Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Pressure and magnetic field effects in heavy-fermion $UCu_{3.5}Al_{1.5}$
A. ALSMADI, Physics Department, the Hashemite University, Jordan, H. NAKOTTE, Physics Department, NMSU, Las Cruces, NM, V. ZAPF, F. FABRIS, T.D. DIDN, A. LACERDA, NHMF, LANL, Los Alamos, NM, J. KAMARAD, Institute of Physics, CAS, Czech Republic — $UCu_{3.5}Al_{1.5}$ crystallizes in the hexagonal $CaCu_5$ structure and is described as a heavy fermion, which shows non-Fermi liquid behavior[1]. Here, we report on electrical resistivity, magnetic susceptibility, and magnetization results on polycrystalline $UCu_{3.5}Al_{1.5}$. The resistivity was measured under hydrostatic pressure up to 10kbar and in fields up to 18T. At ambient pressure and in zero field, the resistivity shows an anomaly at T_1=19K and then it goes through a maximum at T_{max}=2K. These two anomalies were also observed in the susceptibility data. The anomaly in the resistivity at T_1 goes to lower values with increasing fields and disappear at fields about 12T. T_{max} on the other hand goes to higher values with increasing fields. We find relatively weak pressure dependence, where both T_1 and T_{max} go down with increasing pressure. In the field scan at 2K and at ambient pressure, we find a change in the slope of the magnetoresistance at about 6.9T. Application of pressure causes a reduction of the magnetoresistance effect.
[1] H. Nakotte, et al., Phys. Rev. B 54, 12176 (1996)

A. Alsmadi
Physics Department, the Hashemite University, Jordan

Date submitted: 05 Dec 2007 Electronic form version 1.4