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Simulation of the dynamic aperture of the NICA booster synchrotron based on magnetic measurement data

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Dynamic aperture (DA) is one of the key characteristics for any accelerator facilities. The estimation of the lattice elements errors (nonlinearities and integral field value errors, misalignment of the elements etc.) and beam correction system influence at DA are the milestone stage during construction of the facility. Also, the value of the DA is ought to be sufficient (be in excess of the beam pipe dimensions). The report studies methods of the DA calculation for the NICA booster synchrotron in MAD-X software among other factors including symplectic tracking algorithm PTC (Polymorphic tracking code). The results of the magnetic measurements of the lattice elements and influence of the the chromaticity and sextupole errors of magnets correction system were taken into account.

Summary

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