Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Magneto-transport Studies of Type-II InAs/GaSb Quantum Wells in Inverted/Normal Regime with Dual-gating and Magnetic Doping DI XIAO, NITIN SAMARTH, The Pennsylvania State University — Type-II InAs/GaSb quantum wells are of great current interest as quantum spin Hall (QSH) insulators due to the unique inverted band structures in the topological regime. However, recent studies have shown that conductance plateaus and non-local signals of edge currents can apparently be observed in the gate-controlled QSH phase diagram for *both* topological and trivial phases. Here, we report a thorough transport study of InAs/GaSb quantum wells in both the inverted and normal regimes by varying the thickness of the InAs channel layer. By using dual gating, we study the phase diagrams of macroscopic devices, demonstrating the gradual change of the band structures with different layer parameters. Non-local measurements on mesoscopic samples confirm the existence of edge currents in both regimes. Finally, motivated by a recent theoretical prediction [Wang et al., PRL, 113, 147201 (2014)] of achieving a quantum anomalous Hall state in these systems by magnetic doping, we describe our ongoing studies of gated InAs/GaSb quantum wells that are Mn-doped. Funded by ONR.

Di Xiao
The Pennsylvania State University

Date submitted: 11 Nov 2016 Electronic form version 1.4