Abstract Submitted
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Spin waves in the double orbital-order spinel, FeV_2O_4[1] G.J. MACDOUGALL, University of Illinois at Urbana-Champaign, A.A. ACZEL, V.O. GARLEA, G.E. GRANROTH, T. HONG, A.D. CHRISTIANSON, S.E. NAGLER, Oak Ridge National Laboratory, I. BRODSKY, University of Illinois at Urbana-Champaign, H.D. ZHOU, University of Tennessee — For the past several years, the spinel vanadates, AV_2O_4, have been central to the study of orbital degeneracy and the complex coupling of spin, charge and lattice degrees-of-freedom in frustrated antiferromagnets. One such material of recent interest is FeV_2O_4, which has orbital degeneracy at high temperatures on both cation sites of the spinel structure. Previous x-ray scattering and our own neutron powder diffraction results have identified three structural and two magnetic transitions in this compound, and the low-temperature non-collinear spin state has been associated with an emergent ferroelectric moment. In the past year, we have followed our initial results on powders with an elastic and inelastic neutron scattering study on large single crystals of FeV_2O_4. Our elastic data confirm the same structural and magnetic transitions inferred from powder measurements, with near identical transition temperatures. Our inelastic data reveal the presence of two low-energy spin-wave branches, qualitatively similar to what has been reported for the related compound, MnV_2O_4, but with an order of magnitude larger spin-gap. I will present these results, and discuss them in the context of MnV_2O_4 and the present state of the literature.

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