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STS studies of the surface of Bi₂Se₃ MEGAN ROMANOWICH, MAL-SOON LEE, S.D. MAHANTI, STUART TESSMER, Michigan State University, DUCK YOUNG CHUNG, JUNGHWAN SONG, MERCOURI KANATZIDIS, Northwestern University; Argonne National Laboratory — We apply scanning tunneling spectroscopy to characterize the surface of the topological insulator Bi₂Se₃. Spectroscopy reveals that the minimum in the local density of states (LDOS) does not actually vanish in the region where Dirac cone states exist. We demonstrate with density functional theory calculations that this can be understood in terms of an asymmetric addition to the LDOS associated with a contribution from the bulk valence band that overlaps in energy with the Dirac point. We will discuss the origin of the fluctuations in the LDOS seen in the experiment near 0.2 eV above the Dirac point, which are associated with tunneling into the lowest conduction band states.

Prefer Oral Session

Prefer Poster Session

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