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Magnetic field compensation for $n-^4$He parity-violating spin-rotation experiment at NIST K. GAN, The George Washington Univ., V. ZHUMABEKOVA, Al-Farabi Khazakh National Univ., A.K. OPPER, The George Washington Univ., B.E. CRAWFORD, Gettysburg College, C.D. BASS, J.M. DAWKINS, T.D. FINDLEY, J.C. HORTON, C.R. HUFFER, D. LUO, A.M. MICHERDZINSKA, M.G. SARSOUR, W.M. SNOW, Indiana Univ./IUCF, E.I. SHARAPOV, Joint Institute for Nuclear Research,Dubna,Russia, H.P. MUMM, J.S. NICO, NIST, D.M. MARKOFF, North Carolina Central Univ., P.R. HUFFMAN, North Carolina State Univ./TUNL, B.R. HECKEL, H.E. SWANSON, Univ. of Washington — A high precision measurement of the parity-violating spin rotation $\phi_{pv}(n, \alpha)$ for transversely polarized neutrons passing through ^{4}He is currently underway at the NIST Center for Neutron Research (NCNR). Reducing parity conserving rotations due to ambient magnetic fields is the primary experimental challenge and is being met through the use of magnetic shielding, movable targets, four separate target locations, and neutron energy detection. External coils are used to stabilize the ambient field in the longitudinal direction at a predefined value. The system is based on measuring the magnetic field outside the shielding and using a proportional-integral-derivative(PID) feedback loop to control the current through the external coil system, suppressing any change of the ambient field by a factor of 10-20. The presentation will also include an internal coil system designed within magnetic shielding.

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