Abstract Submitted
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Magnetic Ordering in FeSc2S4[1] K.W. PLUMB, J.R. MOREY, Johns Hopkins University, J.P.C. RUFF, CHESS, Cornell University, J.A. RODRIGUEZ-RIVERA, NIST, T.M. MCQUEEN, S.M. KOOHPAYEH, C.L. BROHOLM, Johns Hopkins University — FeSc2S4 is a cubic spinel where orbitally active Fe^{2+} ions occupy the A-site diamond sublattice. Despite a high spin (S=2) state and Curie Weiss temperature of 45 K thermodynamic measurements show no indication of a phase transition and the material has been proposed as a unique example of a spin-orbital liquid. This ground state might arise from competition between on site spin-orbit coupling and Kugel-Khomskii exchange. We report neutron scattering measurements on polycrystalline samples of FeSc2S4 which bring this picture into question. They reveal a previously unreported magnetically ordered state below 11 K. No structural distortions are visible with neutron or x-ray scattering. The effect of hydrostatic pressure on the magnetic excitation spectrum was also explored and found to be minimal.

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