Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Spin-Fermion Models for Manganites and Diluted Magnetic Semiconductors: A Dynamical Mean Field Study FLORENTIN POPESCU, Florida State University, GONZALO ALVAREZ, Oak Ridge National Laboratory, ELBIO DAGOTTO, University of Tennessee and Oak Ridge National Laboratory
— Using Dynamical Mean Field Theory (DMFT) we derive general expressions for the Curie Temperature (T_c) of a spin-fermion model for any coupling constant J and any concentration of localized spins x. In the case of manganites, we compare these results with those obtained previously for the case of an infinite Hund's coupling J_H. In the case of diluted magnetic semiconductors (DMS) we discuss the dependence of T_c on model parameters and the effect of the inclusion of a more realistic band structure. We show that DMFT is a powerful tool to study spin-fermion models for DMS in the weak coupling regime.

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Date submitted: 30 Nov 2004 Electronic form version 1.4