

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Electronic properties of HgTe/CdTe heterostructure under perturbations preserving time reversal symmetry¹ TOME SCHMIDT, Universidade Federal de Uberlândia, JONAS ANVERSA, PAULO PIQUINI, Universidade Federal de Santa Maria, ADALBERTO FAZZIO, Universidade de São Paulo — Using first principles calculations, the Dirac cone of HgTe/CdTe heterostructure is identified at the interface, inside the valence band. The spin texture of the 2D Dirac states is totally in-plane for all interface directions, different from the 3D topological insulators, where there is always some out-of-plane spin components. The massless Dirac states are strongly affected by applying positive or negative biaxial pressure. While negative pressure turns the system metallic, suppressing the Dirac states, positive pressure maintains the protected topological states, but dislocates the Dirac cone upward in energy. The protected Dirac states are kept up to a contraction of 3% in the lattice parameter. Larger compressive pressures leads to suppression of the protected metallic states.

¹FAPESP, FAPEMIG, CNPq, CAPES

Tome Schmidt
Universidade Federal de Uberlândia

Date submitted: 10 Dec 2012

Electronic form version 1.4