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Versatile magnet-endstations for soft x ray magnetic dichroism experiments

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Versatile magnet-endstations for soft x ray magnetic dichroism experiments

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To take full advantage of the strengths of soft x ray magnetic dichroism measurements for the detailed and quantitative characterization of multi-element magnetic materials, we developed an eight pole electromagnet that provides magnetic fields up to 0.9 T in any direction relative to the incoming x ray beam. Design constraints and system optimization for maximum peak field will be discussed. The setup allows us to measure magnetic circular and linear dichroism spectra as well as to thoroughly study magnetization reversal processes with very high precision. First experimental results obtained with the system will be presented. The key technical difficulties in developing a similar superconducting device with peak fields of 5 T and ramping rates suitable for point-by-point full field reversal in an XMD experiment will be discussed.

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