Abstract Submitted for the MAR16 Meeting of The American Physical Society

Spin wave damping in colossal magnetoresistive $La_{0.7}Ca_{0.3}MnO_3$ JOEL HELTON, SUSUMU JONES, US Naval Academy, MATTHEW STONE, Oak Ridge National Laboratory, DMITRY SHULYATEV, National University of Science and Technology "MISiS", DANIEL PARSHALL, JEFFREY LYNN, NIST Center for Neutron Research — The hole-doped perovskite $La_{0.7}Ca_{0.3}MnO_3$ is best known for the colossal magnetoresistance displayed at a combined ferromagnetic and metalinsulator phase transition (T_c =257 K). Previous studies have reported that the spin wave excitations in the ferromagnetic phase become anomalously damped near the Brillouin zone boundary, though a later work suggested that this was a measurement artifact due to an optical phonon branch. We have used the ARCS time-of-flight neutron spectrometer to investigate the spin wave excitations of $La_{0.7}Ca_{0.3}MnO_3$ at T=100 K and find a damping for spin waves at energies exceeding 20 meV that cannot be explained solely by proximity to the phonon branch. With additional measurements using the BT7 triple-axis neutron spectrometer, the spin wave damping is explored as a function of reduced wavevector, excitation energy, and temperature.

> Joel Helton US Naval Academy

Date submitted: 03 Nov 2015

Electronic form version 1.4