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A magnetic shield for encompassing spin transport coils ZACH MISTELSKE, JOEY PECK, CHRISTOPHER CRAWFORD, University of Kentucky, SNS NEDM COLLABORATION — High precision spin-precession experiments (EDMs for example) require weak (10-50 mG) spin transport fields that are easily sensitive to any external field, especially earth's magnetic field. These magnetic coils must be surrounded by a magnetic shielded environment, for which specialized equipment is not available, to avoid these external fields. I will describe a flexible mu-metal two-layer magnetic shield with a uniform interior field and a X-Y-Z mapping system within the shield, that provides a full 3d field mapping of the internal coils. The stages in the mapping system move by motors, spinning various pulleys connected to chains, outside the shield using a low-cost assembly of commodity nonmagnetic parts together with 3-d printed mechanisms and mounting hardware.

Zach Mistelske
University of Kentucky

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