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Magnetoelectric Phase Transition in a Triangular Lattice Antiferromagnet $CuCrO_2$ KENTA KIMURA, HIROYUKI NAKAMURA, Division of Materials Physics, Osaka University, MINORU SODA, KAZUMA HIROTA, Department of Earth and Space Science, Osaka University, TSUYOSHI KIMURA, Division of Materials Physics, Osaka University — A focus of this study is a triangular lattice antiferromagnet $CuCrO_2$, a recently discovered magnetically-induced ferroelectric with a modulated 120-degree spiral spin structure [1-3]. We investigated magnetic and magnetoelectric properties of this material by using single crystal samples. Our magnetization and dielectric measurements clearly reveal that a magnetic field along a triangular lattice plane induces a meta-magnetic phase transition accompanied with drastic changes of electric polarization, i.e. a magnetoelectric phase transition [4]. Symmetry analysis based on these experimental results suggests that the magnetoelectric phase transition is characterized as a 90-degree polarization flop by a 90-degree spiral plane flop, which is further evidenced by our spin-polarized neutron diffraction measurements. [1] S. Seki et al., Phys. Rev. Lett. 101, 067204 (2008). [2] K. Kimura et al., Phys. Rev. B 78, 140401 (2008). [3] M. Poienar et al., Phys. Rev. B 79, 014412 (2009) [4] K. Kimura et al., Phys. Rev. Lett. 103, 107201 (2009).

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