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STM imaging of impurity resonances on Bi2Se3 ZHANYBEK ALPICHSHEV, Stanford University, RUDRO BISWAS, Harvard University, ALEXANDER BALATSKY, Los Alamos National Laboratory, JAMES ANALYTIS, JIUN-HAW CHU, IAN FISHER, AHARON KAPITULNIK, Stanford University — In this paper we present detailed study of the density of states near defects in Bi2Se3. In particular, we present data on the commonly found triangular defects in this system. While we do not find any measurable quasiparticle scattering interference effects, we do find localized resonances, which can be well fitted by theory [1] once the potential is taken to be extended to properly account for the observed defects. The data together with the fits confirm that while the local density of states around the Dirac point of the electronic spectrum at the surface is significantly disrupted near the impurity by the creation of low-energy resonance state, the Dirac point is not locally destroyed. We discuss our results in terms of the expected protected surface state of topological insulators.

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