(14)

SOME ESTIMATES FOR DETERMINATION OF THE NEW STEERING MAGNET DISPLACEMENT ON THE WIGGLER EXIT 07.10.97

A.Gover, S.Efimov, Y.Pinhasi

There is part of the TAU-FEL facility near of the of the wiggler exit on the Fig.1. It is shown the VH6 steering magnet on the his standard place - right from the wiggler exit (beam moves from left to right on this picture).

It was interested to determine effectively of the steering magnet if it is found left from the wiggler exit and on the enough big distance from Pirson coil P3.

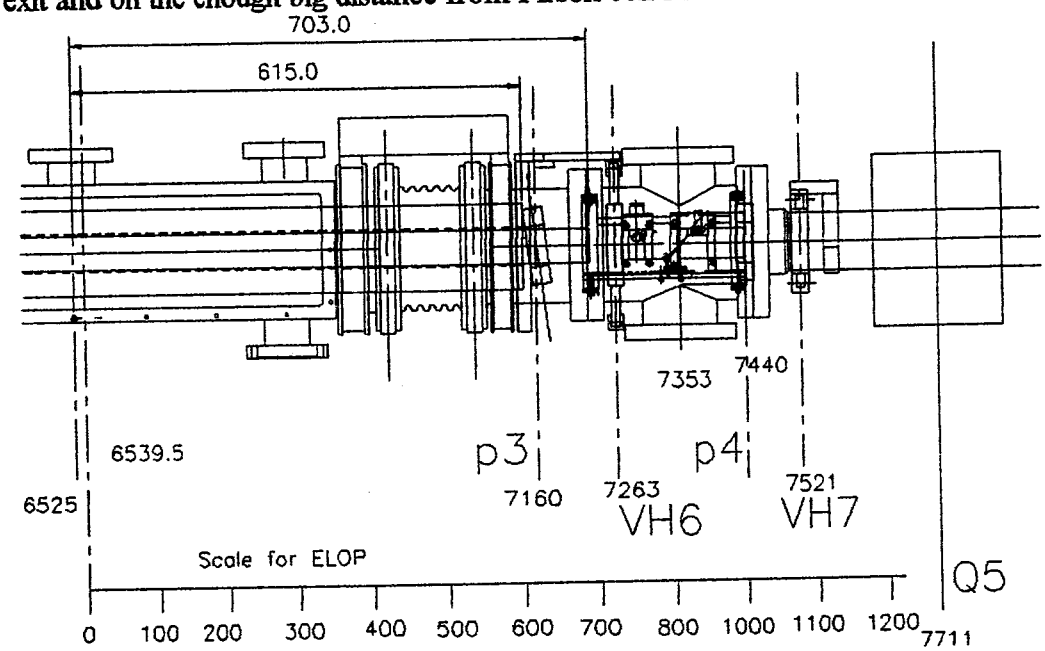

Fig.1. TAU-FEL. Region of the wiggler exit.

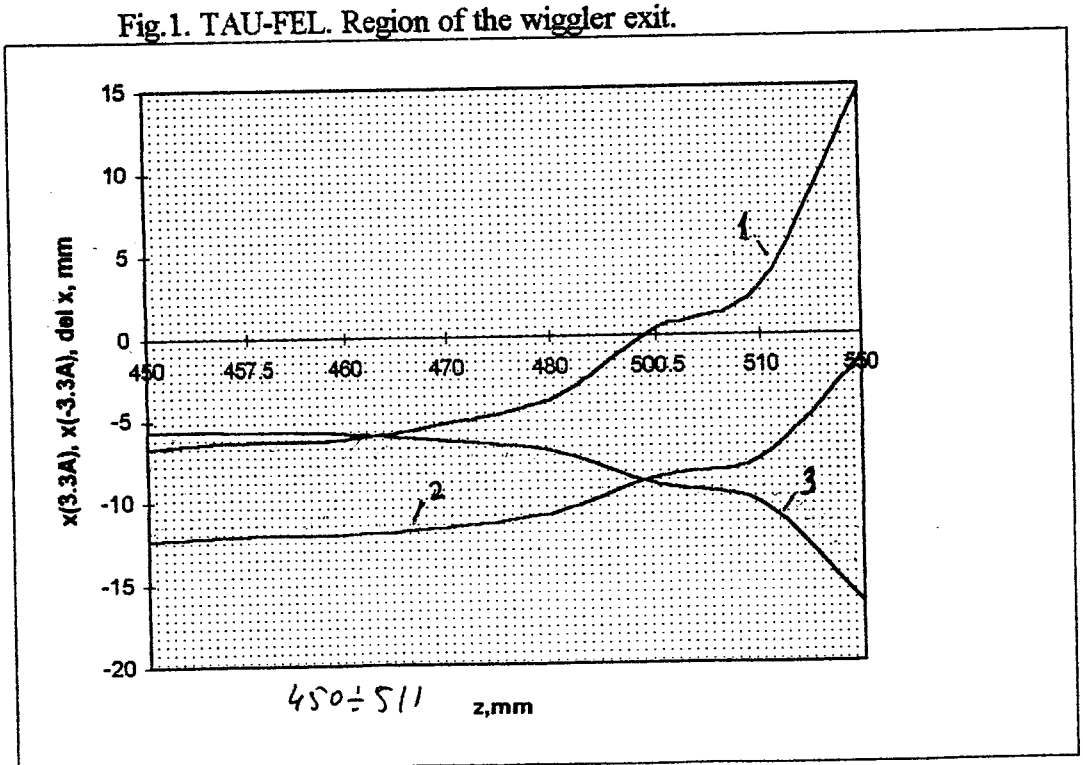

Fig.2. Displacement central beam trajectory from z-axis for z=1200mm as function of steering magnet position for steering current 3.3A (curve 1), -3.3A (curve 2) and their difference, Bs of the last magnet is increased on 10%.

The numerical results for two position of the steering magnet are shown in the Tables 1 and 2. Coordinate z=689mm is the coordinate of end point of the beam scrapper with 10mm full aperture. Coordinate z=457.5mm corresponds to maximum distance of the steering magnet from the wiggler exit without any technical problems.

Table 1.

Z(steering)=457.5mm (143mm from exit), ΔBs=+10%.

	-3.3A	0	3.3A
x(z=1200),mm	-5.7	-9.0	-12.5
x(z=689), mm	-0.7	-1.2	-1.7
x'(z=1200), mrad	-9.8	-15.6	-21.4

Table 2.

Z(steering)=500.5mm (100mm from exit), ΔBs=+10%.

	-3.3A	0	3.3A
x(z=1200),mm	-9.1	-9.0	-8.7
x(z=689), mm	-1.4	-1.2	-1.0
x'(z=1200), mrad	-12.5	-15.6	-14.9

The results of simulates if ΔBs=0 are lead on the Fig.3, Tables 3 and 4.

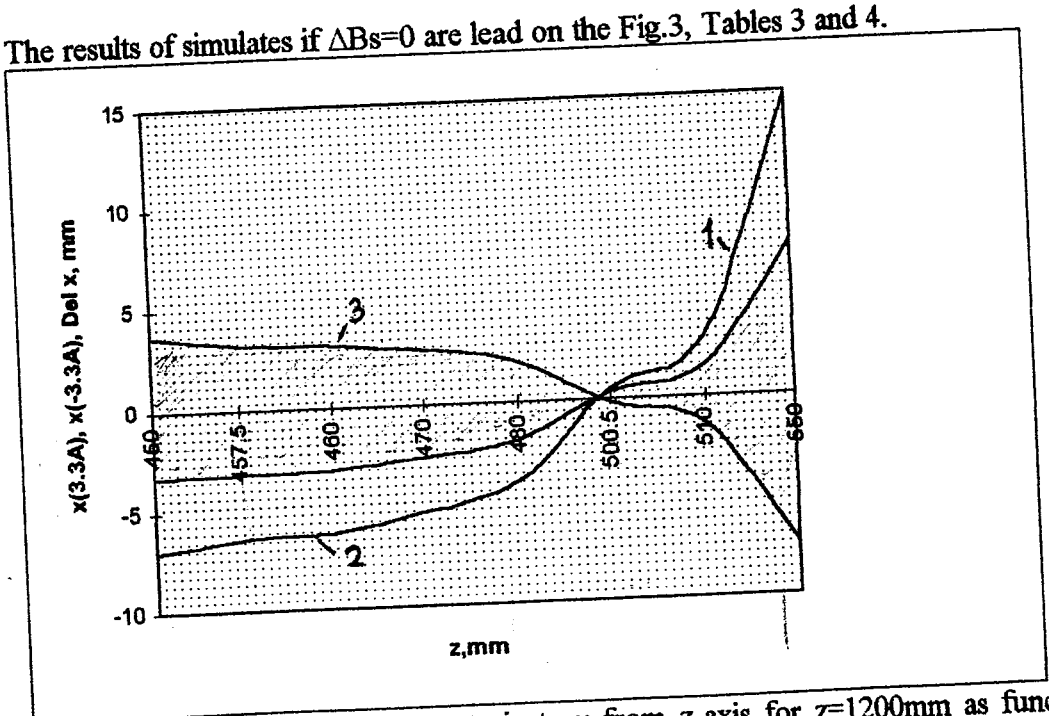

Fig. 3. Displacement central beam trajectory from z-axis for z=1200mm as function of steering magnet position for steering current 3.3A (curve 1), -3.3A (curve 2) and their difference.

The case if ΔBs=0.

Table 3.

Z(steering)=457.5mm (143mm from exit), ΔBs=0.

	-3.3A	0	3.3A
x(z=1200),mm	3.2	0	-3.2
x(z=689), mm	0.7	0.2	-0.3
x'(z=1200), mrad	4.9	-0.5	-5.6

Table 4.

Z(steering)=500.5mm (100mm from exit), ΔBs=0.

	-3.3A	0	3.3A
x(z=1200),mm	-0.2	0	0.3
x(z=689), mm	0	0.2	0.4
x'(z=1200), mrad	-0.5	-0.5	-0.2

CONCLUSION: The best position for disposition of the additional steering maget find in the interval z=457.5÷470mm . z=500±10mm is the region where action of the steering magnet is not effectively.