

Abstract Submitted
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Direct Observation of Localized Spin Antiferromagnetic Transition in PdCrO₂ by Angle-Resolved Photoemission Spectroscopy¹ HAN-JIN NOH, JINWON JEONG, BIN CHANG, DAHEE JEONG, HYUN SOOK MOON, EN-JIN CHO, Department of Physics, Chonnam National University, Gwangju, JONG MOK OK, JUN SUNG KIM, KYOO KIM, B.I. MIN, Department of Physics, Pohang University of Science and Technology, Pohang, HAN-KOO LEE, JAE-YOUNG KIM, BYEONG-GYU PARK, HYEONG-DO KIM, Pohang Accelerator Laboratory, Pohang University of Science and Technology, Pohang, SEONGSU LEE, Korea Atomic Energy Research Institute, Daejeon — We report the first case of the successful measurements of a localized spin antiferromagnetic transition in delafossite-type PdCrO₂ by angle-resolved photoemission spectroscopy (ARPES). This demonstrates how to circumvent the shortcomings of ARPES for investigation of magnetism involved with localized spins in limited size of two-dimensional crystals or multi-layer thin films that neutron scattering can hardly study due to lack of bulk compared to surface. Also, our observations give direct evidence for the spin ordering pattern of Cr³⁺ ions in PdCrO₂ suggested by neutron diffraction and quantum oscillation measurements, and provide a strong constraint that has to be satisfied by a microscopic mechanism for the unconventional anomalous Hall effect recently reported in this system.

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