Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Electron transmittivity and reflectivity through a barrier in 2D and 3D topological insulators[1] ANDRII IUROV, Hunter College and Graduate Center, City University of New York, GODFREY GUMBS, OLEKSIY ROSLYAK, Hunter College, City University of New York, DANHONG HUANG, USAF Research Lab (AFRL/RVSS) — We investigated theoretically the tunneling through a square potential barrier for both 2D and 3D topological insulators and their relationship to the well-known anomalous tunneling effect in graphene. Additionally, we analyzed the way in which both surface and bulk states are affected by the application of circularly-polarized light in comparison with electron dressed states in graphene where the electron-photon interaction led to the formation of an energy gap and chiral symmetry breaking of the electron eigenstates. We compare our results for topological insulators with recently obtained data for graphene. The difference arising from the presence of the bulk state energy spectrum will be analyzed and discussed in detail.

[1]This research was supported by contract # FA 9453-11-01-0263 of AFRL. DH would like to thank the Air Force Office of Scientific Research (AFOSR) for its support.

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Date submitted: 14 Nov 2011 Electronic form version 1.4