

Abstract Submitted
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Magnetic Excitations in LaMnPO DANIEL MCNALLY, JACK SIMONSON, Department of Physics and Astronomy, Stony Brook University, Stony Brook, NY 11794, GREG SMITH, Department of Physics, The Ohio State University, Columbus, Ohio 43210, JEFF LYNN, YANG ZHAO, NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland 20899, MEIGAN ARONSON, Department of Physics and Astronomy, Stony Brook University, Stony Brook, NY 11794 — We performed inelastic neutron scattering experiments on LaMnPO at the BT-7 triple-axis spectrometer at NIST Center for Neutron Research. LaMnPO is an insulating pnictide compound and is antiferromagnetically ordered below $T_N = 375$ K. Constant energy scans were performed above T_N , and revealed spin-spin correlations in the paramagnetic state with characteristic wavevector $Q = 1.6 \text{ \AA}^{-1}$, near the antiferromagnetic ordering wavevector $Q_{AFM} = 1.55 \text{ \AA}^{-1}$. We performed constant wavevector scans above and below T_N and these show there is a q-dependent and temperature-dependent energy gap in the magnetic excitations that vanishes at $T_N = 375$ K. Constant energy scans below T_N show the peak in the magnetic excitations does not change up to a measured energy transfer of 15 meV, suggesting exchange interactions are quite strong. The magnetic excitations in LaMnPO are similar to those observed in the parent compounds of the iron pnictide superconductors. Research supported by a National Security Science and Engineering Faculty Fellowship by the AFOSR

Daniel McNally
Department of Physics and Astronomy,
Stony Brook University, Stony Brook, NY 11794

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