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Status of longitudinal instability suppression at NanoTerasu

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NanoTerasu is a 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 achromat lattice. The commissioning of the storage ring started in June 2023. The longitudinal instability was observed when the stored beam current reached 150 mA in August 2023. The temperature of RF cavity was adjusted to suppress the instability. The user operation was started on schedule in April 2024 with a stored beam current of 160 mA. The stored beam current was reached 200 mA without the beam instability in July 2024. The stored beam current at user operation period was limited to 200 mA by the longitudinal instability. We try to suppress the longitudinal beam instability using several methods. We developed the pillbox type RF kicker cavity to suppress the instability. In addition, we tried to suppress the longitudinal instability using the transverse feedback kicker. I will report the status of longitudinal instability suppression at NanoTerasu.

Footnotes

Funding Agency

I have read and accept the Conference Policies

Yes

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