Abstract Submitted
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Spin Control of the topological surface states in 3D topological insulators using polarized light[1] ANNA GURA, JEFF SECOR, MILAN BEGLIARBEKOV, LUKAS ZHAO, HAIMING DENG, LIA KRUSIN-ELBAUM, Physics Department, City College of New York — The topological surface states of 3D topological insulators (TIs)been shown to interact non trivially with circularly polarized light. Here we report on the study of spin-polarized currents in several 2^{nd} generation TIs, such as Sb_2Te_3, Be_2Te_3, and Bi_2Se_3. In particular, to probe the robustness of the helical current surface states we will contrast the polarization dependence of the photocurrent in as grown crystals and crystals with controlled disorder introduced by magnetic and non-magnetic impurities. These result in the development of a gap in the energy spectrum of surface Dirac fermions (DFs), that is DFs acquire mass. The photo-response contrast between massless and massive Dirac fermions studied under electric field gating conditions will be presented.

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