Contribution ID: **404** Contribution code: **TUPMO25**   Type: **Poster Presentation**

Initial implementation of a new orbit feedback system using MicroTCA.4 for the PF user operations

Tuesday 9 September 2025 16:00 (2 hours)

A new orbit feedback system has been introduced to the PF-ring, a synchrotron radiation source at KEK, starting from the third operation period of FY2024. The new system is built with state-of-the-art digital signal processing circuits based on the MicroTCA.4 standard. The stored beam's closed orbit distortion (COD) is measured at a 10 kHz rate using the circuits matched to the number of BPMs, and corrected to a designated reference orbit by feeding back the results of matrix calculations using the inverse response matrix to the currents of fast steering magnets. The transition from the legacy VME-based system, which had been in service for nearly 30 years, was carried out carefully and stepwise during the startup phase of the third operation period. The reference orbit was successfully transferred to the new system, and even in-vacuum undulators with a minimum gap of 4 mm were operated without requiring additional orbit corrections. In this presentation, we will describe the setup of the newly implemented system, the transition process from the old system, and plans for future improvements.

Footnotes

Funding Agency

I have read and accept the Conference Policies

Yes

Author: TAKAI, Ryota (High Energy Accelerator Research Organization)

Co-authors: SAGEHASHI, Hidenori (High Energy Accelerator Research Organization); SHIOZAWA, Mami (High Energy Accelerator Research Organization); TADANO, Mikoto (High Energy Accelerator Research Organization); OBINA, Takashi (High Energy Accelerator Research Organization)

Presenter: TAKAI, Ryota (High Energy Accelerator Research Organization)

Session Classification: TUP

Track Classification: MC06: Feedback Systems and Beam Stability