Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Kondo Physics in a Rare Earth Ion with well localized *4f* electrons[1] JOLANTA STANKIEWICZ, Instituto de Ciencia de Materiales de Aragon, CSIC-Universidad de Zaragoza, ZACHARY FISK, Department of Physics, University of California at Irvine , MARCO EVANGELISTI, Instituto de Ciencia de Materiales de Aragon, CSIC-Universidad de Zaragoza, PEDRO SCHLOTTMAN, Department of Physics, Florida State University — We observe a rise in the low temperature resistivity of dilute $La_{1-x}Nd_xB_6$ single crystals. The specific heat data for the same samples show that there is an entropy of Rln4 per mole Nd involved in the excess specific heat above that of LaB_6. All these features are consistent with a Kondo scale of $T_K = 1$ K. However, Nd has a well localized $4f^3$ $J = 9/2$ Hund's Rule configuration which is not expected to be Kondo coupled to the conduction electrons in LaB_6. We conjecture that the unexpected Kondo effect arises via participation of *4f* quadrupolar degrees of freedom of the Nd crystal field ground state quartet. Raman experiments as well as detailed theoretical studies do indicate that one expects strong quadrupolar influence in the properties of NdB_6.

[1]Supported by grant MAT2008/03074, from MICINN of Spain, and by NSF grant DMR-0854781.

Jolanta Stankiewicz
Instituto de Ciencia de Materiales de Aragon, CSIC-Universidad de Zaragoza

Date submitted: 08 Nov 2011 Electronic form version 1.4