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Commissioning of the beam diagnostic system for NanoTerasu: a new 3 GeV light source in Japan

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NanoTerasu is a 4th generation 3 GeV light source newly constructed in Sendai, Japan. The circumference is 349 m and the natural emittance is 1.1 nm rad, which is realized by a double-double-bend lattice. The commissioning of the storage ring started in June 2023 and the stored current reached 300 mA in November. The beam diagnostic system for NanoTerasu mainly consists of button BPMs to monitor both single-pass and COD beam orbit, a DCCT to monitor the stored current, an X-ray pinhole camera to measure the beam size. To suppress collective instabilities, a transverse bunch-by-bunch feedback (BBF) system is also in use. The BBF system can also measure the betatron tune. In this talk, an overview of the beam commissioning of NanoTerasu, the performance of each beam diagnostic component, and fine-tuning of the electron beam optics will be presented.

Footnotes

Funding Agency

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Yes

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