Abstract Submitted for the MAR13 Meeting of The American Physical Society

Transport and Capacitance Measurements of Bi2Se3 Devices VALLA FATEMI, HADAR STEINBERG, FERHAT KATMIS, BENJAMIN M. HUNT, LUCAS ORONA, JAGADEESH S. MOODERA, PABLO JARILLO-HERRERO, MIT — We report electronic transport and capacitance measurements on Bi2Se3 thin-film and exfoliated devices. Strong modulation of the charge carrier density is achieved via the electric field effect with a local top-gate electrode utilizing either high-k dielectric insulators or transferred hexagonal boron nitride. The understanding of ambipolarity due to the electric field effects in these systems is addressed by comparing the modulation of the quantum capacitance and resistance in different devices, accompanied by a model. Additionally, we report capacitance and resistance measurements on these devices at high magnetic fields.

Valla Fatemi MIT

Date submitted: 26 Oct 2012 Electronic form version 1.4