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Commissioning simulation for the Hefei advanced light facility storage ring

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Hefei advanced light facility (HALF) is a fourth-generation light source under building. The lattice contains 20 super-periods with modified hybrid 6-bend achromat (MH6BA). The circumference is 479.86 m, and the natural emittance is 85.8 pm·rad at 2.2 GeV. In reality, the real storage ring is different from the ideal lattice due to different kinds of errors. The errors come from many sources, like misalignment of components, imperfect magnetic field, etc. Due to strong nonlinear effect and small dynamic aperture of the HALF storage ring, the errors degrade the performance of the lattice seriously. The closed orbit may not exist without any correction. To figure out the practical performance of the lattice with errors, a start to end commission simulation is performed in this study, which also helps to build correction scheme for effective commissioning.

Footnotes

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