Abstract Submitted
for the OSS15 Meeting of
The American Physical Society

The RKKY Interaction in a Polarized Electron Gas CHRISTOPHER PORTER, The Ohio State University — The RKKY interaction is a well-known itinerant interaction that can account for long-range magnetic interaction, and does not require overall polarization of the electron gas through which the interaction occurs. In fact, very few authors have considered the effects of the polarization of the electron gas. We present analytical and numerical evidence that the polarization of the electron gas can play an important role in the coupling of spins in a lattice. We use classical Monte Carlo simulations of spin relaxation with annealing to identify ferromagnetic and antiferromagnetic states. Such calculations are relevant for disordered distributions of large-spin ions in a nonmagnetic lattice such as the heavy doping of Mn in GaAs diluted magnetic semiconductors.

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Date submitted: 06 Mar 2015 Electronic form version 1.4