

Abstract Submitted
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Orbital ordered phases of Mn_3O_4 and MnV_2O_4 investigated by NMR JEONG HYUN SHIM, Department of Physics, KAIST, SOONCHIL LEE, Department of Physics KAIST, TAKURO KATSUFUJI, Department of Physics, Waseda Univ. — Compared to spin and charge, investigating orbital state is relatively difficult because it requires higher sensitivity of microscopic experimental tools. In the present study, we have demonstrated that the orbital state of Mn_3O_4 can be determined by a field-angle resolved NMR technique and the technique also applied to the investigation of MnV_2O_4 that was reported to have a strong orbital influence to spin and lattice.[1] The orbital ordered phase of MnV_2O_4 has been controversial, because lattice symmetry alone can not determine the orbital states of V^{3+} ions. From our NMR results, we found that the orbital configuration of MnV_2O_4 appears to support the Motome's antiferro-type model with an unexpected tiling of orbital direction within a-b plane, or another explanation is a phase coexistence of antiferro-type and ferro-type orbital ordered domains.

[1] T. Suzuki, et al., Phys. Rev Lett. 98, 127203 (2007).

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