Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Magnetic frustration and tuning of magnetic order by the chemical order parameter in selected alloys SERGII KHMELEVSKYI, PETER MOHN, Institut of Applied Physics, Vienna University of Technology, Vienna, Austria — Chemical disorder on the frustrated lattice often leads to the formation of the spin glass state in magnetic alloys. However, if the system is above percolation threshold or there are strong long-distant interactions between magnetic atoms than the formation of some complex ordered state may occurs in disordered alloys. By changing a long-range atomic order parameter one may tune the magnetic order in such kind of the alloys. Here, we present our ab-intio investigation of three selected alloys: VAu_4, Ni_3Mn and Au-Fe spin glass, where the degree of the chemical order is greatly affect the magnetic properties leading to very peculiar experimental behavior. Using magnetic force theorem, CPA and LSGF method we study long-distant exchange interactions and local environment effects. We have find, in particular, that contrary to the long standing believe the dominating interactions in VAu_4 are antiferromagnetic and source of the frustration in Au-Fe system is not geometrical in origin.

Sergii Khmelevskyi
Institut of Applied Physics, Vienna University of Technology, Vienna, Austria

Date submitted: 23 Nov 2009 Electronic form version 1.4