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Magnetic Characteristics of Two Metglas Alloys MARIE BLATNIK, Caltech, SNS NEDM COLLABORATION — Magnetic shielding is gaining greater significance as precision experiments become more sensitive, such as for the Spallation Neutron Source nEDM [neutron electric dipole moment] measurement. Targeting a sensitivity of 10^{-28} e-cm, the SNS nEDM collaboration minimizes magnetic shield gradients and magnetic noise with a superconducting lead shield and several shield layers that include using a Metglas layer as a primary component. Metglas is a thin ribbon of proprietary engineered alloy that comes in many varieties. One alloy with high (as cast) permeability is Metglas alloy 2705M, which is primarily composed of Cobalt. However, this alloy will activate under neutron radiation and is therefore unsuitable. However, another high-performance Metglas alloy, 2826 MB, contains only trace amounts of Cobalt. A study of the shielding characteristics of the two alloys was performed, paying close attention to field oscillation frequency and magnitude.

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