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Phasing Magnet for CSX-2 beamline at NSLS-II

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A phasing magnet has been developed at National Synchrotron Light Source II (NSLS-II) for the Coherent Soft X-ray Scattering (CSX) beamline. The phasing magnet will be located at the center of the straight section in between two identical and independent variably polarized APPLE-II devices. Based on Permanent Magnet technology, the phasing magnet has been designed to achieve the required electron beam delay in order to properly adjust the phase matching of these two consecutive EPU's (Elliptically Polarizing Undulators) and ensure a positive interference between the photon beam emitted in each device. This paper will describe the mechanical and magnetic design together with the final field measurements and magnetic tuning results. Also, the spectral performance of the two EPU's and the method used to properly set the field strength of the phasing magnet for any given radiation wavelength and polarization mode will be presented as well.

Author: MUSARDO, Marco (Brookhaven National Laboratory)

Co-authors: TANABE, Toshiya (Brookhaven National Laboratory); RANK, James (Brookhaven National Laboratory); CORWIN, Todd (Brookhaven National Laboratory); HARDER, David (Brookhaven National Laboratory); RHEIN, Craig (Brookhaven National Laboratory)

Presenter: MUSARDO, Marco (Brookhaven National Laboratory)

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