

Study of the t_{2g} orbital in the $YTiO_3$ by using Magnetic Compton Profile Measurement

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$YTiO_3$ is one of the compounds which show orbital ordering phenomenon. The 3d electrons of Ti^{3+} ions in t_{2g} configuration exhibit orbital ordering. Crystal structure of $YTiO_3$ is the perovskite (Pbnm). This compound is ferromagnetic below 28K.

The Magnetic Compton scattering (MCS) is one of the strong method of observing the electron structure. The physical quantity obtained from this experiment is Magnetic Compton Profile (MCP). MCP is directly linked to the wave function of magnetic electron.

The measurement was carried out at 10 K with a magnetic field of 0.85 T. The incident x-ray energy was 60 keV. The experiment was performed at the AR-NE1A1 beamline.

We measured the MCP of $YTiO_3$ along the a-axis and the c-axis. The result is Fig1(a-axis), (c-axis). Fig1(a-c) is a profile that pulled Fig1(a-axis) and Fig1(c-axis). As a result, we confirm that there are anisotropy in the MCP along the a-axis and the MCP along the c-axis.

We are measuring the MCP of $YTiO_3$ along the b-axis.

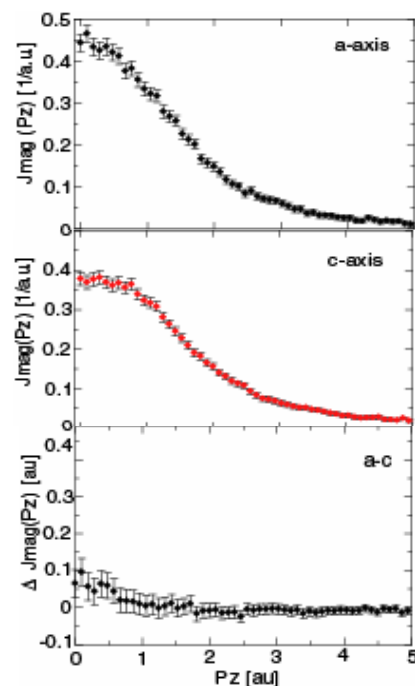


Fig. 1
Magnetic Compton profile of $YTiO_3$ along a,c-axis and a-c.

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