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Electrical transport study of Bi_2Se_3 surface states HADAR STEINBERG, DILLON GARDNER, YOUNG S. LEE, PABLO JARILLO-HERRERO, MIT Department of Condensed Matter Physics — We report an electrical transport study of the topological insulator Bi_2Se_3 . Topological insulators are materials characterized by a gap in the bulk and gapless surface states. The surface states have Dirac dispersions and are protected from back-scattering. The latter protection arises from the fundamental symmetries of the material, and has far reaching consequences for the generation of novel quantum states. We fabricate Bi_2Se_3 devices by mechanical exfoliation of 30-80nm thick flakes and standard electron-beam lithography. The devices are investigated using temperature dependence and magnetoresistance.

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