

Beam-based girder alignment in PETRA-IV: conceptual simulations

DESY is advancing plans to upgrade PETRA III into a 4th generation light source. Magnetic lattice components are assembled and pre-aligned on extended girders before being installed in the tunnel. However, the considerable length of these girders and the inherent misalignment of the magnets introduce challenges for the PETRA IV lattice, particularly in storing the beam within the ring. Previous commissioning simulations indicated that the orbit correction system demands relatively high corrector strengths. In response, a simulation study was carried out to explore the feasibility of beam-based girder alignment correction as a means to reduce these corrector strength requirements during operation.

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