Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Theory of the Spin-EPR shift PRASANTA MISRA, Mesa State College, GOURI TRIPATHI, Berhampur University, India, R.K. DAS, Gopalpur College, India — We use a Green's function approach and include the effects of an external magnetic field, spin-orbit interaction and the interaction between the conduction electron spin and local magnetic moments(c-l interaction)to derive a theory for the spin-contribution to the Electron-Paramagnetic Resonance (EPR) shift. This contribution is proportional to the effective g-factor, density of states and the strength of the c-l interaction. We also consider inter-band effects for application to semiconductors. The EPR shift can shed light on the interaction between conduction electrons and/or holes (in case of semiconductors) with local magnetic moments of the magnetic ions embedded either periodically or otherwise in an electronic system. We calculate the spin-EPR shift(Ps) at the Mn2+ ion in the diluted magnetic semiconductor Pb1-xMnxTe. Ps shows large anisotropy due to the spin-orbit interaction. In addition to the dominant two-band interaction, contributions due to far bands are also included in our calculation. There is good agreement with the experimental results.

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Date submitted: 04 Jan 2005 Electronic form version 1.4