

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Local moments and hyperfine magnetic fields in rare-earth intermetallics XRu_2 ¹ DERMOT COFFEY, Dept.of Physics, Buffalo State College, NY — Electronic properties of a series of ferromagnetically ordered rare earth intermetallics, XRu_2 , are investigated using first principles density functional calculations. The f -moment localized on the rare-earth site is found to be determined by the location of the Fermi level as it moves through the majority band for the lighter members of the series and then through the minority band for the heavier members. The interaction between the local moments is mediated by polarized conduction bands derived from the $4d$ Ru electrons. The size of the hyperfine magnetic fields on the rare-earth sites is correlated with the size of f -moments. In contrast there are almost no moments and very small transferred hyperfine magnetic fields on the Ru sites because their $4d$ -electrons are delocalized.

¹The work was supported by the USDOE(DE-FG02-03ER46064).

Dermot Coffey
Dept.of Physics, Buffalo State College, NY

Date submitted: 19 Nov 2009

Electronic form version 1.4