



Contribution ID: 673 Contribution code: MOPB055

Type: **Poster Presentation**

## Exploring lattice candidates for TPS upgrade

*Monday 2 June 2025 16:00 (2 hours)*

The design of lattice candidates for the Taiwan Photon Source (TPS) upgrade, based on Multi-Bend Achromat (MBA) and Hybrid Multi-Bend Achromat (HMBA) configurations, is under investigation. The system parameters are carefully optimized in order to satisfy all the constraints, particularly minimizing the offset of source points at the existing insertion devices (IDs). The 6BA configuration demonstrates potential for achieving phase cancellation without requiring harmonic sextupoles but poses the limited space challenges. The 5BA lattice provides a configuration with relaxed hardware requirements. Current estimation shows the achieved beam brightness is comparable with the inclusion of intrabeam scattering (IBS) effects. The HMBA scheme is promising due to its simpler configuration and reduced IBS effects. Preliminary results highlight trade-offs between dynamic aperture, lifetime, emittance, brightness and hardware requirements for different lattice configuration, guiding the path forward the TPS upgrade.

### Footnotes

### Paper preparation format

### Region represented

Asia

### Funding Agency

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**Session Classification:** Monday Poster Session

**Track Classification:** MC2: Photon Sources and Electron Accelerators: MC2.A24 Accelerators and Storage Rings, Other