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Force-Neutral Adjustable Phase Undulators

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Variable gap undulators require large and complex motion systems to operate, making their tunability to generate specific radiation wavelengths cumbersome, limited, and slow. RadiaBeam Technologies is engaging in a project to advance undulator manufacturing by utilizing force-neutral adjustable phase undulator (FNAPU) technology developed by Argonne National Laboratory (ANL). This innovative approach allows high precision undulators to be more compact, cost-effective to fabricate and assemble, and safe and user friendly in alignment, manipulation and operation.
The innovation of FNAPU technology is based on the inclusion of a secondary array of permanent magnets, arranged to compensate the internal forces brought on by the main undulator array. The flexibility and compact design of FNAPUs allows for exotic applications (X-undulators) and multiple FNAPUs can be packed together to form an undulator matrix, covering extensive X-ray energy ranges and a broad range of applications, relevant to the needs of XFEL and SR communities, and beyond.

Footnotes

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