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Conceptual design of multipole injection kicker magnets for the ILSF storage ring

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The standard injection scheme of ILSF is composed of 2 septum and 4 kicker magnets installed in a 7-meter-long straight section. Further tuning of the 4 kicker devices to reduce perturbations has proven to be almost impossible since it requires having 4 identical magnets, electronics, and Ti-coated ceramic chambers. Different from pulsed dipole kicker magnets used in a conventional local-bump injection, the single nonlinear or multipole kicker provides a nonlinear distribution of magnetic fields, which has a maximum value off the axis where the injected beam arrives and a zero or near-zero value at the center where the stored beam passes by. So, here the designs of different multipole kickers, including sextupole, octupole, and a nonlinear kicker, have been investigated and compared.

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Footnotes

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