Contribution ID: **269** Contribution code: **THP037** Type: **Poster Presentation**

Force-Neutral Adjustable Phase Undulators

Thursday 14 August 2025 16:00 (2 hours)

Conventional variable-gap undulators rely on complex and bulky motion and support systems, limiting their tuning speed, precision, and overall efficiency. To address these challenges, RadiaBeam Technologies, in collaboration with Argonne National Laboratory (ANL), is advancing ANL's Force-Neutral Adjustable Phase Undulator (FNAPU) technology by developing manufacturing capabilities and diagnostics testing capacity for efficient fabrication and reliable quality control of standalone undulator units.

FNAPUs utilize a secondary array of "off-the-shelf"permanent magnets that counterbalance the internal magnetic forces of the primary undulator array, enabling a compact, force-neutral structure. This design significantly simplifies assembly, improves alignment precision, and enhances operational safety and user accessibility. Furthermore, the compact and modular architecture of FNAPUs supports novel configurations such as X-undulators as well as enabling the integration of multiple units into undulator matrices, providing wide X-ray energy production via switchyard. These capabilities position FNAPU technology as a promising solution for next-generation light sources, including X-ray free-electron lasers (XFELs) and synchrotron radiation (SR) facilities.

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

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I have read and accept the Privacy Policy Statement

Yes

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