

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Surface optical study of topological insulator Bi₂Se₃ DAVID HSIEH, JAMES MCIVER, DARIUS TORCHINSKY, DILLON GARDNER, YOUNG LEE, NUH GEDIK, Department of Physics, Massachusetts Institute of Technology, Cambridge MA 02139 — We report the observation of optical surface second harmonic generation from the (111) surface of Bi₂Se₃ using ultrafast laser pulses. We demonstrate that second harmonic generation is sensitive to both the surface crystal structure as well as the surface carrier density, which we tune through surface molecular doping. Protected nodes in the second harmonic circular dichroism spectroscopy provide a method to study time-reversal symmetry breaking effects from a single surface in a contact free manner.

David Hsieh
Department of Physics, Massachusetts Institute of Technology,
Cambridge MA 02139

Date submitted: 15 Nov 2010

Electronic form version 1.4