

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Edge states of HgTe/CdTe quantum wells beyond critical magnetic field ZEWEI CHEN, TING PONG CHOY, TAI KAI NG, Department of physics, The Hong Kong University of Science and Technology, Hong Kong — 2D topological insulators have caught considerably attention because of its time reversal symmetry (TRS) projected topology. It was believed that when TRS is broken, the helical edge states will be gapped out. However, this picture is challenged by a transport measurement in HgTe quantum well which seems to indicate the existence of edge states under strong magnetic where band inversion of the topological insulator has been destroyed. In this paper, we study the HgTe quantum well under perpendicular magnetic field. In the presence of strong spin-orbit coupling and magnetic field, we find edge-like states at the first electron-like and hole-like Landau levels leading to edge conductance without the Landau level being completely filled. The origin of this edge-like state is explained. The experimental results can be explained by our calculation.

Zewei Chen
The Hong Kong University of Science and Technology

Date submitted: 20 Nov 2016

Electronic form version 1.4