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Performance of the NSLS X-ray ring with an operating EMW

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In December 1994, an elliptical multipole wiggler (EMW) was installed in the X13 straight section of the NSLS X-ray Ring. This device produces variable polarized x-rays with right-/left-handedness of polarization switchable at up to 100 Hz, making possible the use of either gating or lock-in amplifier techniques to detect the very weak signatures of circular dichroism and other effects associated with right- vs. left-handedness of some physical systems. The EMW was commissioned during the spring of 1995 at an operating frequency of 2 Hz. Utilizing trim coils at the wiggler ends and the high precision orbit measurement system of the NSLS X-ray Ring, the residual orbit motion was reduced to a level below 0.5 micron. The EMW has been successfully run during user operations with no adverse effects on other experiments. The degree of circular polarization of the output radiation was characterized by making magnetic circular dichroism measurements using the X13A soft x-ray beamline. For vertical deflection parameter K_x of 1.2 and 1.6, the MCD effects at the Fe $L_{2,3}$ edges indicate a degree of circular polarization of 60% and 75%, respectively, agreeing with calculated values.