

Meeting on August 6th 2002

Minutes taker Ina Reichel

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

Absent(excused) A. Zholents

Date August 7 2002

Distribution

J. Corlett
I. Reichel
D. Robin
S. de Santis
W. Wan
A. Wolski
A. Zholents

Overview of topics

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

Using Sasha's suggestion from last week Ina has an almost finished design. The beta-functions are not yet exactly matched, but it looks good overall.

Ina got TraFiC4 to run and produce reasonable looking output using an example file provided by A. Kabel. She'll set up a meeting with A. Kabel and some people from the femtosource to clarify the input parameters needed.

Weishi recently played around with the compressor/beamline, too, and found a solution without a dedicated compressor with a large tuning range for R_{56} (0.1 m to 1.0 m).

2 Lattice database and CVS (I. Reichel)

Ina installed a test directory and is currently waiting for Nancy Lewis to try to check out files to see if it works. As soon as everything works everybody will get an email with instructions.

There was a discussion about who actually has a current version of the lattice files for Ina to put in there once everything works. It looks like both Andy and Weishi have an up-to-date version (as Andy did not change anything in the version he got from Weishi).

3 More cross-checks between MERLIN and Stefano's analytical results (A. Wolski)

Andy tracked just the cavities in MERLIN for all four passes. The results agree well with Stefano's calculations, so it looks like MERLIN gets the wakefields right.

Andy also tracked the whole machine from the entrance of the main linac to the end of the undulator farm with and without the sextupoles and it looks like the effect is small. The sextupoles remove the tail from the longitudinal distribution (see Fig. 17) but they slightly distort the horizontal phase space (see Fig. 18). Tracking included transverse wakefields only in the main linac, no machine errors or bunch offsets or distortions.

There was some discussion if the higher order components of the dipoles in MERLIN are actually treated correctly and if in case they are not, the sextupoles should actually make it worse.

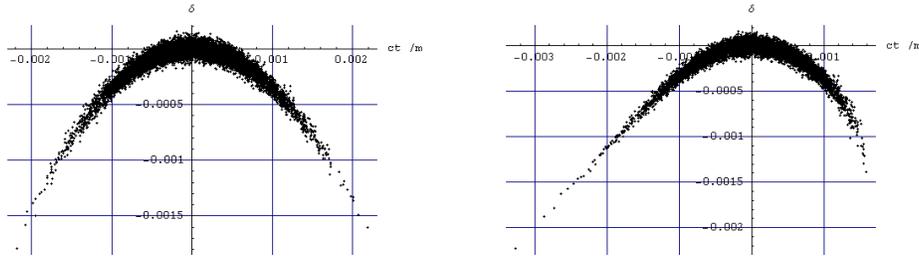


Figure 17: Tracking results in the longitudinal plane from MERLIN from start of main linac to end of undulator farm with (left) and without sextupoles (right).

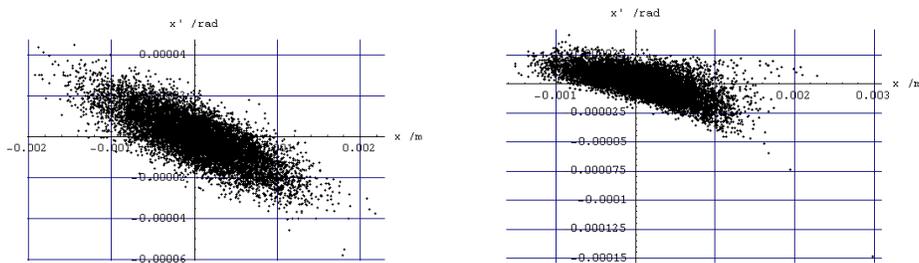


Figure 18: Tracking results from MERLIN for the horizontal plane from start of main linac to end of undulator farm with (left) and without sextupoles (right).

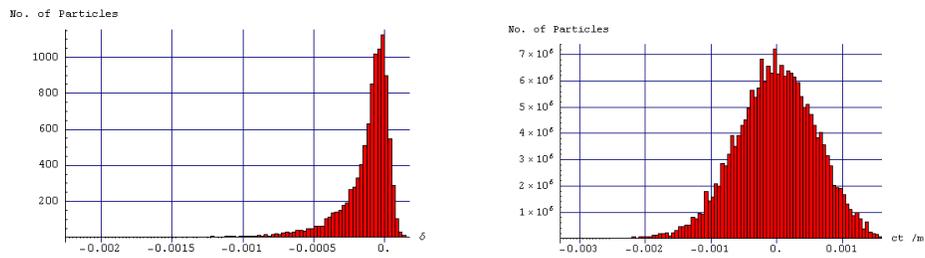


Figure 19: Tracking results from MERLIN from start of main linac to end of undulator farm without sextupoles: Energy spread (left) and bunch length histograms. With sextupoles on the histograms are only slightly changed.