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# Fri-Af-Po.10-06: Design, fabrication, and testing of a double-period undulator prototype for the SHINE project

*Friday 4 July 2025 14:00 (2 hours)*

The FEL-II beamline of the Shanghai High Repetition Rate XFEL and Extreme Light Facility (SHINE) will utilize 14 advanced double-period undulators to cover the photon energy range from 0.4 to 3 keV. Magnetic force compensation technology has been adopted to reduce the overall size of the undulator to address the limited tunnel space. Specifically, a new magnet array is added next to the existing planar undulator magnet array, with a fixed offset in the beam direction between the two magnet arrays. When one undulator is in working, the other provides a repulsive force to reduce the magnetic load on the girder. This paper introduces the design, fabrication, and testing of a double-period undulator prototype in detail.

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