

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Magnetization measurements in site disordered UCu_4Ni ¹ ARIANA VALDEZ, E. SOTO, O.O. BERNAL, Department of Physics and Astronomy, California State University, Los Angeles, CA 90032, D.E. MACLAUGHLIN, Department of Physics and Astronomy, University of California, Riverside, CA 92125, G.R. STEWART, J.S. KIM, Department of Physics, University of Florida, Gainesville, FL 32611 — UCu_4Ni is a non-Fermi liquid, quantum critical system, obtained from dilution of Cu for Ni in antiferromagnetic (AFM) UCu_5 . Introduction of Ni in the lattice structure of the parent compound suppresses the AFM transition temperature from 16.5 Kelvin down to zero at $x = 1$. Because Ni ions are slightly smaller than Cu ones (Pd and Cu ions are similar in size), Ni can be expected to distribute itself randomly between the two available crystal sites. UCu_4Ni is therefore a site-disordered material. We present a magnetization study of a random powder of UCu_4Ni as a function of applied magnetic field (-9.0–9.0 T) and temperature (2–300 K). We analyze the data from the point of view of magnetic disorder, as would be produced by a distribution of local magnetic susceptibilities, within the context of the Kondo Disorder Model. Comparison with similar existing studies in polycrystalline samples by others will be discussed.

¹Work supported by NSF/DMR-0604015 and 1105380.

Ariana Valdez
Department of Physics and Astronomy,
California State University, Los Angeles, CA 90032

Date submitted: 12 Dec 2011

Electronic form version 1.4