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Neutron diffraction study of low dimensional magnetic system: single crystal α-$NaMnO_2$ REBECCA DALLY, Boston College, STEPHEN WILSON, University of California, Santa Barbara, JEFFREY LYNN, ROBIN CHISNELL, LELAND HARRIGER, NIST Center for Neutron Research, MICHAEL GRAF, Boston College — $\alpha-NaMnO_2$ contains complex, low dimensional interactions and is magnetically frustrated due to the triangular arrangement of Mn^{3+} (S=2, $t_{2g}^3 e_g^1$) atoms in the crystal. Nearest neighbor Mn atoms lie along the *b*-axis in a chain; these chains span the ab-plane, where a mean-field approach to the interchain exchange predicts the cancellation of interactions, giving rise to quasi-1D behavior. Here we will present the results of our recent single crystal neutron diffraction measurements of correlated spin behavior in this Na_xMnO_2. A complex evolution of the ordering wave vector, spin anisotropy, and dimensionality is observed as the system approaches the antiferromagnetic phase transition. The implications for the inherent dimensionality of this system and its coupling to the lattice will be discussed.

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