

Sorting of Dipole and Quadrupole Magnets for the BESSY II Booster Synchrotron*, M. ABOBAKR, G. WÜSTEFELD, BESSY (Berlin) Germany - The BESSY II Booster¹ is a 50 MeV to 2 GeV electron synchrotron presently under construction at the BESSY II site in Berlin. To minimize the closed orbit beating due to the random dipole strength errors of the dipoles the method of simulated annealing was used to sort the dipole magnets. If we expect an $5 \cdot 10^{-4}$ rms error for the field strengths, the maximum of the closed orbit excursion between a "bad" and a "good" sorting solution differs by a factor of 4. A similar optimization method was applied for the quadrupoles to reduce the beating of the transverse betatron functions. In this case and an expected random $1 \cdot 10^{-3}$ rms gradient error a "good" sorting improves the beta beating by a factor of 20 compared to a "bad" one.

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¹ The BESSY II Booster Synchrotron, E. Wehreter et al. to be published in these proceedings.