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Evidence of magnon phonon interaction in $La_{0.70}Ca_{0.30}MnO_3$
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— One of the unresolved issues in the understanding of the spin dynamics of the CMR manganites is the anomalous softening and damping of the magnons near the zone boundary observed in $A_{1-x}B_xMnO_3$ (A=La, Pr, Nd, etc; B=Ca, Sr, etc. x $\sim$ 0.30). [1], [2]. While many theoretical explanations have been formulated to explain this phenomena we proposed that these anomalous features are related to a strong magnon-phonon coupling expected from the strong magnetoelastic interactions in the CMR manganites.[2] In this talk we present neutron scattering evidence for the coupling of the magnons and a severely damped branch of optical phonons in $La_{0.70}Ca_{0.30}MnO_3$. ORNL is managed by UT-Battelle, LLC, for the U.S. Dept. of Energy under contract DE-AC05-00OR22725. [1] H. Y. Hwang et al, Phys. Rev. Lett 80, 1316 (1998) [2] P. Dai et al, Phys. Rev. B 61, 9553 (2000)

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