

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**Anisotropic exchange interactions in III-V diluted magnetic semiconductors** CARSTEN TIMM, Free University Berlin, A. H. MACDONALD, University of Texas at Austin — The RKKY interaction between substitutional Mn local moments in GaAs is both spin-direction-dependent and spatially anisotropic. We determine the strengths of these two types of anisotropy using a semi-phenomenological tight-binding model that treats the hybridization between Mn d-orbitals and As p-orbitals perturbatively and accounts realistically for its non-locality. We show that spin-orbit coupling, exchange non-locality, and band-structure anisotropy all play a role in determining these strengths. The results are used to estimate the degree of ground-state magnetization suppression due to frustrating interactions between randomly located Mn ions. We discuss our results for the RKKY interaction in relation to previous calculations from both phenomenological models and ab-initio approaches.

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Date submitted: 27 Mar 2013

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