

Abstract Submitted
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Quantum Hall effect in Cd_3As_2 films MASAKI UCHIDA, YUSUKE NAKAZAWA, SHINICHI NISHIHAYA, KAZUTO AKIBA, the University of Tokyo, MARKUS KRIENER, RIKEN, YUSUKE KOZUKA, ATSUSHI MIYAKE, the University of Tokyo, YASUJIRO TAGUCHI, RIKEN, MASASHI TOKUNAGA, the University of Tokyo, NAOTO NAGAOSA, YOSHINORI TOKURA, MASASHI KAWASAKI, the University of Tokyo, RIKEN — A well known semiconductor Cd_3As_2 is reentering the spotlight due to its unique electronic structure of three-dimensional Dirac semimetal. We have succeeded in fabricating high crystallinity and high mobility Cd_3As_2 thin films epitaxially grown on SrTiO_3 to observe quantum Hall effect at high magnetic fields up to 55 T. With a decrease in film thickness to 10 nm, the quantum Hall states exhibit various changes such as of degeneracy accompanied with topological phase transitions. Detailed electronic structures of subband splitting and gap opening are identified from the quantum transport depending on the confinement thickness. Our findings and techniques pave the way for further investigation of quantum transport originating from the topological electronic structures in Cd_3As_2 .

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