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Cross-talk between magnets in the H6BA-cell of PETRA IV

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For the upgrade of the 6 GeV synchrotron light source PETRA III into a diffraction-limited storage ring PETRA IV it is planned to replace the 23 m long double-bend achromats by hybrid six-bend achromats (H6BA). The high packing density of elements in the H6BA cells requires that the distance between magnets are small with only a few centimeters between the yokes for some of the magnets. Overlapping fringe fields of the magnets will result in substantial magnetic cross talk. The change of the main field component of quadrupoles due to magnetic interference will lead to a change of the optical functions of PETRA IV. In this paper results of magnetic field cross-talk calculations between magnets will be presented. The influence of the cross-talk on the optics of PETRA IV, its integration in the lattice model and its correction will be discussed.

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Footnotes

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