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Magnetic Shielding Studies for the nEDM Experiment at the SNS¹ SUSAN MALKOWSKI, BRAD PLASTER, University of Kentucky, NEDM COLLABORATION — The nEDM Experiment at the SNS requires an overall magnetic shielding factor of order 10^5 to attenuate external background magnetic fields. At present, the shielding design includes an external (room-temperature) multi-layer μ -metal magnetic shield, a cryogenic (4 Kelvin) Pb superconducting shield, and a cryogenic (4 Kelvin) ferromagnetic shield composed of a Metglas winding. This presentation will discuss results from a number of R&D prototyping studies on the magnetic shielding design we have completed, including the formation of μ -metal to μ -metal magnetic seals across shielding gaps, optimized winding patterns for Metglas shields, studies of degaussing cycles, and methods for external background-field stabilization.

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