Contribution ID: **1724** Contribution code: **TUPB107** Type: **Poster Presentation**

Development of a global tune geedback system for beam stability at the Taiwan Light Source

Tuesday 3 June 2025 16:00 (2 hours)

This paper introduces the development of a global tune feedback system at the Taiwan Light Source (TLS) to address tune variations resulting from changes in the gap and phase of insertion devices. The system utilizes two families of quadrupole magnets to sustain betatron tunes at their desired working points. Adjustment currents, essential for feedback control, are computed using a tune response matrix derived from the lattice model and processed through the singular value decomposition (SVD) algorithm. Real-time tune shift data, provided by a bunch-by-bunch feedback system, enables precise and efficient compensation. This integrated approach ensures robust beam stability and optimal performance under varying operational conditions.

Footnotes

Paper preparation format

Region represented

Asia

Funding Agency

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Session Classification: Tuesday Poster Session

Track Classification: MC8: Applications of Accelerators, and Engagement for Industry and Society: MC8.U02 Materials Analysis and Modification