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Scanning tunneling spectroscopy of stripe induced spatial modulations in the electronic structure of Bi₂Te₃+d
YOSHINORI OKADA, WENWEN ZHOU, DANIEL WALKUP, CHETAN DHITAL, YING RAN, ZIQING WANG, STEPHEN WILSON, VIDYA MADHAVAN, Boston College — To take full advantage of the unique properties of topological insulators, a huge amount of effort has been spent in exploring the tunability of their charge carrier density or magnetism by chemical doping, creating an ever increasing need for probing and understanding the real-space electronic response. In this study, we investigate the effects of a 1D periodic modulation (stripes) on the electronic structure of Bi₂Te₃+d. Using a combination of spectroscopic mapping, Fourier transform spectroscopy and Landau level measurements we map out the energy-momentum dispersion of the surface state over a large energy range and show that the stripes have a non-trivial effect on the bulk and surface state band structure.

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