Abstract Submitted
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Scanning tunneling spectroscopy studies of Bi2Te2Se[1] ILYA DROZDOV, HAIM BAIDENKOPF, JUNGPIL SEO, Department of Physics, Princeton University, SHUANG JIA, ROBERT CAVA, Department of Chemistry, Princeton University, ALI YAZDANI, Department of Physics, Princeton University — Topological insulators are a class of semiconductors characterized by the presence of current-carrying helical surface states lying within the bulk gap. The surface states of these materials possess massless Dirac-like dispersion. Helical spin texture of the surface states leads to suppression of backscattering in these materials. Results of scanning tunneling spectroscopy study of Bi2Te2Se (BTS) topological insulator will be presented. Similar to previously studied Bi2Te3 and Bi2Se3 the new material shows a relatively large band gap and a simple surface band structure. High bulk resistivity and high surface electron mobility make it a compound of interest for potential applications. Differential conductance mapping with scanning tunneling microscope is used to visualize surface states of this novel highest-bulk-resistivity topological insulator. These experiments enable us to assess the variation of local density of states in this compound under different growth conditions and to correlate the findings with transport properties

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