

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Magnetic structure and CEF levels in CeNiAsO¹ S. WU, C. BROHOLM, W.A. PHELAN, T.M. MCQUEEN, Johns Hopkins University, J.C. NEUEFEIND, M.B. STONE, Oak Ridge National Laboratory — Some HF materials like CeCu_{6-x}Aux and YbRh₂Si₂ have been interpreted as exhibiting unconventional local criticality, rather than a conventional magnetic instability. However, the situation is far from settled so there is great interest in exploring new HF systems in the proximity of magnetic instabilities. Recent reports on CeNiAsO indicate this is a good candidate for such studies. CeNiAsO is isostructural to the 1111 Fe-based superconductors but exhibits a different type of itinerant magnetism associate with the rare earth site. CeNiAsO has two successive phase transitions at 9.3K and 7.3K that were tentatively associated with antiferromagnetism. To understand these transitions, we carried out magnetic neutron diffraction experiments at the Spallation Neutron Source. We have identified the long range magnetic order and associate the lower transition with a reorientation of the magnetic moment. We also report inelastic neutron powder experiments that determine the crystal field level scheme, which differs from that reported for CeFeAsO and corroborate our analysis of the magnetic structure.

¹This research was supported by the U.S. Department of Energy, office of Basic Energy Sciences, Division of Materials Sciences and Engineering under Award DE-FG02-08ER46544 .

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Date submitted: 14 Nov 2014

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