Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Half-metallic ferromagnetism in iron-antimony based Skutterudites with monovalent filler atoms ANDREAS LEITHE-JASPER, WALTER SCHNELLE, HELGE ROSNER, JOHN MYDOSH, YURI GRIN, Max-Planck-Institute for Chemical Physics of Solids Dresden, Germany — We report the thermodynamic, magnetic and electronic properties of of the filled Skutterudites AFe_4Sb_{12} (A=Na,K,Tl) in a joined experimental and theoretical study. Unexpectedly, these compounds show a ferromagnetic transition at $T_c \sim 85\,\mathrm{K}$.[1] According to electronic structure calculations and point-contact Andreev reflection [2] these systems show a rather large spin polarization. On the other hand, these itinerant magnets exhibt strong spin fluctuations. A brief comparison with compounds based on A=Ca,Sr,Ba,Yb,La where spin fluctuations impede long magnetic order will be presented.

[1] A. Leithe-Jasper, W. Schnelle, H. Rosner, N. Senthilkumaran, A. Rabis, M. Baenitz, A. Gippius, E. Morozova, J.A. Mydosh, and Yu. Grin, Phys. Rev. Lett. 91, 037208, (2003).
[2] G. Sheet, H. Rosner, S. Wirth, A. Leithe-Jasper, W. Schnelle, U. Burkhardt, J. A. Mydosh, P. Raychaudhuri, and Yu. Grin, Phys. Rev. B 72, 180407, (2005).

Helge Rosner
Max-Planck-Institute for Chemical Physics of Solids Dresden, Germany

Date submitted: 24 Oct 2007 Electronic form version 1.4