Meeting on August 13th 2002

Minutes taker Ina Reichel

Those present J. Corlett, I. Reichel, A. Wolski, W. Wan, A. Zholents

Date August 15 2002

Distribution

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Overview of topics

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1 Update on a design of the first bunch compressor (I. Reichel, W. Wan)

Ina now has a finished version using a dedicated compressor (see Fig. 20)..

Weishi has worked some more on his solution but cannot get rid of the small β-functions (both are small at the same place). Due to the low beam energy the small β-functions could lead to problems due to space charge effects. It is not easy to get the β-functions larger, as the required R_{56} is large and therefore the quadrupoles need to be fairly strong, i.e. have short focal lengths.

Sasha suggested using a larger energy spread and reducing R_{56} which would make the design of the first compressor significantly easier. His idea is to increase the energy spread by about a factor of five but decrease R_{56} only by a factor of two or three and then use the residual correlation in the second compressor (after the pre-linac). No one immediately found an obvious reason why that should not work but we will have to look at the rf-focusing in the pre-linac. Andy will track this though the pre-linac to see if there are any adverse effects.

Both lattices (Ina's and Weishi's) should be checked for space charge effects as they are a problem for the beamline just before the compressor which had not been expected.

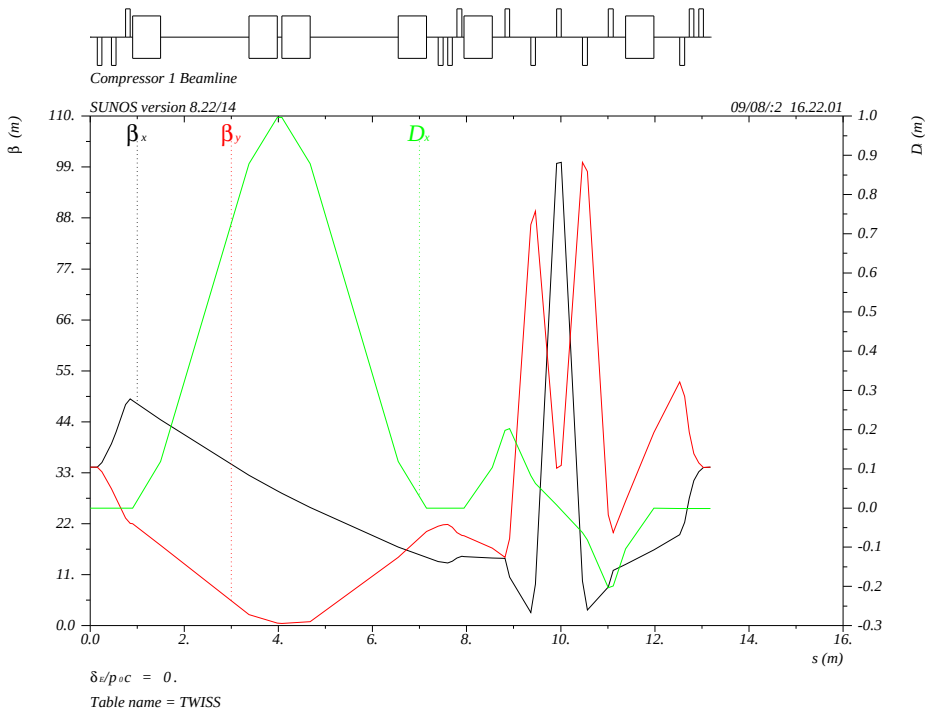

Figure 20: Lattice for the first compressor using a dedicated compressor.

2 Lattice database and CVS (I. Reichel)

The test directory is ready and Ina emailed everyone instructions. So far no one has tried it.

3 Newest tracking results from MERLIN (A. Wolski)

Andy tracked a bunch trough the whole machine for the first time using nominal parameters. The simulation includes misalignment of the rf cavities but no misalignment of other elements and no orbit correction. The sextupoles are ON. Figure 21 shows the dependence of the vertical emittance on the misalignment of the cavities with and without wake fields. No effect of the wake fields is visible.

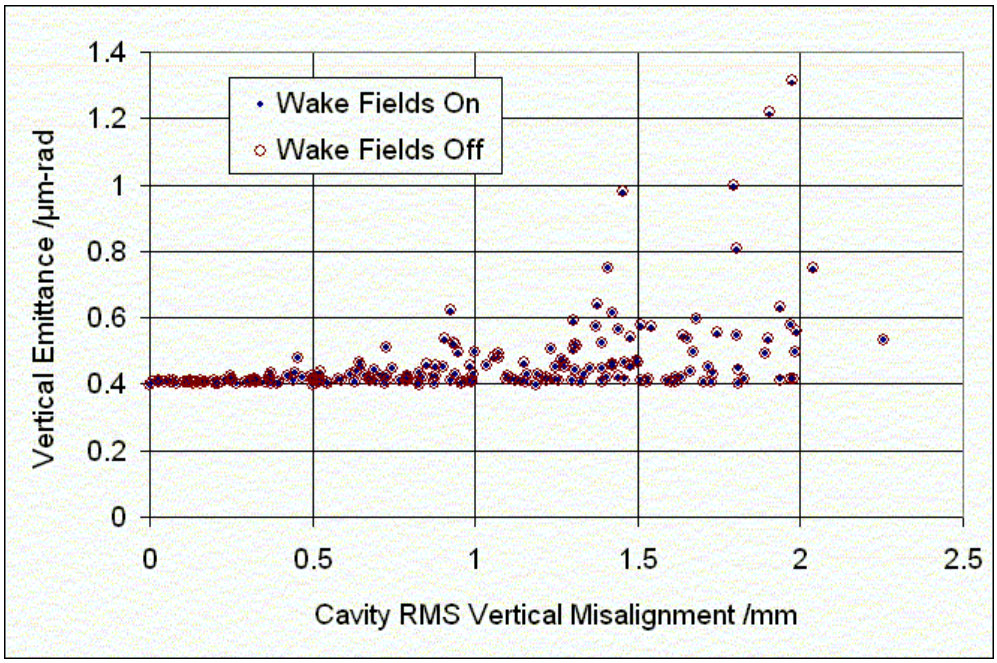

Figure 21: Tracking results from MERLIN for the whole machine with sextupoles ON including misalignment of the rf cavities with and without wake fields.