Contribution ID: **84** Contribution code: **MOP030**   Type: **Poster Presentation**

Development of an upgraded fast orbit feedback system for NSLS-IIU

Monday 11 August 2025 16:00 (2 hours)

As light source facilities evolve, upgrading fast orbit feedback systems is essential for improving beam stability. NSLS-II is planning an upgrade to NSLS-IIU, which introduces stricter stability requirements for advanced experiments. To address this, we developed a next-generation fast orbit feedback prototype system to enhance noise suppression and extend control bandwidth beyond 1 kHz. A system-wide evaluation was conducted, covering beam position monitors, cell controllers, power supply controllers, power supplies, and vacuum chamber effects. Latency and bandwidth bottlenecks were identified in the cell and power supply controllers. A new cell controller was designed to increase the sampling rate from 10 kHz to 31.5 kHz and reduce system latency to under 70 μs. The transfer function and gain measurements of a single-input-single-output system show a 10-dB improvement in noise suppression and an extension of bandwidth into the kHz range. We present the development and performance results of the upgraded system, offering a path toward higher beam stability at NSLS-IIU.

Please consider my poster for contributed oral presentation

Yes

Would you like to submit this poster in student poster session on Sunday (August 10th)

No

Footnotes

Funding Agency

I have read and accept the Privacy Policy Statement

Yes

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