

Abstract Submitted  
for the MAR09 Meeting of  
The American Physical Society

**The magnetic interactions in iron pnictides** JIJI PULIKKOTIL, VLADIMIR ANTROPOV, Ames Laboratory, Ames, IA, USA, MARK VAN SCHILFGAARDE, Arizona State University, Tempe, AZ, USA — Using static linear response theory we studied the pair wise magnetic interaction parameters in many typical families of iron pnictides. Parameters have been obtained for a wide range of volumes and distance between Fe and As atoms. We demonstrate that two nearest neighbor couplings in plane dominate, with a third and fourth nearest neighbor coupling responsible for the appearance of non-collinear ordering when the magnetic moment is small. We found that the ratio between first and a second neighbor coupling is not universal and greatly varies as a function of pressure or Fe-As distance. A small interplane coupling is found, and it varies by a factor of 10-20 among pnictides. We analyze the Neel temperatures, adiabatic spin wave spectrum and a nature of magneto-structural transitions in different classes of pnictides.

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Date submitted: 20 Nov 2008

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