Study of low carrier density heavy fermion Ce$_3$Au$_3$Sb$_4$\(^1\) HAN- 
OH LEE, Department of Physics, University of California, Davis, PETER 
KLAVINS, Department of Physics, University of California, Davis, California, 95616, 
ZACHARY FISK, Department of Physics, University of California, Davis, California, 95616, 
CATHIE CONDRON, Department of Chemistry, University of California, Davis, California, 95616, 
A. D. CHRISTIANSON, Department of Physics and Astronomy, University of California, Irvine, California, 92698-4575, 
J. M. LAWRENCE, Department of Physics and Astronomy, University of California, 
Irvine, California, 92698-4575, J. S. GARDNER, Physics Department, Brookhaven 
National Laboratory, Upton, New York, 11973-5000, NIST Center for Neutron Research, 
National Institute — Ce$_3$Au$_3$Sb$_4$ is a narrow gap semiconductor with a 
well localized Ce$^{3+}$ state. The specific heat measurements, however, show a Kondo 
impurity like behavior with a large increase of the specific heat coefficient at low 
temperature, suggesting a heavy fermionic character in this low carrier concentration 
system. Magnetic susceptibility, resistivity, and specific heat data will be shown 
for single crystal Ce$_3$Au$_3$Sb$_4$. The dilution study with La substituted on the Ce site 
will be also presented to further discuss the Kondo effect in this system.

\(^1\)This work has been supported by NSF DMR-0433560

Han-Oh Lee
Department of Physics, University of California, Davis, California, 95616

Date submitted: 30 Nov 2005