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Metal-to-insulator switching in quantum anomalous Hall states LEI PAN, XUFENG KOU, Univ of California - Los Angeles, JING WANG, stanford university, YABIN FAN, Univ of California - Los Angeles, EUN SANG CHOI, National High Magnetic Field Laboratory, Florida State University, QIMING SHAO, Univ of California - Los Angeles, SHOU CHENG ZHANG, stanford university, KANG LUNG WANG, Univ of California - Los Angeles — Quantum anomalous Hall effect (QAHE) was recently achieved in magnetic topological insulator films as a form of dissipationless transport without external magnetic field. However, the universal phase diagram of QAHE and its relation with quantum Hall effect (QHE) remain to be investigated. Here, we report the experimental observation of the giant longitudinal resistance peak and zero Hall conductance plateau at the coercive field in the six quintuple-layer $(Cr_{0.12}Bi_{0.26}Sb_{0.62})_2Te_3$ film, and demonstrate the metal-to-insulator switching between two opposite QAHE plateau states up to 0.3 K. The universal QAHE phase diagram is further confirmed through the angle-dependent measurements. Our results address that the quantum phase transitions in both QAHE and QHE regimes are in the same universality class, yet the microscopic details are different.

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