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Magnetic Excitations in the CE-type manganite $Pr_{0.5}Ca_{1.5}MnO_4$
J. A. FERNANDEZ-BACA, ORNL and Univ. of Tennessee, FENG YE, ORNL, SONGXUE CHI, Univ. of Tennessee, PENGCHENG DAI, Univ. of Tennessee and ORNL, J. W. LYNN, NIST, R. MATHIEU, Univ. of Tokyo, Y. TOKURA, Univ. of Tokyo — Charge and orbital ordering (CO-OO) in doped manganites can control bulk and magnetic properties of the material. Canonical examples of the CO-OO compounds are 3D R(1-x)A(x)MnO3 and 2D R(1-x)A(1+x)MnO4 manganites near x=0.5. The magnetic ions in those systems are usually arranged in a checkerboard order, where spins of Mn3+ and Mn4+ form zigzap ferromagnetic chains coupling antiferromagnetically. Recent theoretical calculations and experimental observations suggest that the stabilization of CO-OO state in CE-type magnetic structure might be magnetic in origin. In this talk we will present our recent results on the study of the spin-wave excitations in the layered compound Pr0.5Ca1.5MnO4 with CE-type magnetic structure using inelastic neutron scattering. ORNL is managed by UT-Battelle, LLC, for the U.S. Dept. of Energy under contract DE-AC05-00OR22725. The work at UT was supported by the U.S. NSF DMR-0453804 and DOE DE-FG02-05ER46202.

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