

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Electron-spectroscopy of the heavy fermion alloy $Ce_{1-x}Yb_xCoIn_5$ ¹

L. DUDY, J.W. ALLEN, University of Michigan, J. DENLINGER, Advanced Light Source, Lawrence Berkeley National Laboratory, L. SHU, M. JANOSCHEK, R.E. BAUMBACH, M.B. MAPLE, University of California, San Diego — $Ce_{1-x}Yb_xCoIn_5$ (YbCe115) is a new 115 alloy series with long range magnetic order suppressed in the whole substitution range. Measurements reveal a rich phase diagram in which the Kondo lattice is robust against Yb substitution, superconductivity persists to high values of x, and the non-Fermi-liquid behavior is enhanced by Yb substitution [1]. We have characterized the electronic structure of this new alloy by x-ray and angle resolved photoemission spectroscopy (XPS and ARPES) performed at the Advanced Light Source (ALS). Yb 4f XPS spectra vary with increasing x from dominantly Yb^{3+} to a mix of Yb^{3+} and Yb^{2+} , in agreement with inferences from the magnetic susceptibility [1]. We will present ARPES data to show the x-dependence of the Fermi surface and discuss the relation of the electronic structure to the transport properties. The effect of surface contributions to the XPS and ARPES data will be assessed.

[1] Lei Shu et al, to be published

¹Work supported by the U.S. Dept. of Energy under Contract No. DEFG02-07ER46379 at UM, DE-AC02-05CH11231 at the ALS and DEFG02-04ER46105 at UCSD.

L. Dudy
University of Michigan

Date submitted: 03 Jan 2011

Electronic form version 1.4