Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Interplay between Fe and Nd magnetism in NdFeAsO single crystals W. TIAN, Ames Laboratory, U.S. DOE, Ames, W. RATCLIFF II, J.W. LYNN, NIST Center for Neutron Research, Gaithersburg, J.-Q. YAN, Ames Laboratory, U.S. DOE, Ames, M.G. KIM, Ames Laboratory, U.S. DOE, and Dept. of Physics and Astronomy, Iowa State University, Ames, B. JENSEN, K. DENNIS, Ames Laboratory, U.S. DOE, Ames, R.W. MCCALLUM, Ames Laboratory, U.S. DOE and Dept. of Materials Science and Engineering, Iowa State University, Ames, T.A. LOGRASSO, Ames Laboratory, U.S. DOE, Ames, R.J. MCQUEENEY, A.I. GOLDMAN, A. KREYSSIG, Ames Laboratory, U.S. DOE and Dept. of Physics and Astronomy, Iowa State University, Ames — Millimeter-sized NdFeAsO single crystals were grown out of NaAs flux and characterized by ac-susceptibility, magnetization, electrical resistivity, and specific heat measurements. The microscopic nature of the observed phase transitions has been determined by neutron scattering experiments at BT9, NIST, Gathersburg, and high-resolution x-ray diffraction studies. The tetragonal-to-orthorhombic lattice distortion is followed by the reported antiferromagnetic ordering of the Fe moments. At low-temperatures, the onset of the antiferromagnetic order of the Nd moments is accompanied with a rearrangement of the Fe moments. The observed phase transitions underline a complex coupling between the Fe and Nd magnetism. – The work at the Ames Laboratory was supported by the US DOE, Office of Science, under contract No. DE-AC02-07CH11358.

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Date submitted: 30 Dec 2009 Electronic form version 1.4