Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Layered dilute magnetic semiconductors: A dynamical mean field study[1] MAJID NILI, UNJONG YU, JUANA MORENO, MARK JARRELL, Department of Physics and Astronomy, Louisiana State University — We study ferromagnetism of layered dilute magnetic semiconductors within the Dynamical Mean Field Approximation. Our approach includes the spin-orbit coupling in the host compound and the interaction between the magnetic ions and the itinerant carriers using a modified double-exchange coupling. We simulate heterostructures with different distributions of magnetic ions: uniform doping, delta-doping in one single layer and delta-doping in two layers. We investigate the magnetic properties by changing the hole filling as well as the magnetic doping and the position of the doped layers in the heterostructure. We also include the on-site attraction potential between the magnetic ions and charge carriers to show its effect on the formation of the impurity band. We find that the ferromagnetic transition temperature and other properties strongly depend on the distribution of magnetic ions.

[1]This work was supported by the National Science Foundation through OISE-0730290, DMR-0548011, and DMR-0706379

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Date submitted: 21 Nov 2008 Electronic form version 1.4