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Electric Control of Spin Chirality in Multiferroic Ni3V2O8¹ IVELISSE CABRERA, Johns Hopkins University, MICHEL KENZELMANN, Laboratory for Neutron Scattering, ETH Zurich and Paul Scherrer Institute, GAVIN LAWES, Wayne State University, OKSANA ZAHARKO, Laboratory for Neutron Scattering, ETH Zurich and Paul Scherrer Institute, COLLIN BROHOLM, Johns Hopkins University — We discuss electric control of spin chirality in the magnetically frustrated multiferroic $Ni_3V_2O_8$ through polarized magnetic neutron diffraction. Cooling to the cycloidal magneto-electric phase in an electric field $\bf E$ causes the incommensurate Bragg reflections to become neutron spin polarizing, the sense of neutron polarization reversing with $\bf E$. Comprehensive polarized neutron diffraction measurements establish the chiral nature of the long range ordered spin configuration and its response to $\bf E$. Concomitant evolution of chiral and ferroelectric domains is observed by comparing polarized neutron diffraction data to pyroelectric current measurements and hysteresis under different poling conditions [1].

[1] I. Cabrera, M. Kenzelmann, G. Lawes, Y. Chen, W. C. Chen, R. Erwin, T. R. Gentile, J. Leao, J. W. Lynn, N. Rogado, R. J. Cava, and C. Broholm, (unpublished), 2008.

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