

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Resonant Ultrasound Studies of Ferromagnetic $\text{Yb}_{14}\text{MnSb}_{11}$ SRIPARNA BHATTACHARYA, VEERLE KEPPENS, Materials Science and Engineering Department, The University of Tennessee, Knoxville, Tennessee, IVAN A. SERGIENKO, BRIAN SALES, DAVID MANDRUS, Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee — The compound $\text{Yb}_{14}\text{MnSb}_{11}$ is believed to be a rare example of an under-screened Kondo lattice. In this material the Yb ions are divalent and hence nonmagnetic. The magnetism comes from the Mn 3d electrons and the antiferromagnetic coupling of these electrons to holes in the Sb 5p bands. The antiferromagnetic coupling between a local magnetic moment and extended Bloch states can result in ferromagnetism due to the RKKY interaction, but can also give rise to Kondo physics. Here we report measurements of the elastic moduli (obtained using resonant ultrasound spectroscopy) as a function of temperature (2-300K) and magnetic field (0-2 T) for $\text{Yb}_{14}\text{MnSb}_{11}$. An unusual lattice stiffening is observed below T_c . Attempts to model this behavior using Landau theory will be discussed.

Sriparna Bhattacharya
The University of Tennessee

Date submitted: 15 Dec 2006

Electronic form version 1.4