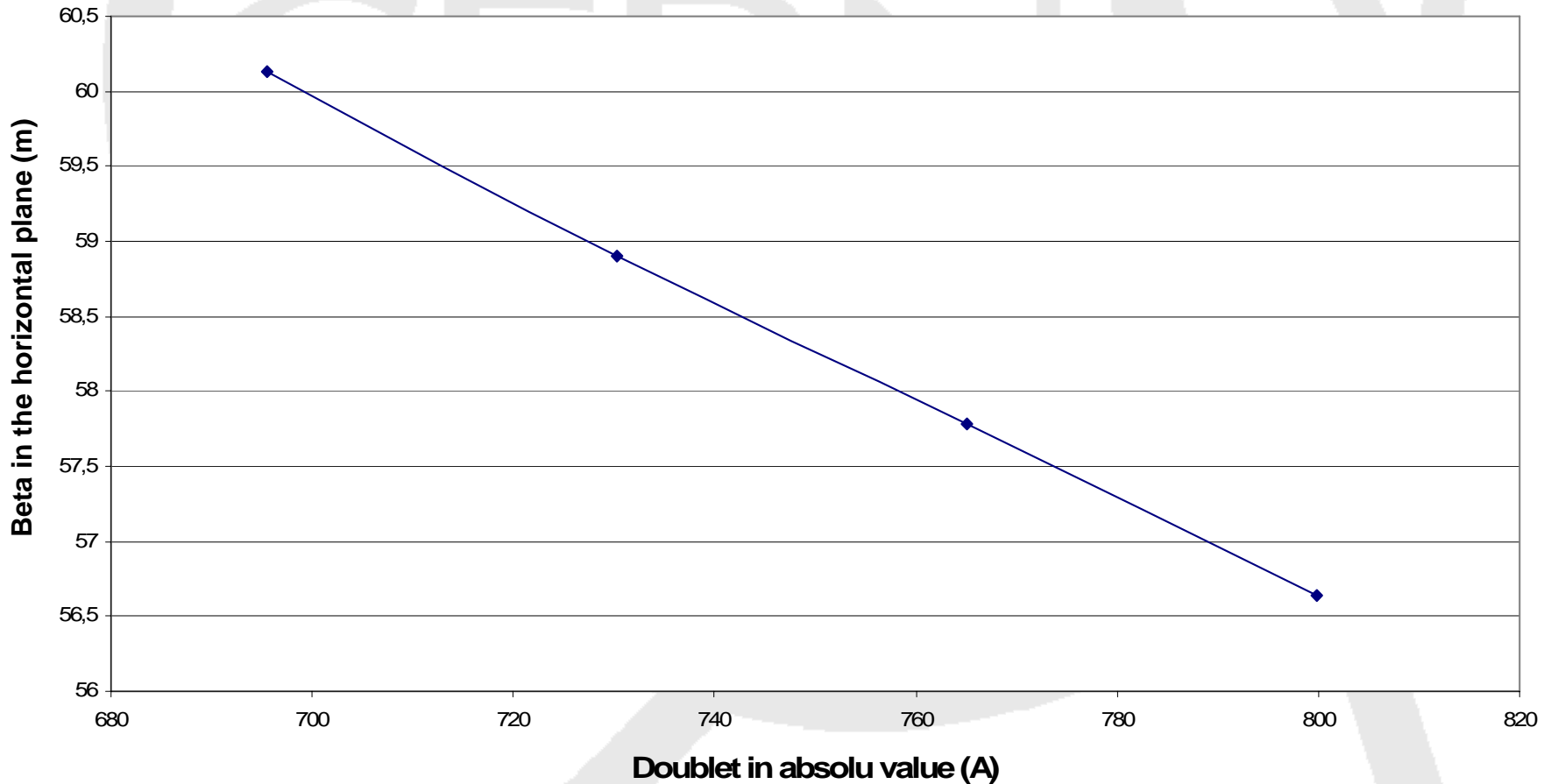
First half PS machine



	Increase %		
<i>I</i>triplet	0	0	0
<i>I</i>doublet	5	10	15
<i>I</i>triplet	5	10	15
<i>I</i>doublet	0	0	0
<i>I</i>triplet	5	10	15
<i>I</i>doublet	5	10	15

Results : Section 63

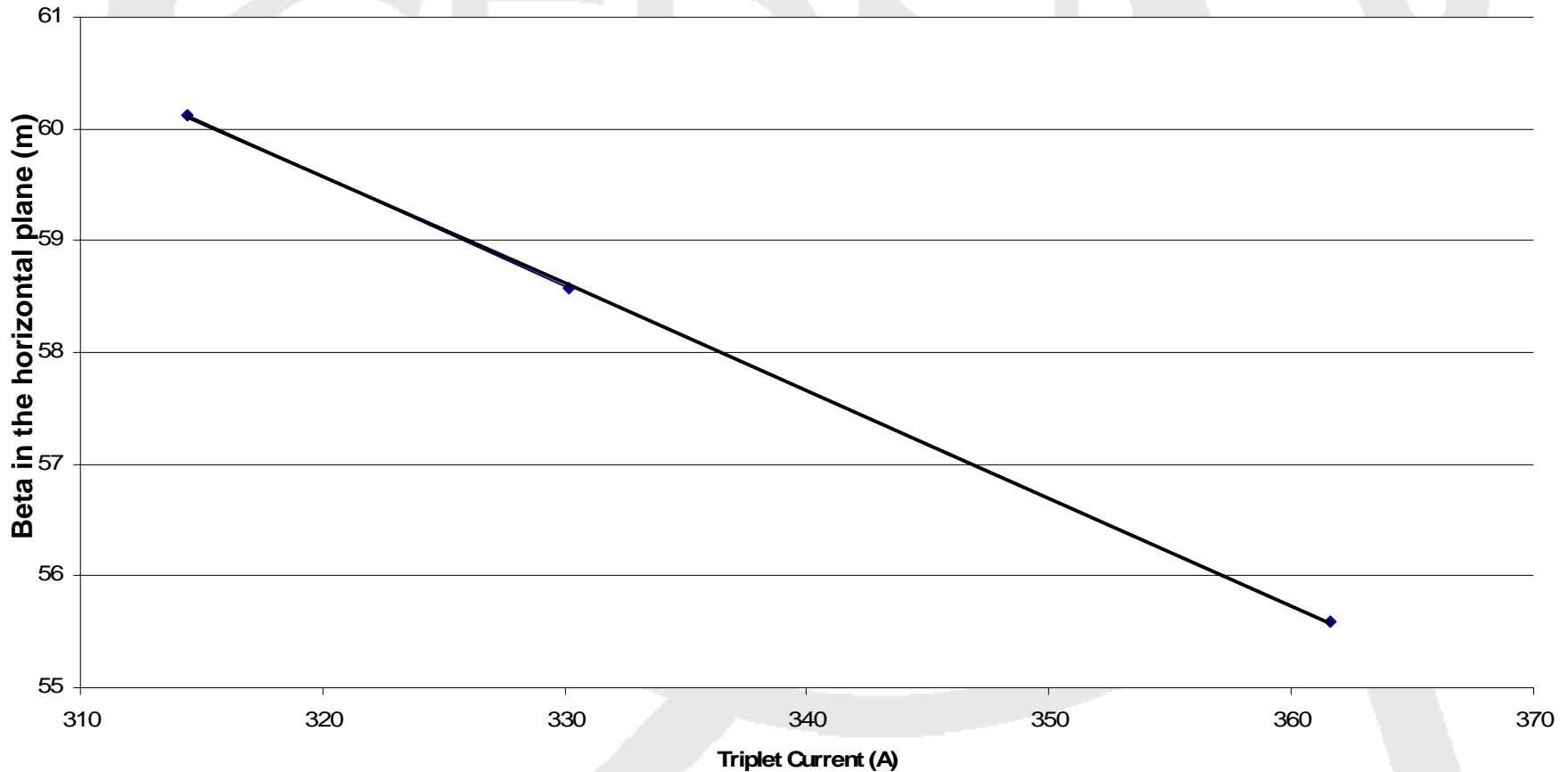
Triplet=+0%, Doublet = +5%, +10%, 15%



Beta max in horizontal plane linearly decreases in function of current of doublet currents

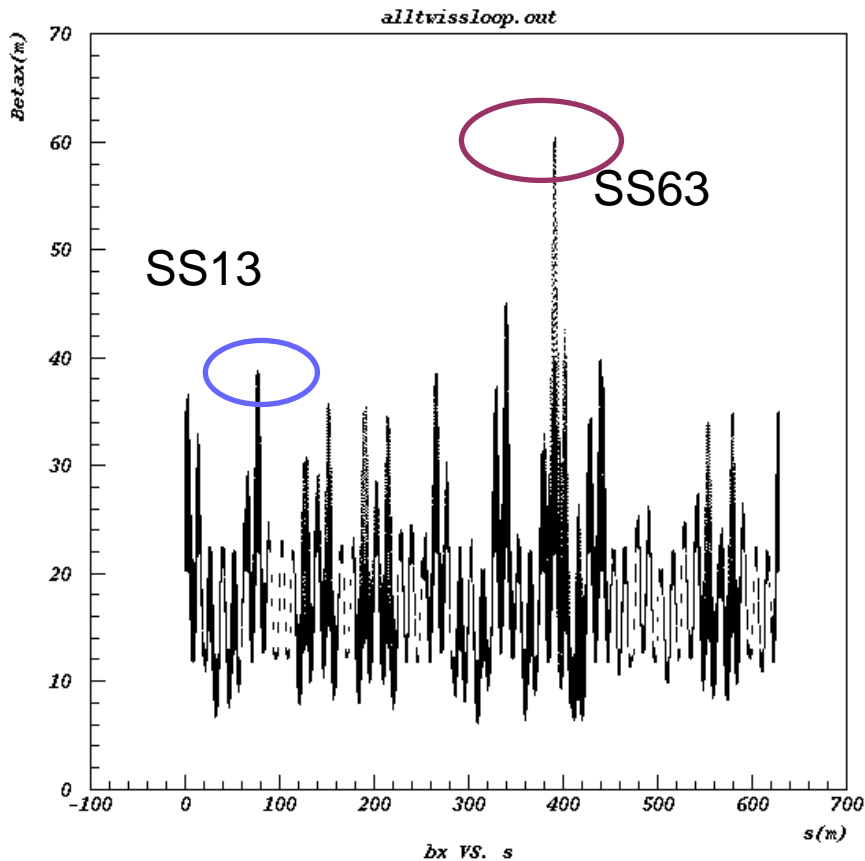
Results : Section 63

Doublet = +0 %, Triplet = +5%, +10%, +15%



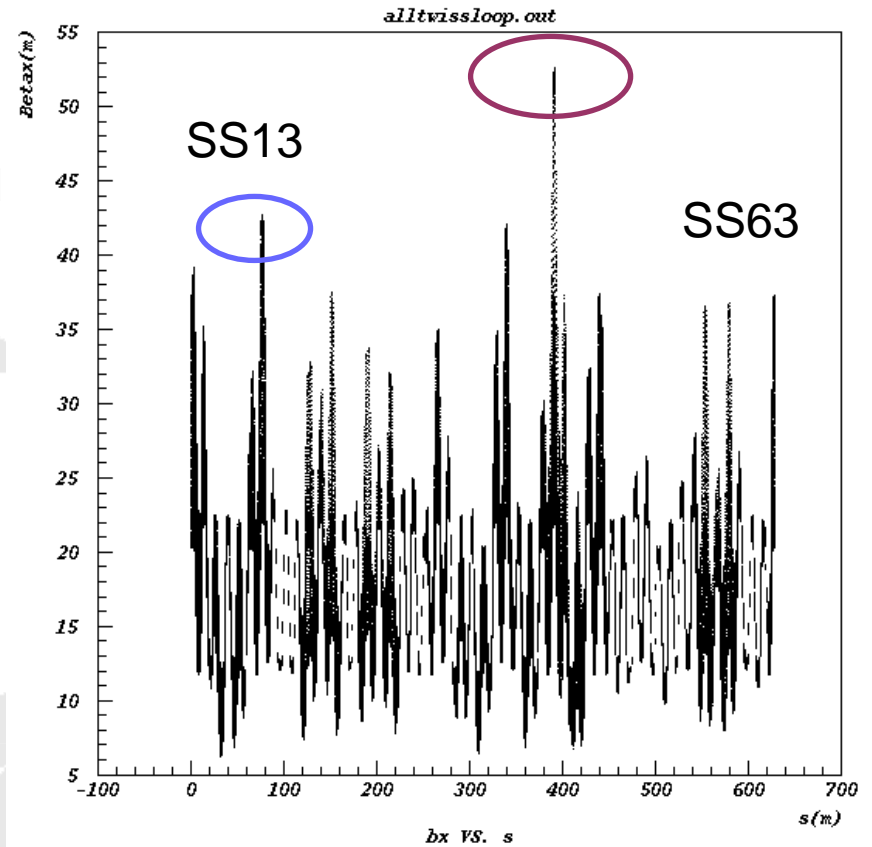
Beta max in horizontal plane linearly decreases in function of current of triplet currents

Case with initial current



Betax vs time

Case with Itriplet=15 % and Idoublet=15%



Betax vs time

Beta in horizontal plan less than 55m in case of Itriplet = +15 % and Idoublet = +15 % in the first part of the machine, so Itriplet = -15 % and Idoublet = -15 % in the second part.

Increase of the beta horizontal plane in the PU13 because of the triplet

Results : Section 13



Beta max in horizontal plane linearly increases in function of current of triplet currents.

No effect by the doublet

Sensitivity response study

- Increase doublet or triplet currents decrease linearly the beta max in horizontal plane in SS63.
- Both increase in the same time, additional effect in SS63
- It seems in SS63 only the doublet has an effect
- Increase of the triplet has an effect in SS13 in increasing the beta in the horizontal plane.

In order to reduce or balance losses at the Gammajump time, Triplet and Doublet currents have to change at the same time.

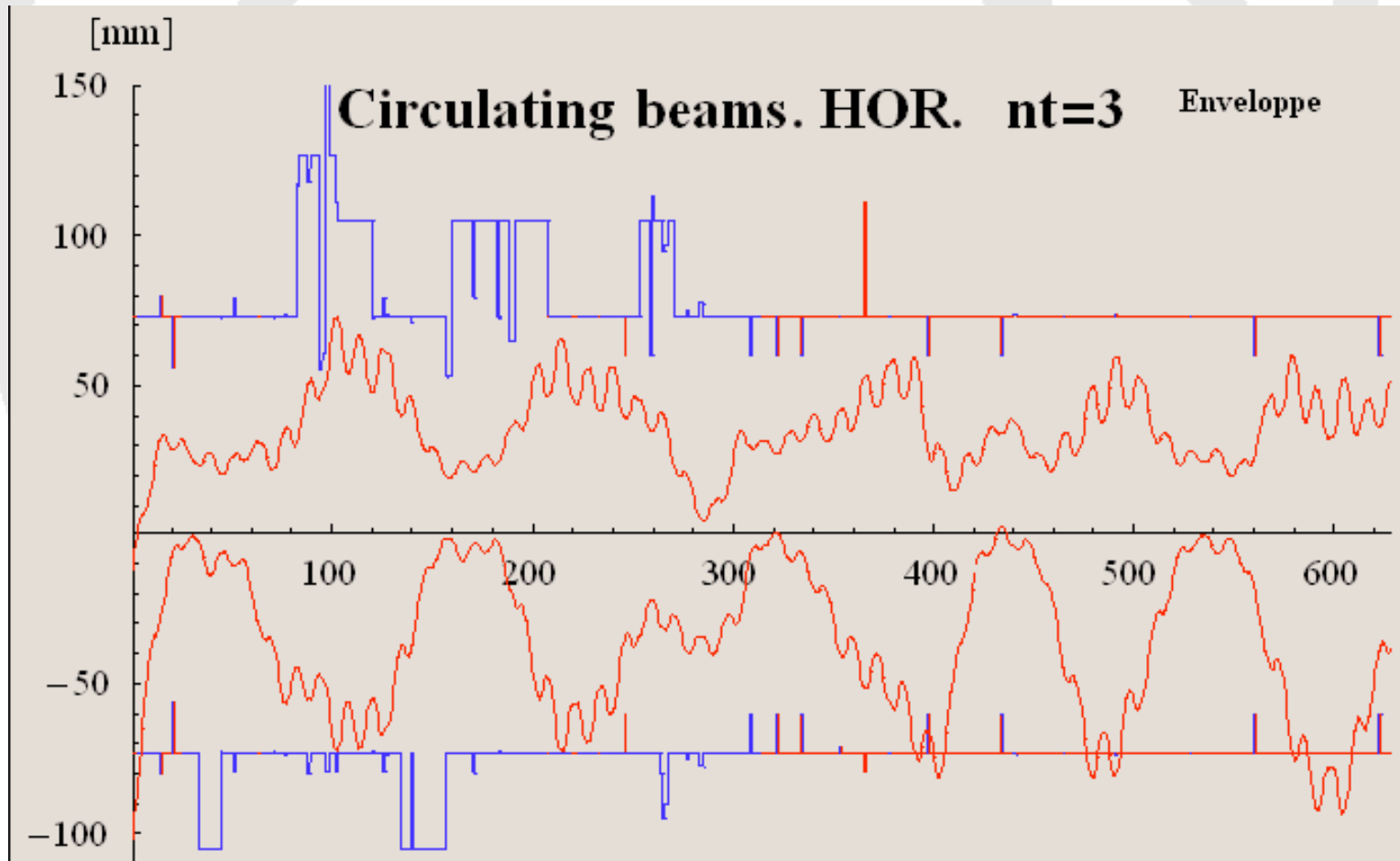
The ordered power supplies is not adapted

MEASURED ORBITS NEAR TRANSITION

MD on Friday 09/06/06 on MD3 by S. Gilardoni, E. Métral,
R. Steerenberg, S. Aumon,

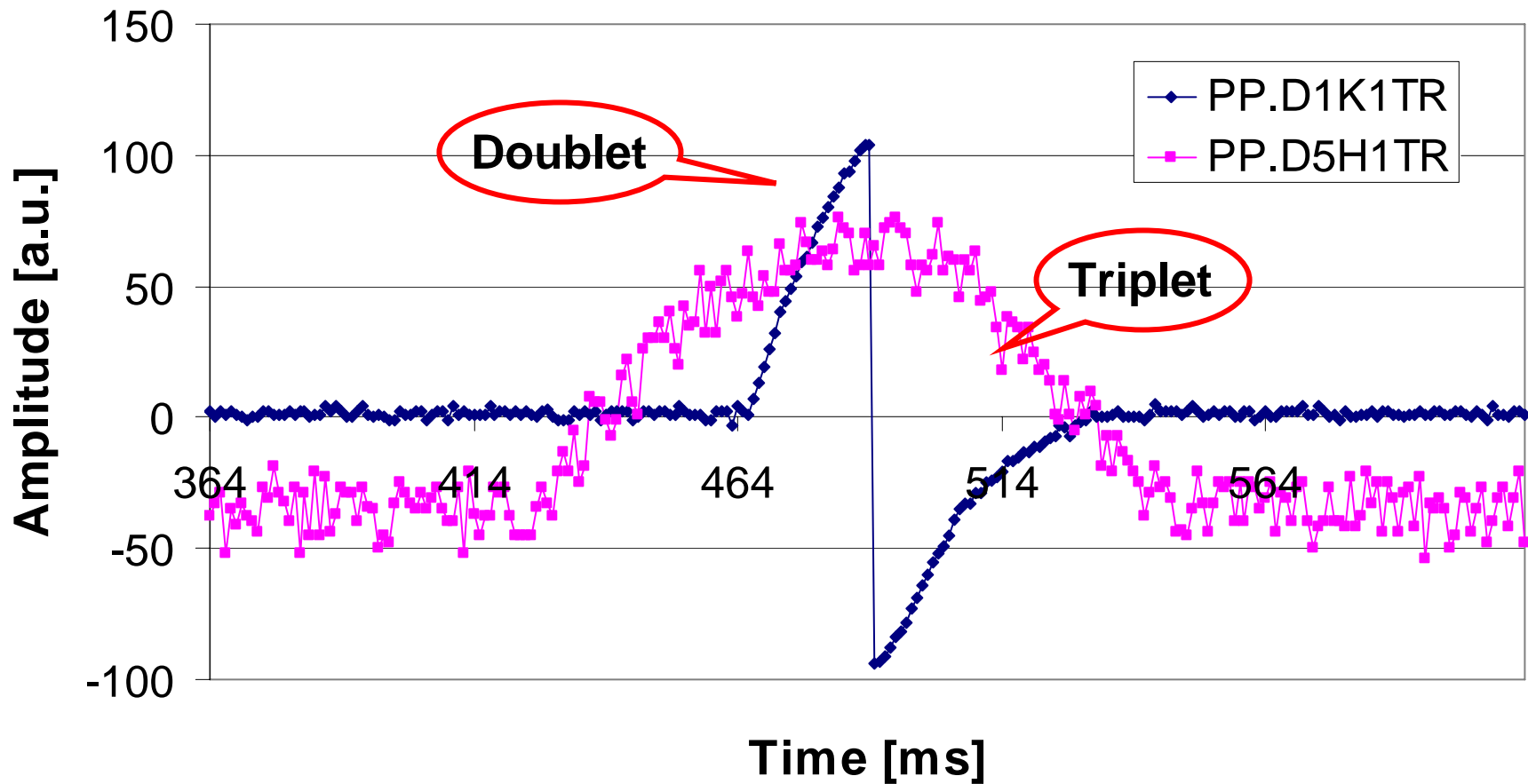
At the last meeting ...

Extension of the beam at 3 sigma with the aperture model VS distance (m)



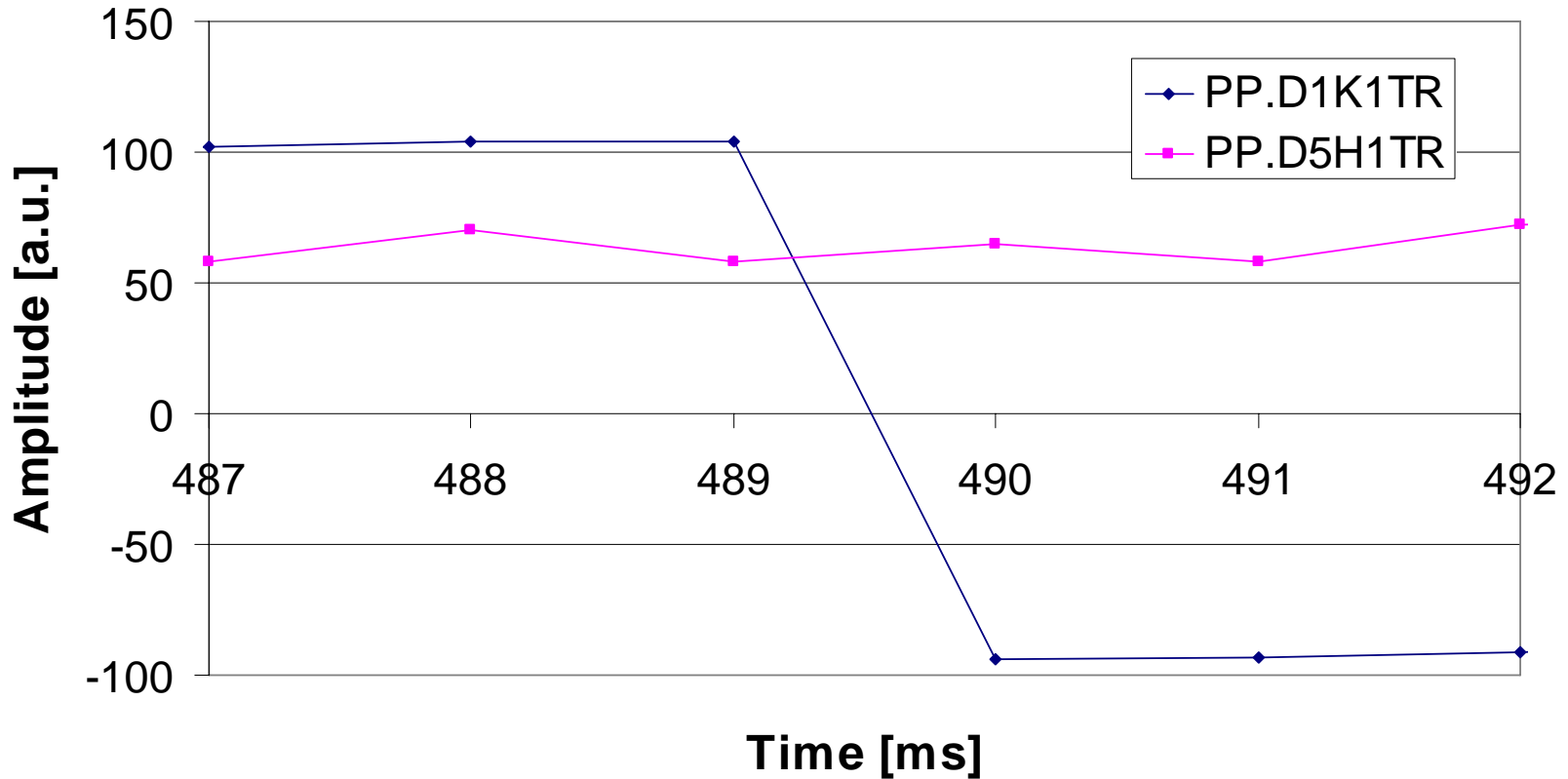
→ **Orbit distortion**

Transition equipments



1- Orbit measurement at different times near the transition with more precision at the Gammajump time

Transition equipments

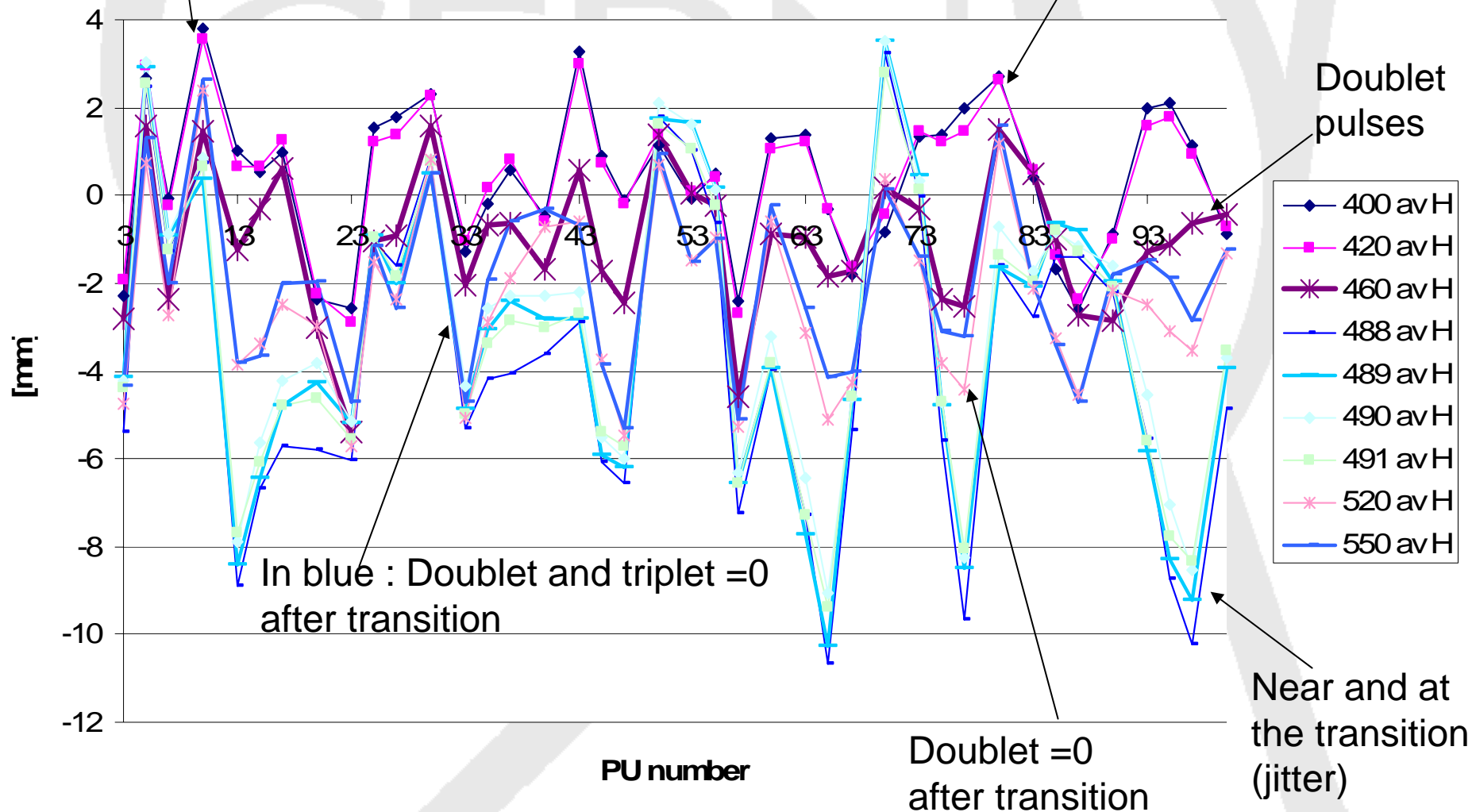


2- Orbit measurement with variation of the doublet currents

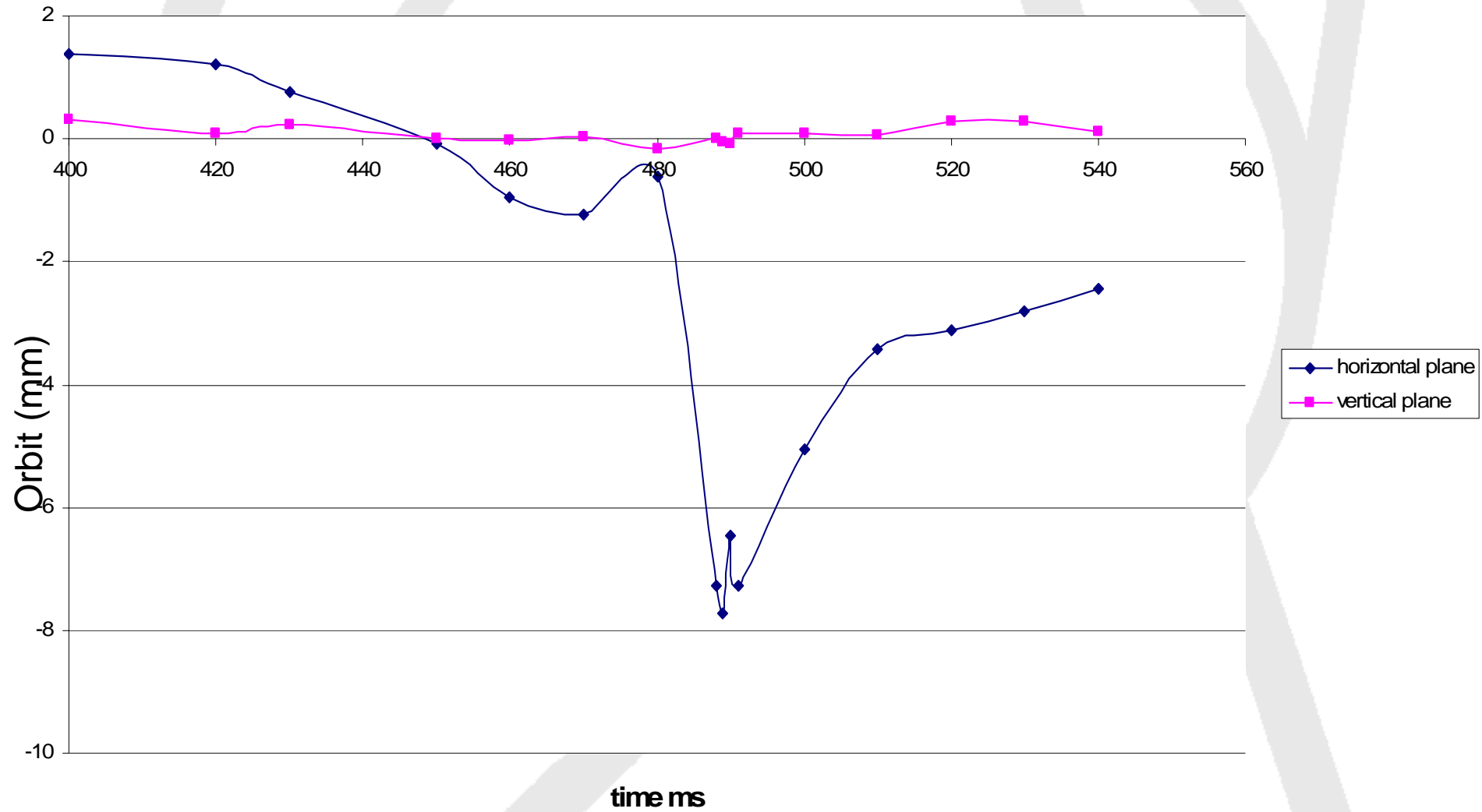
In violet : doublet
and triplet =0

In pink: triplet
pulses

Measured H orbits near transition

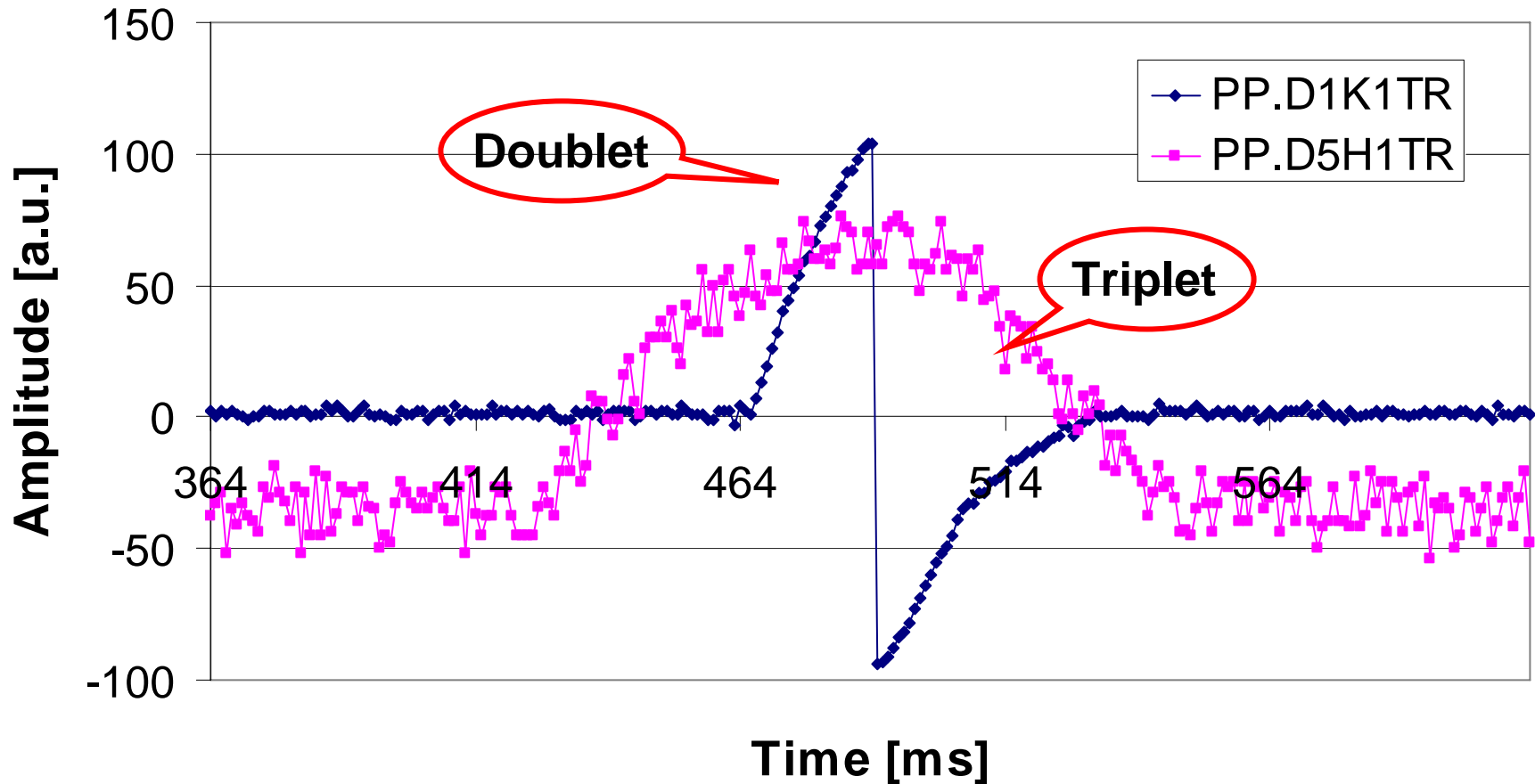


Orbit position in PU 63



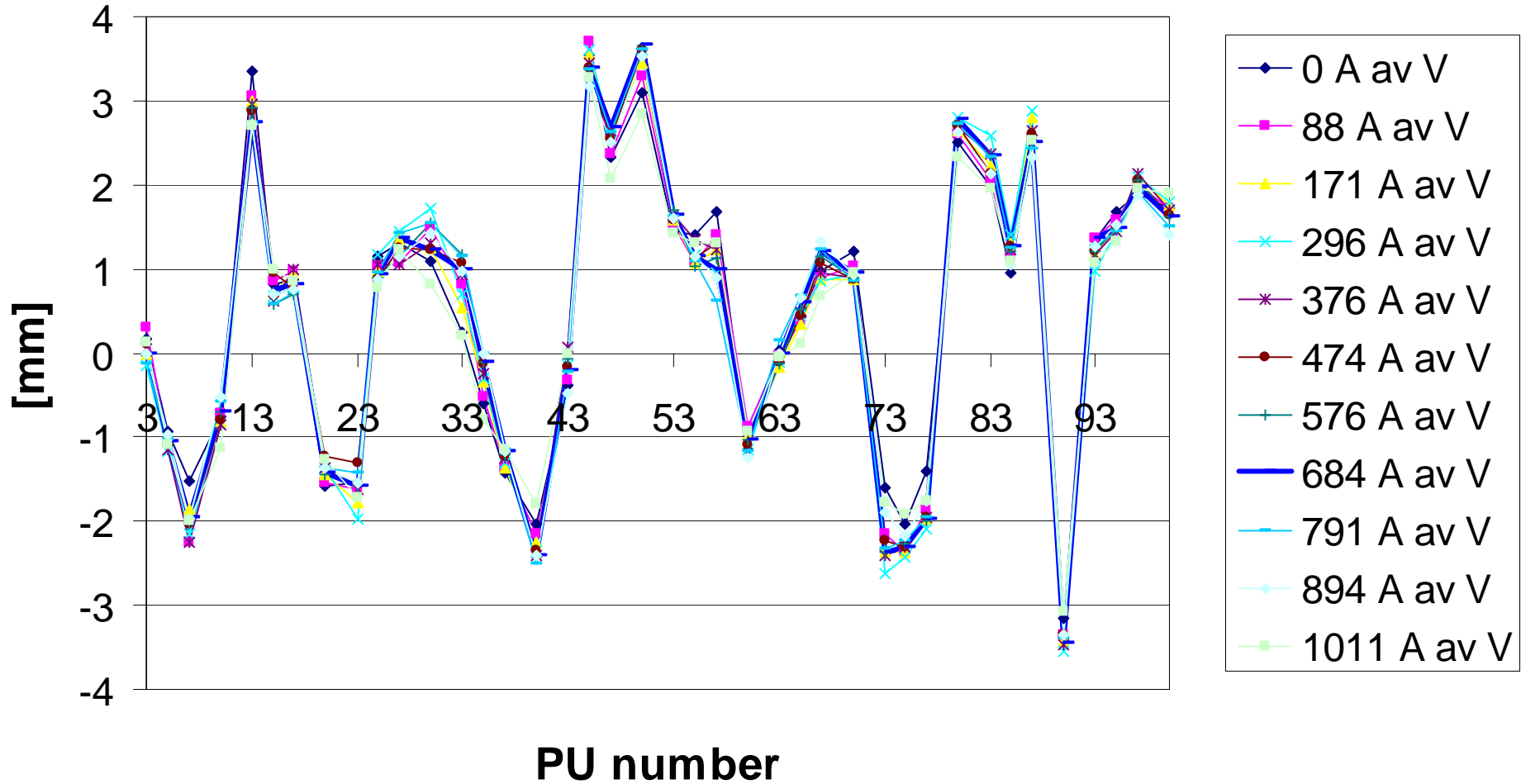
Orbit measurements with variation of the doublet current

Transition equipments



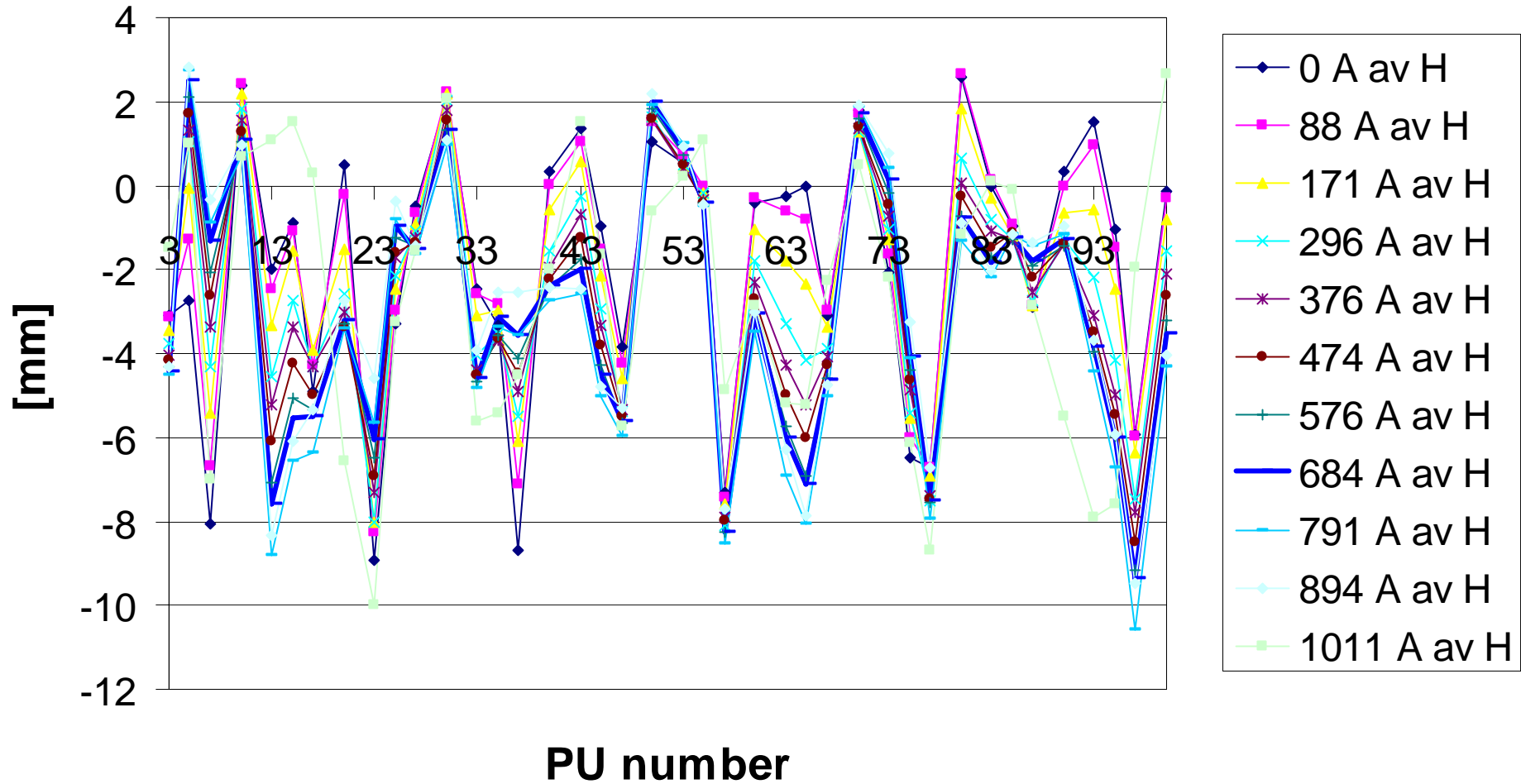
VERTICAL ORBIT AS A FUNCTION OF CURRENT IN THE DOUBLET

Measured V orbits near transition

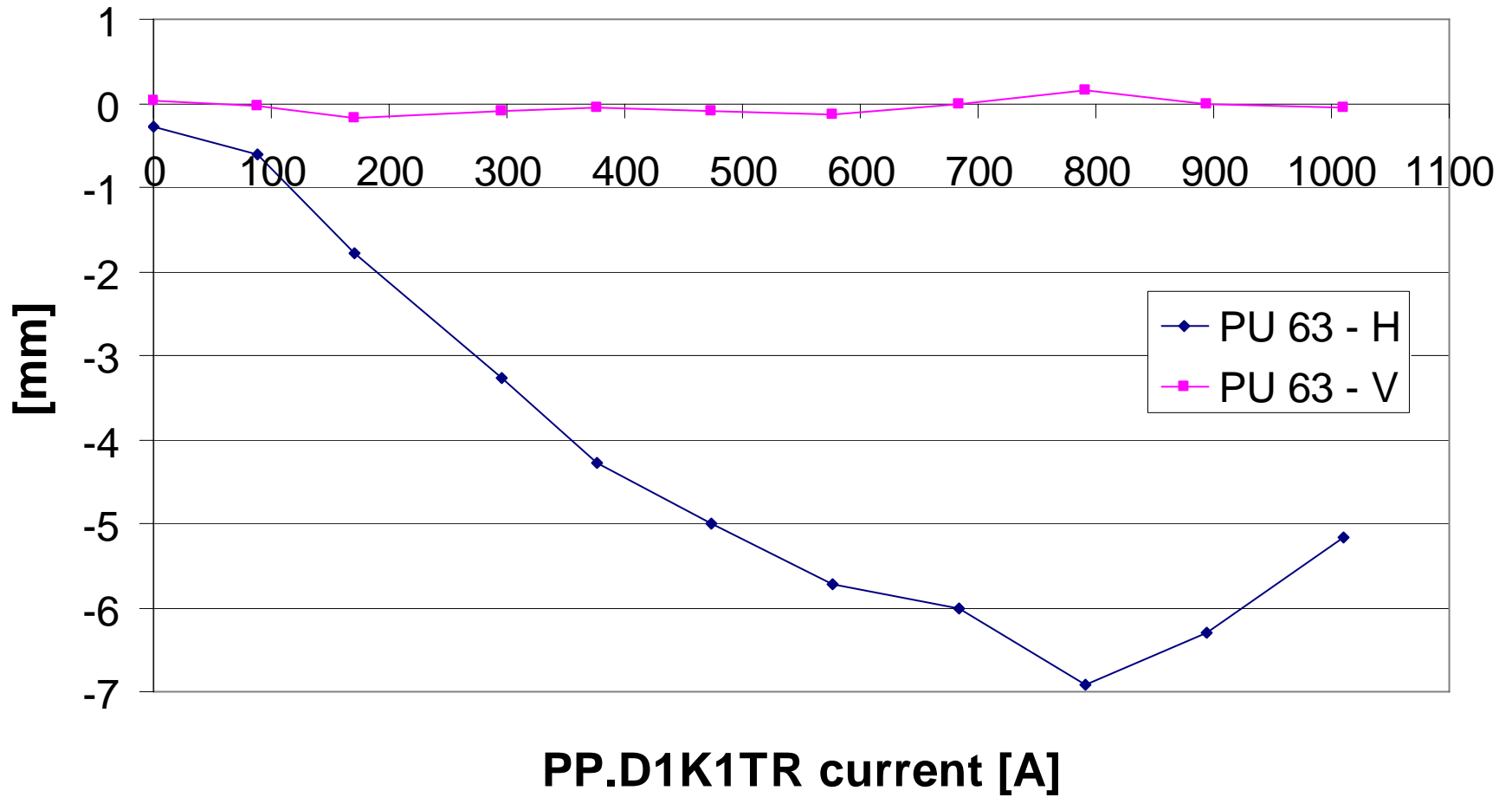


HORIZONTAL ORBIT AS A FUNCTION OF CURRENT IN THE DOUBLET

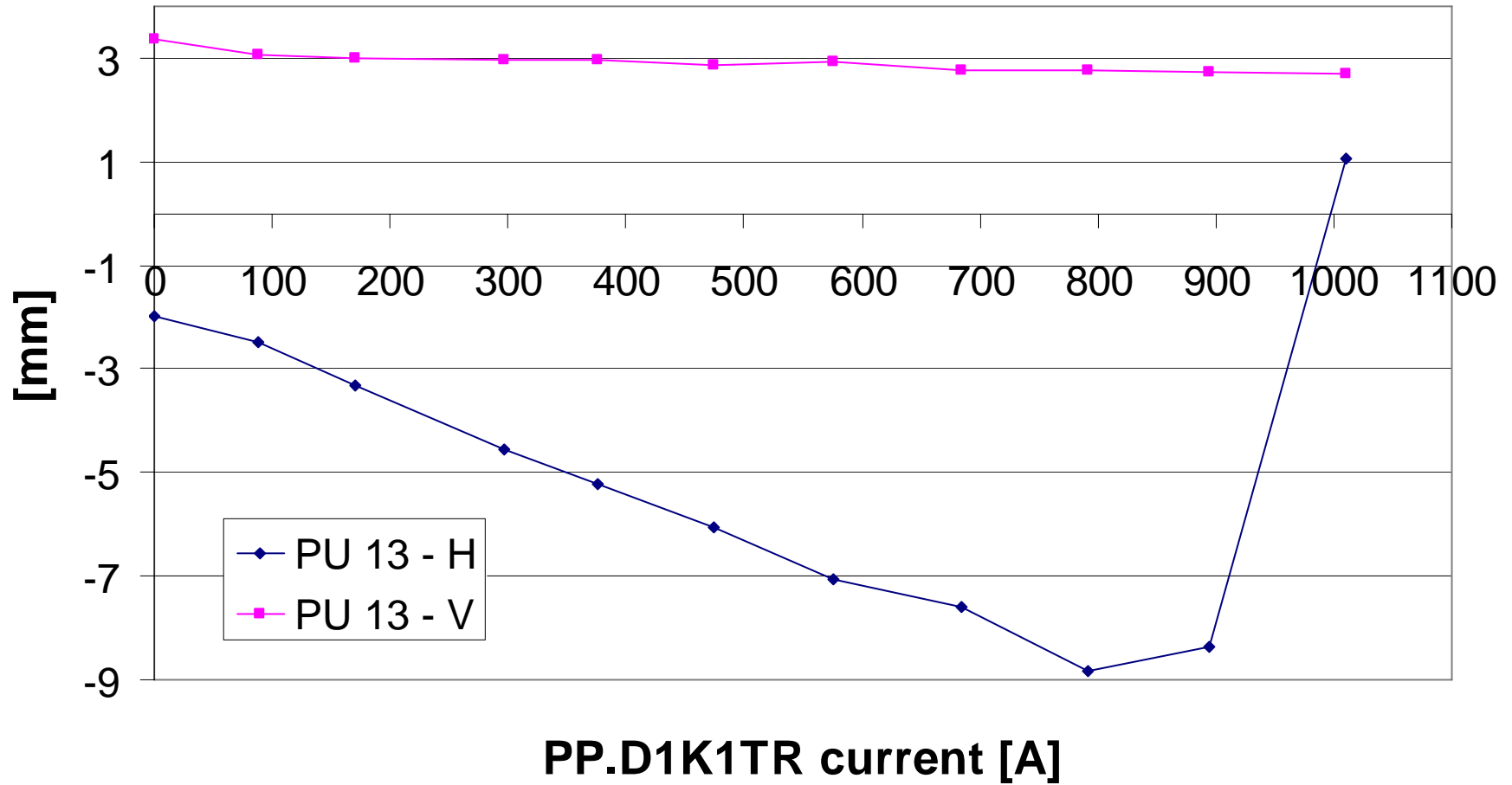
Measured H orbits near transition



Position in PU 63 vs. current in the doublet



Position in PU 13 vs. current in the doublet



Conclusions

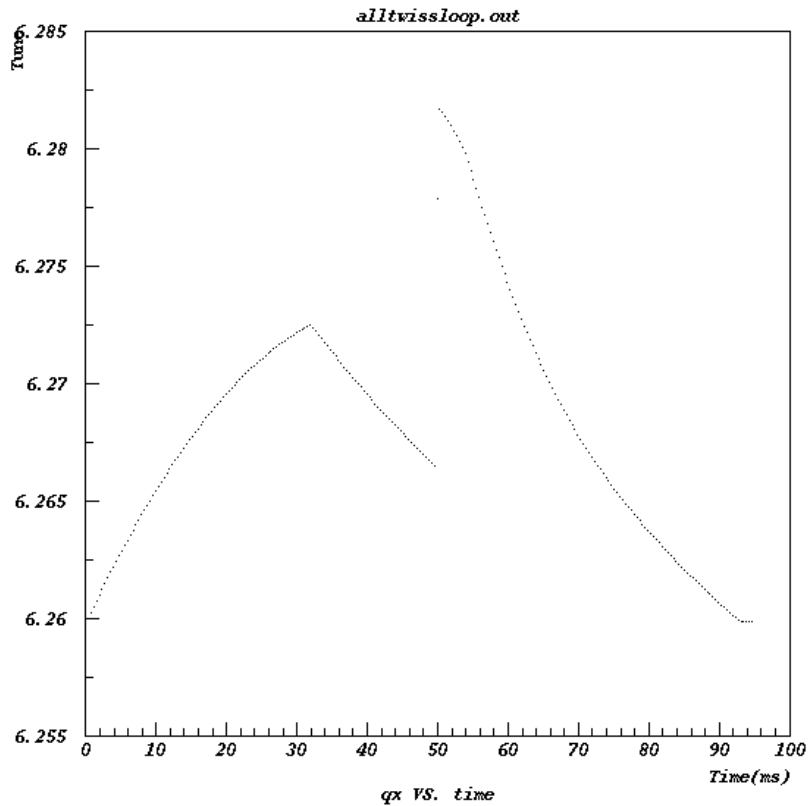
Doublet currents are the causes of the orbit distortion near the transition (see in PU 63, PU 13 and in PU97).

Almost no change in vertical orbit vs. current in the doublet.

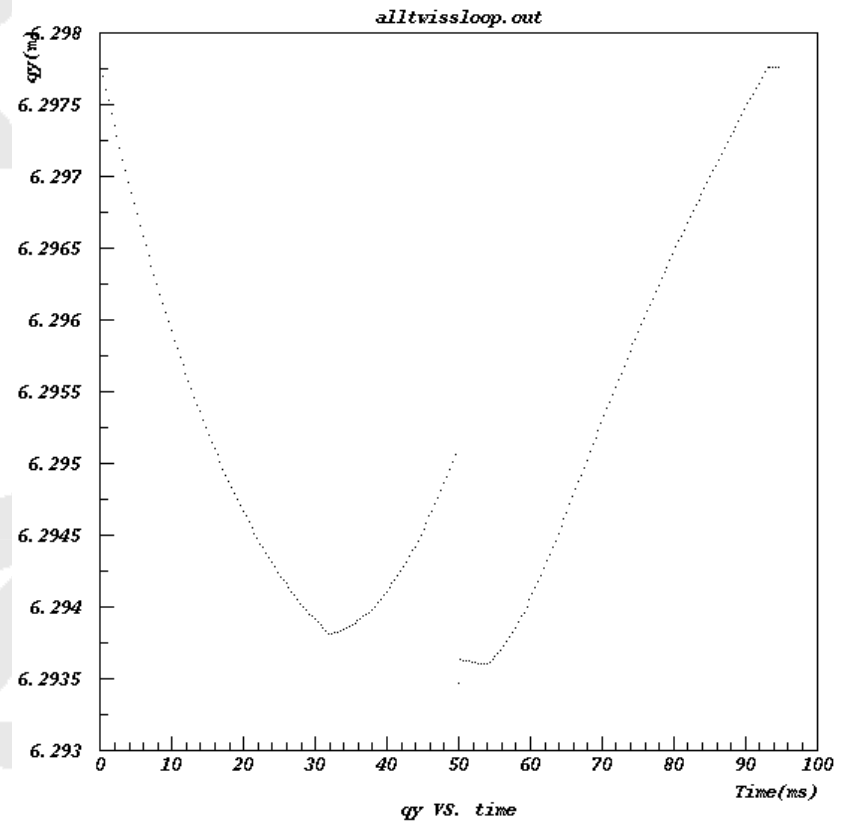
In PU 97, misalignments is the causes of the distorsion, it will check the simulation program .

According the orbit data, possibility to make interpolation in order to have a mathematic model of the influence of the doublet currents on the orbit.

Tune in the simulation PS program

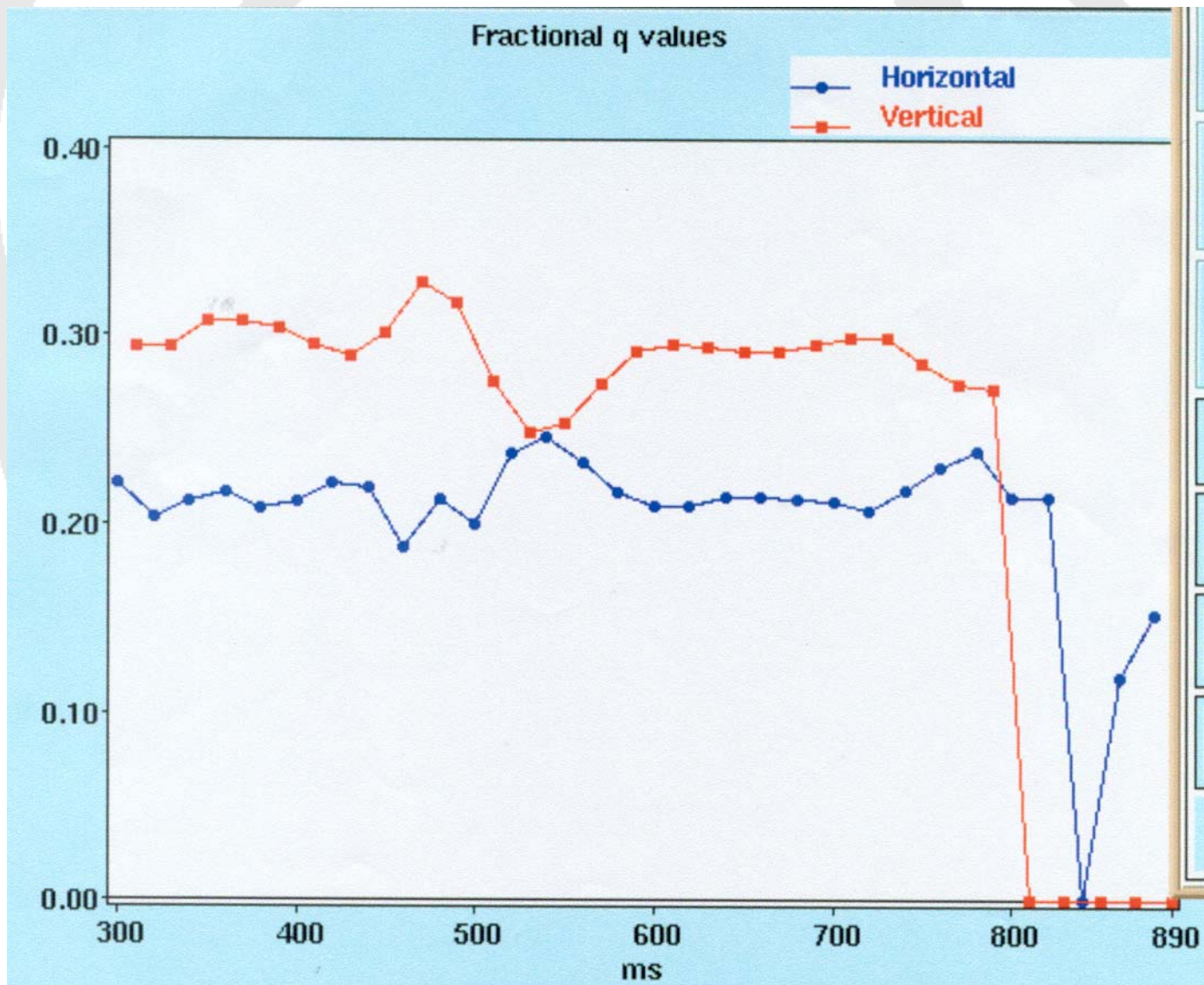


Tune qx in the horizontal plane vs time



Tune qy in the vertical plane vs time

Tune Measurements made by S. Gilardoni on the 15.06.06



Conclusions

Differences between tune measured in control room and in simulation PS program

False value of pole face in the dipole in the program but we obtain the same result.

→ Different working point