

Abstract Submitted  
for the MAR17 Meeting of  
The American Physical Society

**Field effect study of QHE in low carrier density films of Bi<sub>2</sub>Se<sub>3</sub><sup>1</sup>**

NIKESH KOIRALA, MIT, MARYAM SALEHI, JISOO MOON, SEONGSHIK OH,  
Rutgers University — The novel quantum Hall effect (QHE) arising from topological surface states (TSS) of TIs have been difficult to observe in binary chalcogenide compounds such as Bi<sub>2</sub>Se<sub>3</sub> due to high level of doping in these materials. By growing Bi<sub>2</sub>Se<sub>3</sub> thin films with low starting carrier density, we have not only observed ambipolar transport but also the quantized QHE (per surface) associated with Dirac dispersion of the TSSs as indicated by (inverse) odd integer nature of Hall resistance. Furthermore, we will also discuss how QHE signature varies as a function of gate voltage.

<sup>1</sup>NSF/GBMF

Nikesh Koirala  
Massachusetts Inst of Tech-MIT

Date submitted: 10 Nov 2016

Electronic form version 1.4