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Impact of Delta undulator on SIRIUS beam dynamics

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SIRIUS is the Brazilian 4th generation synchrotron light source. Currently, SIRIUS is in its Phase 1 stage of the project, with 14 beamlines proposed, some of which are already used by external users. Recently, the SABLÁ beamline underwent a transition where its commissioning insertion device (ID) was replaced by the beamline's titular ID, an in-house developed DELTA undulator. This device offers versatility in generating various polarizations of light depending on the relative positions of the ID cassettes. However, each permissible configuration engenders distinct perturbations in beam dynamics, particularly affecting beam orbit, optics, and equilibrium parameters. This paper reports the impacts of the DELTA on beam dynamics and outlines the correction strategies implemented to mitigate these effects.

Footnotes

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