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Orbit feedback system in SOLARIS synchrotron final step implementation and first measurements

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SOLARIS, a third-generation synchrotron radiation source in Kraków, Poland, is dedicated to providing high-brilliance X-ray beams for various scientific disciplines. The successful operation of a synchrotron radiation facility heavily relies on precise control of the electron beam orbit within the storage ring. Orbit deviations, even on a small scale, can adversely affect beam quality, leading to decreased performance and efficiency of experimental setups. To mitigate these effects, an Orbit Feedback System is essential, providing correction of orbit deviations. In this study, we present the implementation of an enhanced Orbit Feedback System consisting of fast and slow orbit correction systems as well as RF drift compensation. System consists of feedback algorithms calculating corrective actions of the actuators (fast and slow correction magnets) based on beam position measurements. We also present first measurements and tests for the system showing its capabilities.

Footnotes

Funding Agency

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