Abstract Submitted
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Magnetic Ground State of the Ideal Triangular-Lattice Antiferromagnets Tuned by the Inter-layer Interactions[1] JIE MA, University of Tennessee, M MATSUDA, Oak Ridge National Laboratory, Y. KAMIYA, RIKEN, Z. L. DUN, University of Tennessee, C. DELA CRUZ, Oak Ridge National Laboratory, C. D. BATISTA, Los Alamos National Laboratory, Y. QIU, N BUTCH, J. R. D. COPLEY, NIST, H. D. ZHOU, University of Tennessee — Neutron inelastic scattering and diffraction techniques have been applied to investigate both structures and spin wave excitations of the tri-perovskite $Ba_3MM'_2O_9$, which is antiferromagnetic with the equilateral-triangular lattice M layers. Although the magnetic structure of the system is non-collinear 120in ab-plane, the c-axis canting appears by increasing the spin momentum from $S(Co^{2+}) = 1/2$ to $S(Mn^{2+}) = 5/2$. Our measurements clearly show that the magnetic ground state and excitations could be modified by the inter-layer interaction, which is strongly interfered by the type and staggering method of the nonmagnetic $M'O6$ clusters. In addition, the lattice-related quantum phenomena were discussed, such as the temperature-dependent acoustic mode in Ba3NiNb2O9, and the pressure-effect on the magnetic dynamics of the Fermi-liquid-like ground state, Ba3NiSb2O9(6H-B).

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