Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Hybrid Monte Carlo scheme for interacting double-exchange systems[1] MALCOLM KENNETT, NURI YAZDANI, Simon Fraser University — The magnetic and electronic properties of diverse systems such as diluted, magnetic semiconductors, manganites and europium hexaboride can be described using kinetic-exchange models in which itinerant carriers are coupled to local magnetic moments. Monte Carlo simulations of the magnetic properties of such models usually treat the local moment spins as classical and ignore electron-electron interactions due to the need to diagonalize a fermion problem at each spin flip. We introduce a hybrid Monte Carlo scheme that allows electron-electron interactions to be included at a mean field level. We identify regions in parameter space where our approach is most useful and present results of simulations of thermodynamic quantities in ordered and disordered models of interacting fermions coupled to local moments.

[1]Supported by NSERC

Malcolm Kennett
Simon Fraser University

Date submitted: 20 Nov 2009 Electronic form version 1.4