

Abstract Submitted
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Spin Configurations in the 2D Frustrated Spin System YBaCo_4O_7 Using NMR¹ S. YUAN, M.J.R. HOCH, P.L. KUHN, T. BESARA, J.B. WHALEN, T.M. SIEGRIST, A.P. REYES, J.S. BROOKS, National High Magnetic Field Laboratory Florida State University, Tallahassee, Florida 32310, H. ZHENG, J.F. MITCHELL, Materials Science Division, Argonne National Laboratory, Argonne, Illinois 60439 — The system YBaCo_4O_7 has frustrated kagome spin planes which are separated by triangular AF spin layers. The configurations of the cobalt spins have been studied by neutron scattering at various temperatures, below $T_N=106$ K. In our low temperature NMR experiments on both a powder sample and a single crystal, non-equivalent cobalt sites are associated with distinct peaks in the zero field frequency scan spectra. Information about the internal hyperfine field orientations for both kagome and triangular layers has been obtained in two experiments, (1) rotating the sample with respect to the RF pulse field (zero applied field experiment) and (2) rotating the sample with respect to a small external field (in-field experiment). These approaches can be used to determine the spin configurations. Orthogonal orientations for the kagome hyperfine field and the triangular hyperfine field have been shown in both two experiments. Our low TAF spin alignment for the triangular layers is in agreement with the spin configuration in the neutron findings at 5 K, but for spins in kagome layers our orthogonal spin configuration does not agree with the neutron results.

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James Brooks
Florida State University

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