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Cavity Beam Position Monitors pulse Injection source

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The Cavity Beam Position Monitor (CBPM) system at Accelerator Test Facil- ity 2 (ATF2, KEK, Japan) operates with attenuation at a reduced 200 nm (vs measured 20-30 nm) resolution to cope with CBPM to magnet misalignment. In addition, CBPMs need regular calibrations to maintain their performance. To address these limitations, a pulse injection system is under development. This system aims to compensate for static offsets by injecting an anti-phase replica of the average beam signal directly into the sensor cavities. The same signal can provide a calibration tone for the whole processing chain and eliminate lengthy beam-based calibrations. Proof of principle tests for such a system have been conducted in December 2023. In this paper, we report on the results of the first beam test, discuss the technical challenges and provide a preliminary hardware specification for future experiments.

Footnotes

Funding Agency

I have read and accept the Privacy Policy Statement

Yes

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