

Abstract Submitted
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Magnetic Excitations in MnV_2O_4 Studied by Inelastic Neutron Scattering KEISUKE MATSUURA, Department of Advanced Materials Science, The University of Tokyo, Kashiwa 277-8561, Japan, AMANE UEHARA, Department of Applied Physics, The University of Tokyo, Hongo, Tokyo 113-8656, Japan, YOICHI NIL, NOBUYUKI ABE, HAJIME SAGAYAMA, TAKA-HISA ARIMA, Department of Advanced Materials Science, The University of Tokyo, Kashiwa 277-8561, Japan, SUNGDAE JI, RYOICHI KAJIMOTO, Research Center for Neutron Science and Technology, Comprehensive Research Organization for Science and Society, Tokai, Ibaraki 319-1106, Japan — We focus on the dynamical structure of a spin-orbital coupled system MnV_2O_4 , which crystallizes in the spinel structure. Each V^{3+} ion with the $3d^2$ configuration is surrounded by an oxygen octahedron. The orbital degree of freedom consequently exists in the t_{2g} states. Below $T_{\text{oo}} = 53\text{K}$, the t_{2g} orbitals are arranged in the layered antiferroic way. Simultaneously, non-collinear ferrimagnetic ordering takes place. In this spin-orbital correlated system, in addition to conventional spin waves, orbital waves and spin-orbital coupled excitations are expected to appear. A measurement of inelastic neutron scattering on single crystals of MnV_2O_4 was carried out at 5K using a Fermi-chopper type spectrometer 4SEASONS installed at BL01, J-PARC, Japan. The dispersion of the magnetic excitations at 8-9meV have been revealed, which was only rather vaguely observed in the previous study. We have performed spin-wave calculations based on the spin Hamiltonian and compared with the experimental results in order to identify the 8-9meV modes.

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