Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Resolving magnetic frustration in a Laves lattice JIYANG WANG, University of Chicago, YEJUN FENG, Argonne National Laboratory, RAFAEL JARAMILLO, Harvard University, JASPER VAN WEZEL, Argonne National Laboratory, PAUL CANFIELD, Ames Laboratory, THOMAS ROSENBAUM, University of Chicago — CeFe2 is a ferromagnet that exhibits antiferromagnetic fluctuations in its ground state. We use x-ray diffraction and diamond-anvil-cell techniques to directly measure the transition to antiferromagnetism in pure CeFe2 at high pressure which couples to the change in the lattice symmetry. Numerical simulations are adopted to identify the magnetic structure of the ground states and to quantitatively illustrate effects of competing magnetic energy scales and geometrical frustration on the magnetic phase diagram. Comparison of phase transitions under both chemical substitution and applied pressure suggests a general solution to the physics of Laves phase magnets.

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Date submitted: 11 Nov 2011 Electronic form version 1.4