Abstract Submitted
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Observation of the Quantum-Anomalous-Hall Insulator to Anderson Insulator Quantum Phase Transition in Magnetic Topological Insulators[1] CUI-ZU CHANG, MITThe Penn State University, WEI-WEI ZHAO, The Penn State University, JIAN LI, Princeton University, J.K. JAIN, CHAOXING LIU, The Penn State University, JAGADEESH S. MOODERA, MIT, MOSES H. W. CHAN, The Penn State University — The quantum anomalous Hall (QAH) effect can be considered as the quantum Hall (QH) effect without external magnetic field, which can be realized by time reversal symmetry breaking in a topologically non-trivial system [1,2], and in thin films of magnetically-doped TI [3]. A QAH system carries spin-polarized dissipationless chiral edge transport channels without the need for external energy input, hence may have huge impact on future electronic and spintronic device applications for ultralow-power consumption. The observation of QAH effect has opened up exciting new physics and thus understanding the physical nature of this novel topological quantum state, can lead to a rapid development of this field. In this talk, we will report our recent progress about the experimental observation of a quantum phase transition from a quantum-anomalous-Hall (QAH) insulator to an Anderson insulator by tuning the chemical potential, and finally discuss the existence of scaling behavior for this quantum phase transition. References [1] F. D. M. Haldane, Phys. Rev. Lett. 61, 2015-2018 (1988). [2] R. Yu et al, Science 329, 61-64 (2010). [3] C. Z. Chang et al, Science 340, 167(2013); Nature Materials 14, 473(2015).

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