Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Cubic anharmonicity of the Fe-As bond of the iron-pnictides estimated from Raman spectroscopy. MATS GRANATH, Gothenburg University, JOHAN BIELECKI, JOAKIM HOLMLUND, CHRIS KNEE, Chalmers University of Technology, NAN LIN WANG, Beijing National Laboratory for Condensed Matter Physics, LARS BÖRJESSON, Chalmers University of Technology — We study the phonon spectrum of the iron-pnictide superconductors, (Ce,Nd)$O_{1-x}F_x$FeAs, using Raman spectroscopy. Based on the temperature dependent softening of the out of plane optical Fe-mode (B_{1g} at Γ) we estimate the magnitude of the cubic anharmonicity of the Fe-As bond by calculating the self-energy due to phonon-phonon interactions. This also gives an estimate of the lattice expansion or contraction due to Fe isotope substitution which may in turn influence electronic properties.

Mats Granath
Gothenburg University

Date submitted: 21 Nov 2008 Electronic form version 1.4